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B

B. Mod

► Behavior Modification

B5M

► Big-Five Model

Back, Mitja

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Mitja D. Back is a Full Professor of Psychological Assessment and Personality Psychology at the University of Münster, Germany. He is interested in the conceptualization and assessment of personality as well as the dynamic interplay and development of personality and social relationships.

Educational Background

Back (born 1977 in Frankfurt, Germany) earned his diploma in psychology at the University of Mainz in 2003, with a thesis on the role of executive control processes for the implicit assessment of personality. He completed his Ph.D. in 2007 at the University of Leipzig. His doctoral thesis included social relations analyses of interpersonal attraction at zero acquaintance. Back worked under the mentorship of Boris Egloff for his diploma and Ph.D.

Professional Career

After a 3-year postdoc phase in Leipzig and Mainz including a research stay at the University of Connecticut under the supervision of David Kenny, Back was appointed junior professor (assistant professor equivalent) of personality psychology and psychological assessment at the University of Mainz, in 2010. In 2011 he received the William-Stern prize for outstanding innovative work in the field of personality psychology of the German Psychological Association. Since 2012, he works as full professor in Münster where he is chair of the psychological assessment and personality psychology section. Back is founder of the research network persoc.net (Personality and Social Relationships). He is Editor-in-chief of the *European Journal of Personality* and Associate Editor of *Collabra*. He also serves on the editorial board of the *Journal of Research in Personality and Social Psychological and Personality Science* and was program chair of the 2017 annual meeting of the Society for Personality and Social Psychology. He has authored

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more than 70 publications including several papers in flagship journals such as *Psychological Science*, *Current Directions in Psychological Science*, and *Journal of Personality and Social Psychology.*

Research Interests

Mitja Backs research interest centers around two main topics: the conceptualization and corresponding assessment of personality as well as the interplay of personality and social relationships. In his work on the conceptualization and assessment of personality, he focuses on the convergence and incremental predictive validity of different kinds of personality measures (self-reports, other reports, indirect tests, behavioral measures assessed in representative laboratory and field settings) and a process understanding of the state dynamics that make up traits. He has a special interest in the conceptualization, structure, and assessment of self-knowledge, self-enhancement, and narcissism.

In his work on personality and social relationships, he examines the social interaction processes (interpersonal perceptions, behaviors) underlying (a) the accuracy of social judgments, (b) the effects of personality on peer and romantic relationship development (from first encounters to committed relations), and (c) the development of personality. He also applies concepts and methods of this research to study the therapeutic process, personnel selection, and refugee integration.

Among his main contributions is the reinvigoration of lens and social relations models of interpersonal perceptions (including other-, self-, and meta-perceptions), a call for the assessment of actual behavior, dual-process models of personality and personality self-knowledge, an integrative conceptual framework to the study of personality and social relationships (the PERSOC framework), the Narcissistic Admiration and Rivalry Concept (NARC) including a dual pathway account to the short- and long-term social consequences of narcissism, and a state process model of personality development.

Back is also interested in increasing the transparency and replicability of psychological science and supports *open science* activities as a researcher, mentor, editor, and committee member. He provides *open material*, *open data*, and Reproducible Code on the Open Science Framework (osf.io/chets/) and has signed the commitment to research transparency (www.researchtransparency.org/), and the PRO-Guidelines (opennessinitiative.org/). As Editor of the *European Journal of Personality*, he has implemented the Transparency and Openness Promotion (TOP)-Guidelines (osf.io/9f6gx/). He is a member of the Society for the Improvement of Psychological Science (SIPS), and the Network of Open Science Initiatives (NOSI) in Germany as well as spokesman of the Open Science Initiative Psychology of the University of Münster.

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Bagby, R. Michael

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Dr. R. Michael Bagby was born in Portsmouth, Virginia, and moved throughout the United States and also lived in Spain during his childhood. His interests in psychological assessment were heavily influenced by the work of his uncle, psychologist and psychoanalyst James W. Bagby of New York City, who developed a projective test for measuring object relations in adolescents. As an adolescent himself, Bagby spent his summers assisting his uncle with the coding and analysis of test protocol narratives. Bagby obtained his bachelor's degree from the University of Tennessee (1976) and later obtained his Master of Arts degree from Radford University (1979) and Ph.D. from York University (1985). As a graduate student, Bagby applied the principles of attribution theory and self-presentation theory to the learned helplessness model of depression; these studies laid the foundations for his later research interests in response to biases and affective disorders.

Following his graduate studies, Bagby completed a research and clinical postdoctoral internship in the Behavioural Medicine Clinic at Mount Sinai Hospital in Toronto, Canada. During this time, he became involved in research on alexithymia, a psychological construct describing difficulties with emotional identification and expression and an externally oriented cognitive style (Bagby et al. 1986; Taylor et al. 1985). He continued his work on alexithymia at the Clarke Institute of Psychiatry (now the Centre for Addiction and Mental Health [CAMH]), where over the years he advanced to Senior Scientist, Psychologist-in-Chief, and eventually the Director of Clinical Research. There, Bagby developed a brief self-report questionnaire (the 20-item *Toronto Alexithymia Scale* [TAS-20]; Bagby et al. 1994), which has become one of the most widely used inventories for assessing the alexithymia construct. Bagby's extensive work on the measurement and structure of alexithymia has advanced its theoretical conceptualization as a dimensional personality trait that is distinct from those captured by other popular models of personality, temperament, and psychopathology (Taylor and Bagby 2012).

At CAMH, Bagby translated his doctoral studies of self-presentation into a rich body of research investigating potential threats to the validity of psychological assessments. Specifically, Bagby applied his skill and expertise in psychometrics to develop and refine the evaluation of non-credible responding (intentional and non-intentional). Similar to his work on alexithymia, these efforts resulted in a widely used instrument for detecting feigned illness and disability (i.e., malingering; *Structured*

Interview of Reported Symptoms [SIRS]; Rogers et al. 1992). In this line of work, Bagby has also used experimental research designs (e.g., simulation studies) to empirically evaluate validity scales from a number of standardized self-report instruments (e.g., the Minnesota Multiphasic Personality Inventory-2 [MMPI-2]; Butcher et al. 2001). This work has enhanced the reliability and validity of psychological assessments in applied clinical and legal settings.

Bagby's third line of research has focused broadly on the intersection of personality and psychopathology. This work has demonstrated the utility of personality assessments in clinical practice, given their implications for treatment planning and diagnosis. Bagby's research on personality and treatment outcomes has offered strong support for personalized intervention approaches for major depression. Specifically, this work has demonstrated that patients' personality traits differentially predicted treatment outcomes for cognitive behavioral therapy and antidepressant medication (Bagby et al. 2008a, b). Bagby's work on the structure and diagnosis of psychopathology also provided support for the diagnostic utility of personality assessments in clinical practice. Specifically, he demonstrated that five-factor model of personality traits could be used to distinguish between related psychiatric conditions (e.g., Bagby et al. 1996a, b). More recently, Bagby has applied this approach toward refining the conceptualization and assessment of DSM personality disorders (Bagby et al. 2005a, b; Bagby et al. 2016; Bagby et al. 2008b). He continues his research on personality and psychopathology at the University of Toronto, where he is currently the Chair of the Graduate Department of Psychological Clinical Science and a full professor in the Departments of Psychology and Psychiatry.

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Balance

▶ Compensation
▶ Homeostasis

Balance/Imbalance

▶ Congruence/Incongruence (Rogers)

Balanced Inventory of Desirable Responding

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Synonyms

Paulhus deception scales

Definition

The Balanced Inventory of Desirable Responding (BIDR), also known as the Paulhus Deception Scales (Paulhus 1999), is a 40-item self-report inventory with one scale that assesses a deliberate socially desirable response style and another scale that assesses a nondeliberate socially desirable response style.

Introduction

The BIDR measures a respondent's tendency to distort his/her self-report responses in order to reflect socially desirable responses rather than accurate answers about the self. The BIDR has two, 20-item scales: self-deceptive enhancement (SDE) assesses nondeliberate socially desirable responding, where the respondent in fact believes the desirable responses are accurate self-reports, whereas impression management (IM) assesses socially desirable responding, where the respondent knows the responses are deliberately inaccurate.

The inventory is appropriate for adults and adolescents age 16 years or older, for both nonclinical and clinical populations, requires a grade 5 reading level, and can be completed in approximately 3–5 min. Items are responded to on 5-point ratings that vary between 1 (not true) and 5 (very true) but are scored dichotomously (0 or 1). A total social desirability scale score can also be generated by summing SDE and IM scale scores.

The development of the BIDR was preceded by Paulhus' (1984) factor analysis of existing scales of social desirability responding in which he empirically demonstrated that a two-component model of social desirability is better interpreted as self-deception and impression management than by the previously proposed constructs of denial and attribution. Subsequently, items were rationally constructed for the two dimensions of self-deceptive enhancement and impression management in order to better articulate between the respective unconscious and conscious response biases. Over the years, several revised versions of the BIDR have been introduced. These involved balancing the number of items on each of the SDE and IM scales with regard to direction of keying so as to reduce the impact of acquiescent (yea-saying) or resistant (nay-saying) responding and factor analyzing a compilation of existing items and supplementary items with the goal of creating less correlated scales by selecting items that emphasized scale independence. The current commercially available BIDR version is the 1999 version.

Psychometric Properties

Norms

Normative data for the BIDR are from the responses of 441 community adults sampled in the United States and Canada. College student ($N = 289$), incarcerated offender ($N = 603$), and military recruit ($N = 124$) norms are also

available. Cutoff scores for identifying invalid responding have also been developed, but only for the IM scale, based either on the distributional likelihood for a community sample (IM scale scores >12 or <1 for probably invalid, IM scale scores >8 or <2 for may be invalid; Paulhus 1999) or on research with experimental induced faking (IM scale scores >10 or <4 for faking positively or faking negatively, respectively; Lambert et al. 2016).

Reliability

BIDR scale scores demonstrate acceptable levels of internal consistency reliability. Based on the normative groups, coefficient alpha reliabilities for scores on the SDE scale range from 0.70 to 0.75, on the IM scale from 0.81 to 0.84, and on the total scale from 0.83 to 0.86 (Paulhus 1999). For a sample of 200 university students, Holden et al. (2000) report an identical coefficient alpha of 0.72 for scores on each of the SDE and IM scales.

Test-retest reliabilities for SDE and IM scale scores are 0.77 and 0.79, respectively, based on a 1-week interval (Vispoel and Kim 2014); 0.69 and 0.65, respectively, for a 5-week interval (Paulhus 1991); and 0.71 and 0.68, respectively, based on a 3-year interval (Lonnqvist et al. 2007). Crutzen and Goritz (2010) reported a test-retest reliability of 0.74 for the IM scale scores with a 4-month interval.

Factor Structure

The structural validity of the BIDR has been examined by several factor analyses of item responses. Confirmatory factor analysis of the item responses of 180 undergraduates has supported the two-factor structure of the BIDR (Paulhus 1999). Holden et al. (2000), using principal component analysis applied to the item responses of 200 undergraduates, also supported the two-dimensional nature of the items with congruence coefficients between the obtained solution and the scoring key being 0.88 and 0.91 for SDE and IM scales, respectively.

Validity

The BIDR has shown strong evidence of scale score validity. Paulhus (1999) reported that BIDR total scores correlate 0.73 with scores on the Marlowe-Crowne Social Desirability Scale and 0.64 with scores on the Edwards' Social Desirability Scale. Helmes and Holden (2003) found scores on the SDE scale correlated 0.53, 0.41, and 0.40 with scores on three other standard scales of social desirability responding developed by Crowne and Marlowe (1960), Jackson (1984), and Edwards (1957), respectively. Corresponding correlations for the IM scale scores were 0.63, 0.35, and 0.18, respectively. In studies of experimentally induced faking, Lambert et al. (2016) found that scores on each of the SDE and IM scales could significantly identify fakers (either faking in a positive direction or in a negative direction) from individuals who were instructed to respond under standard instructions.

Alternate Versions

The commercially available version of the BIDR, also called the Paulhus Deception Scales, standardly has each item answered on 5-point ratings. An alternative version, using 7-point ratings, is also available but is not commercially distributed.

Availability

The BIDR is available in English and French versions. Administration and scoring can be through paper-and-pencil forms that include scoring and profile sheets or by local computerized assessment, scoring, and interpretive reporting. A computerized option where paper-and-pencil administration can be followed by computerized scoring, profile generation, and interpretation can also be used. In addition, a BIDR user's manual is available.

Uses

Issues of invalid responding are a concern for many users of self-report measures of personality and psychopathology. As a consequence, uses of the concise, convenient BIDR span virtually all

domains of research (e.g., personality, health psychology, sports psychology, psychometrics, etc.) and applied practice (e.g., clinical, counselling, forensic, industrial/organizational, survey, etc.). The BIDR is the "current gold standard" (Lambert et al. 2016, p. 80) for the detection of socially desirable responding and can be easily incorporated into larger assessment batteries.

Conclusion

The Balanced Inventory of Desirable Responding comprises a short, adaptable, psychometrically sound pair of scales that index the presence of potentially invalid answering associated with socially desirable responding. Researchers or practitioners who are involved in assessment contexts where socially desirable responding may be a concern will find that the BIDR is a useful tool for gauging whether the self-report assessment of other substantive individual difference measures is potentially distorted by either deliberate or nondeliberate socially desirable responding.

Cross-References

- ▶ False-Negative Error
- ▶ False-Positive Error
- ▶ Impression Management
- ▶ Marlowe Crowne Social Desirability Scale
- ▶ Paulhus, Delroy L.
- ▶ Principal Components Analysis
- ▶ Self-Enhancement Bias
- ▶ Social Desirability Response Style
- ▶ Test-Retest Reliability

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Baldwin, Mark W.

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Mark Baldwin is a social-personality psychologist and professor at McGill University in Montreal, Canada. His research examines the cognitive representation of self and patterns of social relatedness.

Early Life and Educational Background

Baldwin was born on October 23, 1957, in Toronto, Canada. He completed his B.A. in Psychology and Sociology from the University of Toronto in 1979, conducting his Honours thesis with Shelly Chaiken. He then studied social-personality psychology at the University of Waterloo, Canada, earning his M.A. in 1982 and his Ph.D. in 1984 both under the direction of John Holmes.

Professional Career

Baldwin secured a postdoctoral fellowship from the Social Sciences and Humanities Research Council of Canada, which supported him to work with Nancy Cantor at the University of Michigan (1984–1985) and then Brian Shaw at the Clarke Institute of Psychiatry (1985–1986). He then paused his academic career to co-write and co-host an award winning children's television series *Camp Cariboo* from 1986 to 1990. In 1990 he joined the psychology department at the University of Winnipeg where he taught until 1998, at which time he began his current position at McGill University. Among his responsibilities at McGill, he was Chair of the Research Ethics Board for Psychology and co-authored McGill's *Policy on the Ethical Conduct of Research Involving Human Subjects*. He has served as Chair of the Social-Personality section of the Canadian Psychological Association, as associate editor of the Personality and Social Psychology Bulletin, and as board member for several journals including the *Journal of Personality and Social Psychology*. He also organized jam sessions at the Society for Personality and Social Psychology annual conference each year from 2001 to 2003. In 2005 Baldwin co-founded (with his students) Mindhabits Inc., a spin-off company to develop serious games and apps based on their work on social cognitive training.

Research Interests

Baldwin's research interests revolve around the question of how people think about themselves and their important relationships. In his early work with graduate supervisor John Holmes, he began using priming techniques to examine the influence of internalized evaluators on processes of self-evaluation. A program of research evolved, showing that briefly bringing to mind a person's parent, or a judgmental acquaintance, or their graduate school advisor, or the Pope, could set in motion a set of self-evaluative processes that would lead to predictable patterns of self-evaluation and resulting feelings of self-esteem. Although the primary focus of this work was on processes of negative self-evaluation, many of the studies included conditions in which an accepting positive evaluator was primed – with salutary effects on self-esteem. These findings came to influence his later work on social cognitive training.

During his postdoctoral year with Nancy Cantor, Baldwin began integrating ideas from a Mischelian social cognitive perspective on personality with other perspectives including Symbolic Interactionism and Object Relations, to try to better understand the cognitive representation of relatedness. He hypothesized that *relational schemas* should guide information processing about social relations, much as person schemas and self-schemas were known to do, with effects on attention, interpretation of ambiguous information, and memory for schema-relevant experiences. Central to this model was the tenet that a person's sense of self is strongly linked to a sense of one or more other people, and both of these representations are grounded in an *if. . .then* interpersonal script reflecting patterns of relatedness between self and other.

In the 1990s, Baldwin collaborated with Beverley Fehr on a series of studies examining social scripts of attachment and emotion. Their approach to adult attachment was to endeavor to extend the individual differences approach that prevailed at the time, by returning to Bowlby's original social cognitive process analysis of internal working models. They proposed that attachment orientations are shaped by accessible cognitive structures representing expectancies about how others will respond to certain types of behavior. For example, the expectation *If I trust my partner, then my*

partner will hurt me would be a script that could give rise to an avoidant attachment orientation. From this perspective, a chronic attachment orientation would reflect a chronically accessible relational schema defining that pattern of relatedness. Along these lines, they used a sequential priming technique to show that thinking about *trusting one's partner* led to the temporary activation of the concept *hurt*, among avoidantly attached individuals. At the same time, this analysis suggested that behavior and emotion could also be influenced by temporary accessibility of different attachment-relevant structures. They pioneered the use of priming techniques to bring to mind a person's most secure relationships, with positive downstream effects on the selection of potential dating partners. They also argued that the influence of temporary accessibility and context-specificity could help explain why measures of adult attachment often showed only moderate levels of stability over time.

Since the mid-1990s Baldwin and his students have been studying the measurement and modification of implicit relational cognition. On the measurement front they have primarily used lexical decision, Stroop, and dot probe measures of accessibility and attentional bias to assess people's automatic processing of relational information. For example, the insecurity of low self-esteem may be rooted in an *if. . .then* contingency such that *If I fail, then others will reject me*. Several studies using a sequential priming lexical decision task have shown that individuals with low self-esteem are indeed faster to identify words relating to *rejection* if they have momentarily been primed with words relating to *failure*. Spreading activation patterns of this kind may underlie many individual differences in relational cognition and experiences of insecurity.

Baldwin and his students first began studying social cognitive training by trying to associate different relational expectancies with different computer tones. Through repeated pairing, one tone might come to be a conditioned stimulus for social acceptance, while another would become a conditioned stimulus for social rejection. They found that when one or the other tone was played later – while the participant filled out a self-esteem questionnaire or engaged in an awkward conversation with a confederate – the tone shaped the person's experience of self and other to influence feelings of self-esteem and social anxiety. The next step in this research program was to try to associate feelings of social acceptance to thoughts about oneself, on the assumption that this might override the tendency shown by insecure individuals to automatically think about rejection when contemplating their own failings and flaws. Participants played a simple game where they clicked on words including their name: When they clicked on their name, a smiling, accepting face appeared momentarily in the same location. This minimal pairing of self with acceptance led to increased implicit self-esteem and reduced aggressiveness among insecure individuals.

Baldwin and students' second line of research into social cognitive training has focused on selective attention. Insecure and anxious individuals tend to automatically focus attention on social threats such as frowning faces and often have difficulty disengaging attention from such threats. This attentional focus reinforces a view of the world as hostile and rejecting, which leads to heightened insecurity producing a vicious cycle. Baldwin's lab group developed and tested a task where the participant is shown an array of faces in which all are frowning except for one smiling face: The participant's task is to locate and click on the smiling face as quickly as possible. Several studies have shown that 5 or 10 min of this social cognitive training can modify insecure participants' attentional bias to be less focused on rejection. The training also shows beneficial downstream effects on self-esteem after a difficult task, on test anxiety among studying undergraduates, on golf scores among golfers, and on workplace stress and cortisol levels among telemarketers. Based on these findings, Baldwin and his students founded a spinoff company *Mindhabits,* which designed award-winning serious games and apps that have been distributed around the world. Their visual-search approach to attentional training helped to launch the now growing clinical field of cognitive bias modification.

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Bandura's Social Cognitive Theory

► Self-Efficacy Theory

Bandwidth-Fidelity Dilemma

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Introduction and Definition

In the area of psychological testing, Cronbach and Gleser (1957) suggested that there is a trade-off between the bandwidth of a measure and its fidelity. Specifically, they argued that whereas broad measures (e.g., measures of general cognitive ability and global personality factors) are capable of predicting broad criteria (e.g., academic outcomes, overall job performance, life satisfaction, and depression) with moderate validity, maximum validity necessitates a higher degree of fidelity between the measure and the criterion, such as that achieved when specific criteria (e.g., academic outcomes in a specific subject, task performance, problems with concentration) are predicted with narrow measures (e.g., verbal reasoning tests, scales of positive emotions) that faithfully capture the particulars depicted in the criterion. This hypothesis is known in research literature as the bandwidth-fidelity dilemma (BFD).

The BFD, therefore, refers to the right balance between the number of questions examined and the

precision of the answers obtained (Cronbach 1990). The terms "bandwidth" and "fidelity" were taken from the theory of information of Shannon and Weaver, devoted to the study of communication systems. Typically, *bandwidth* is used as a synonymous of *complexity* and *variability*. The opposite of bandwidth is *narrowness*. On the other hand, *fidelity* is a synonymous of *accuracy* and *specificity*. The opposite of *fidelity* is *impreciseness*.

In regard to cognitive abilities, a series of studies by Ree and his colleagues found that specific cognitive abilities (e.g., verbal, numerical, and mechanical ability tests) did not predict job performance and training proficiency better than general mental ability (GMA) tests did (Ree and Earles 1991; Ree et al. 1994), thereby tipping the balance against the BFD. A few studies found that specific cognitive abilities showed some degree of incremental validity over GMA validity (e.g., Mount et al. 2008; Ziegler et al. 2011).

In contrast, the debate concerning the BFD is still very much alive in the personality arena in which, with some slight variations, there are three main approaches in the BFD. The first approach sustains that broad personality measures (e.g., Big Five personality inventories, integrity tests, customer-oriented scales, and stress scales) best predict both broad and narrow performance criteria (Ones and Viswesvaran 1996). The second approach maintains that narrow personality measures (e.g., facet personality scales) predict narrow criteria (e.g., anxiety) better than broad personality measures and also that narrow measures explain additional variance over broad measures when broad criteria are considered (Ashton 1998; Ashton et al. 2014; Tett et al. 2003). The third approach represented, for instance, by Hogan and Roberts (1996) and Schneider et al. (1996), sustains that predictors and criteria should be aligned in terms of breadth and, therefore, that the breadth of the criterion dictates what personality predictors are most appropriate for each case.

A Typology of Narrow Measures

In the literature on personality and cognitive ability domains, narrow measures are commonly referred as facets. Subsequently, facet is a term widely used in the BFD research, but it is relatively ambiguous. In fact, it is possible to distinguish among three rather distinct types of facets, namely, residualized, pure, and compound (a.k.a. blended or multifactorial). A *residualized facet* is a measure that contains only the specific variance of the facet, after factor variance has been partialled out. This is the kind of facet required to prove the superior validity of the factors or of the facets, because it is necessary to separate the common variance of the broad factors from the specific variance of the facets. *Pure facets* refer to specific scales and tests related to only one general factor (e.g., GMA, the Big Five personality factors) and that it has no secondary loadings on other factors. This type of measure contains factor variance plus specific facet variance (and error variance). Examples of pure facets are the NEO-PI-R scales of depression, compliance, and order, among others. In the case of cognitive ability domain, verbal fluency tests would be examples of pure facets. *Blended or compound facets* are measures that contain variance explained by two or more broad personality factors (i.e., a measure with significant secondary loadings). Examples of blended facets are the scales of responsibility and risk-taking of the Jackson Personality Inventory (JPI; Jackson 1994). The responsibility scale showed high factor loadings on agreeableness and conscientiousness, and the risk-taking scale showed factor loadings in the Big Five factors of personality (Paunonen and Jackson 1996). Clerical tests would be examples of blended or compound facets in the cognitive domain. The distinction among these three types of narrow measures is crucial, but a great deal of research on the BFD failed to distinguish between residualized, pure, and blended facets.

Two Methods for Researching the BFD and to Separate the Unique Variance from the Common Variance in Narrow Measures

There are two main methods for separating the factor (common) variance and the facet (unique)

variance. The first method is the *residual regression one*. It was used by Ree and his associates (Ree and Earles 1991; Ree et al. 1994) in the domain of cognitive abilities and by Salgado and his associates (2013, 2015) in the domain of personality. It is a two-step approach. First, it is necessary to separate the factor variance (common variance) from the facet variance (specific variance of the narrow measure). This can be done using principal component analysis (PCA), principal factor analysis (PFA), or using hierarchical factor analysis (HFA). The three alternatives produce essentially the same results. The second step is to conduct three regression analyses using three sets of independent variables: (a) the factor alone (i.e., bivariate regression), (b) all the residualized facets together (i.e., creating a linear composite), and (c) the factor supplemented by the residualized facets. The first analysis allows for an estimation of the factor validity. The second allows the validity estimation of the residualized facets as a whole. The third analysis indicates the incremental validity of the residualized facets over the factor.

The second method is the *bifactor exploratory structural equation modeling* (ESEM). In the personality domain, this method was used, for instance, by Chen et al. (2012) and by Morin et al. (2016). Typically, a bifactor model hypothesizes that a general (broad) factor accounts for the common variance shared by the facets and that there are one or more specific (narrow) factors, each of which accounts for the unique variance of the narrow measure. In addition, the general (broad) factor and the narrow factor are uncorrelated with each other. Bifactor ESEM is especially appropriate when blended facets are analyzed. Bifactor models can be tested with structural equation modeling programs (e.g., Mplus, EQS, Lisrel, Amos).

The two models (i.e., residualized regression and bifactor ESEM) produce similar results, although some researchers have suggested that bifactor models have some unique advantages, including smaller standard errors, more accurate representation of data, statistical testing of the causal model, and estimation of the latent means for the facets.

Recent Research on the BFD in Personality and Cognitive Domains and Conclusion

Recent research found that broad personality measures were predictors of broad and narrow criteria, but the facets were not, when the factor variance was residualized (Chen et al. 2012; Morin et al. 2016; Salgado et al. 2013, 2015). Additionally, the facets did not show incremental validity over the broad personality factors. These findings are supportive of Ones and Viswesvaran's (1996) approach in the BFD. These findings suggest that (a) the unique variance represented by the residualized facets is not useful for predicting academic and occupational criteria and that the personality-criteria relationships do not depend on the scope (broad vs. narrow) of criterion measures, (b) personality measures do not need to be matched in terms of breadth with criterion measures if broad personality measures are used, and (c) the validity of the scales of pure and blended facets incorporated into the popular FFM-based personality inventories (e.g., NEO-PI-R) might mainly be due to the reflective latent variable that explains the common variance of the scales. With regard to the validity of the pure and blended facets, research has shown that they can be better predictors of narrow criteria (e.g., Ashton et al. 2014). In the cognitive domain, research found that residualized facets did not show predictive validity (Ree and Earles 1991; Ree et al. 1994), but recent research showed that specific (blended and compound) facets can be valid predictors of broad and narrow criteria (Ones et al. 2017).

It is important to remark, for finishing, that the superior validity of the broad measures for predicting broad and narrow criteria does not imply that the facet measures included in well-known batteries of cognitive ability tests (e.g., DAT, GATB, ASVAB) and in popular personality inventories (e.g., HPI, JPI, NEO-PI-R, PRF) are not valid predictors of important life, job, and academic outcomes. Meta-analyses showed that narrow measures are valid predictors of academic and occupational criteria (e.g., Judge et al. 2013; Ones et al. 2017). What recent research on the

BFD has shown is that it would be erroneous to infer from such meta-analyses that the unique constructs captured by these specific cognitive tests and scales of facets outperform the broader constructs tapped by GMA and the FFM because these typically blended facets also share variance explained by the global factors. This fact implies that practitioners have two possible alternatives for using cognitive ability tests and personality measures in assessment processes. The first alternative is to use broad measures of GMA and the Big Five personality factors. The second alternative is to use composites of pure and blended facets that reflect the broad cognitive and personality factors. The overall validity size would be very similar in both cases. Therefore, the use of a broad factor measure or a composite of pure and blended facets would be mainly a matter of personal preference from the point of view of the criterion-oriented validity.

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BAQ

► Aggression Questionnaire

Barometric Self-Esteem

► Self-Esteem Instability

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Justin L. Barrett is a faculty member at Fuller Theological Seminary. He is a cognitive and developmental psychologist who conducts research concerning (1) cognitive foundations of cultural expression, (2) religious thought development (primarily in childhood), and (3) other causes and consequences of thought and behavior that might be considered "religious." He also writes and speaks on philosophical and theological implications of scientific approaches to the study of religious thought.

Early Life and Educational Background

Barrett was born on June 16, 1971, in Saugus, California. He earned his B.A. in Psychology from Calvin College in 1993 and was awarded a Ph.D. in human experimental psychology from Cornell University in 1997, where he was supervised by Frank Keil.

Professional Career

Barrett was an assistant professor at Calvin College from 1997 to 2000, after which he became a research investigator at the University of Michigan's Institute for Social Research and served on the faculty of the Culture and Cognition Program. In 2001, he left professional academia for 5 years, during which he served Young Life ministries at Rockbridge Alum Springs, Virginia, and in Lawrence, Kansas. He returned to the academy in 2006 and, with Harvey Whitehouse, started the Centre for Anthropology and Mind, followed by the Institute for Cognitive and Evolutionary Anthropology in 2007, at the University of Oxford's School of Anthropology and Museum of Ethnography. At Oxford, Barrett was a senior researcher and course convener for the M.Sc. in cognitive and evolutionary anthropology. In 2011, he was appointed Thrive Professor of Developmental Science at Fuller's Graduate School of Psychology. He directed the Thrive Center at Fuller until 2015, when he became chief project developer for Fuller's Office for Science, Theology, and Religion Initiatives (STAR). He has authored more than 100 publications which have appeared in psychological journals (e.g., *Child Development, Cognitive Psychology, Journal of Positive Psychology*), interdisciplinary journals (e.g., *Cognitive Science*, *Journal for the Scientific Study of Religion*), and journals of other disciplines including anthropology, religious studies, and philosophy (e.g., the *Journal of the American Academy of Religion, The Monist*). He has served as an associate editor for the *Journal of Cognition and Culture* and is on the editorial boards for *Psychology of Religion and Spirituality* and *Religion, Brain, and Behavior*.

Research Interests

Barrett's primary research concerns how typical human cognitive systems inform and constrain cultural expression, thereby partially accounting for their distributions within and across cultures. Though he has considered other forms of cultural expression, he is especially concerned with thoughts and actions typically deemed "religious" such as belief in gods and the performance of rituals (Barrett 2007, 2011, 2012; Barrett and Keil 1996; Barrett et al. 2001). He is widely regarded as one of the founders of cognitive science of religion (CSR) because of his empirical and theoretical work in the area. In recent years,

he has begun writing about the philosophical and theological implications of CSR and asking such questions as: Do cognitive and evolutionary accounts of religion make some religious beliefs more or less likely or more or less rational to hold? (e.g., see Barrett and Church 2013) Secondarily, Barrett conducts research concerning various character strengths and virtues, particularly how they might be cultivated in young people. For instance, in collaboration with Robert Emmons, Tenelle Porter, and Sarah Schnitker, he has examined whether Christian conversion leads to subsequent changes in character strengths (e.g., Schnitker et al. 2014). He has also led a large award program concerning the study of intellectual humility.

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Bases of Self-Esteem

► Contingencies of Self-Worth (CSW) Scale

Basic Anxiety (Horney)

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Synonyms

Basic conflict

Definition

The feelings of insecurity that arise early in childhood where children perceive that they are unloved or undervalued

Introduction

Psychoanalyst Karen Horney described the concept of "basic anxiety" or "basic conflict" in her 1945 book, *Our Inner Conflicts*. She defined basic anxiety as the feelings that arise in a child from being unloved, unvalued, or insecure. She wrote:

> [Basic anxiety] . . .the feeling a child has of being isolated and helpless in a potentially hostile world. A wide range of adverse factors in the environment can produce this insecurity in a child: direct or indirect domination, indifference, erratic behavior, lack of respect for the child's individual needs, lack of real guidance, disparaging attitudes, too much admiration or the absence of it, lack of reliable warmth, having too much or too little responsibility, over protection, isolation from other children, injustice, discrimination, unkept promises, hostile atmosphere, and so on and so on. (p. 41)

Horney also thought that this basic conflict was present in and relevant to numerous religions and philosophies, and she thought that the conflict could be metaphorically represented through themes of light and dark, good and evil, and god and the devil. Horney believed that the development of normal and abnormal personality was largely dependent on environmental, social, and family relationships, specifically parent-to-child

interactions. Further, Horney thought every neurotic symptom was due to the underlying basic conflict. Horney claimed the conflict divides the neurotic's desires, preventing the individual from wanting in anything wholeheartedly. Many cases of neurosis develop in reaction to child-parent relationships in which the child struggles to reconcile the parent's hypocrisy with their professed love, kindness, and generosity (Coolidge 2012; Coolidge et al. 2001). To cope with the insecurities and conflict an individual is experiencing, Horney proposed that neurotic trends may develop. In each case, an individual may adopt strategies best suited to the environment they find themselves in. For example, a child in an unsupportive environment may choose not to participate in a sport with the mindset that it is safer not to try than to try and fail.

Horney (1945, 1950) developed a tridimensional model to explain the directions in which trends move: toward people (compliant), against people (aggressive), or away from people (detached).

In her later work, *Neurosis and Human Growth* (Horney 1950), Horney elaborated on her proposed dimensions. The compliant type, or self-effacing, tends to be subordinate and dependent, strives to appease others, and surrenders love. The aggressive type, or expansive, is focused on mastery, superiority, dominance, and grandiose. The detached type, or resignation, is characterized by a disinterest, acceptance, avoidance of emotional involvement, and aversion to outside input or influence. In all cases, Horney maintains, a part of one's real self is being denied (Horney 1950).

Horney postulated that a healthy individual could move easily between the three trend types, adjusting to the specific situation and environment, while a neurotic individual would become fixated along a single dimension, which Paris (1994) claimed now would be synonymous with a personality disorder. In an empirical operationalization of Horney's three types, Coolidge and his colleagues (Coolidge et al. 2001, 2004) found that they were well indicative of modern conceptions of personality disorders.

Conclusion

Karen Horney defined basic anxiety or basic conflict as the feelings that arise in a child from being unloved, unvalued, or insecure. To cope with the insecurities and conflict an individual is experiencing, Horney proposed that neurotic trends may develop.

Cross-References

- ▶ Horney-Coolidge Tridimensional Inventory (HCTI)
- ▶ Moving Against People
- ▶ Moving Away from People
- ▶ Moving Toward People
- ▶ Neurosis
- ▶ Neurotic Pride (Idealized Image) and Neurotic Self-Hate

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Basic Conflict

- ▶ Basic Anxiety (Horney)

Basic Emotions

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Synonyms

Core emotions; Discrete emotions; First-order emotions; Fundamental emotions; Primal emotions; Primary emotions; Primary-process emotions; Universal emotions

Definition

Basic emotions are hypothesized to be a special class of emotions out of which all other emotions are compounded. According to most theorists, they are innate, universal, and distinct affective states which evolved to serve adaptive functions.

Introduction

The idea that there exists a small set of "basic emotions" dates back to the works of Descartes (1649/1988) who was first to suggest that all emotional states can be derived from six fundamental "passions" (joy, sadness, love, desire, hatred, and wonder). However, the real debate on "emotional basicness" begun with the publication of Darwin's (1872/1998) book entitled *The Expression of the Emotions in Man and Animals*. Darwin argued that emotions are crucial for survival and thus they have distinctive expressions that should be accurately recognized by all humans. This suggestion led many theorists to believe that at least some emotions require no learning and thus are hardwired in the brain and universal.

Which Emotions Are Basic?

Although the view that some emotions are more "basic" than others is widely accepted by emotion theorists, there is little agreement on which emotions should be included in the list of the basic ones. Their number varies depending on the theory (for a review, see Ortony and Turner 1990). The most popular list, sometimes referred to as "The Big Six," was used by Ekman et al. (1969) in their research on universal recognition of emotion from facial expression. The list included happiness, sadness, fear, surprise, anger, and disgust, which are still the most commonly accepted candidates for basic emotions (see Table 1). Over the years some theorists, including Ekman, have shortened or expanded the list. For instance, Plutchnik (1980) added acceptance and anticipation, Ekman (1999; Ekman and Cordaro 2011) added contempt, and Levenson (2011) added interest, relief, and love. More recently, other candidates for basic emotions have been proposed, e.g., love or jealousy (Sabini and Silver 2005). Some authors have also used their own terminology. For instance, Panksepp (2007; Panksepp and Watt 2011) listed play, panic/grief, rage, seeking, fear, lust, and care as the basic ("primary-process") emotions.

Criteria for Emotional Basicness

The decision whether a particular emotion qualifies as basic is based on a set of criteria. Although these criteria vary across theories, many authors agree that a basic emotion should be associated with distinctive universal nonverbal expression, distinctive neural and physiological components, distinctive subjective experience, and distinctive regulatory and motivational properties (Izard 2007; Ekman and Cordaro 2011; Levenson 2011). Importantly, all of these elements should be correlated in intensity and coordinated in time because they are thought to be based on the same emotion-specific central mechanism (i.e., *affect program*; Ekman and Cordaro 2011; cf. Barrett 2006).

Basic Emotions, Table 1 Selected lists of basic emotions

Reference	Basic emotions						
	"The Big Six"						
	Happiness (joy, enjoyment, play)	Sadness (grief)	Anger (rage)	Disgust	Fear/ anxiety	Surprise	Other
Plutchnik (1980)	✓	✓	✓	✓	✓	✓	Acceptance, anticipation
Oatley and Johnson-Laird (1987)	✓	✓	✓	✓	✓	✗	–
Ekman and Cordaro (2011)	✓	✓	✓	✓	✓	✓	Contempt
Izard (2011)	✓	✓	✓	✗	✓	✗	Interest
Levenson (2011)	✓	✓	✓	✓	✓	✓	Interest[a], relief[a], love[a]
Panksepp and Watt (2011)	✓	✓	✓	✗	✓	✗	Seeking, lust, care

[a]An emotion included in the list, but according to the author(s), the evidence for its inclusion is insufficient

The Universality of Emotional Expression

Darwin's (1872/1998) suggestion that emotions evolved to serve a communicative function and thus are expressed and recognized in the same way in every culture has inspired a number of cross-cultural studies on the universality of emotional expression. For instance, Ekman and colleagues (Ekman et al. 1969; Ekman and Friesen 1971) demonstrated that facial displays of "The Big Six" are accurately recognized across cultures, both literate and preliterate, regardless of who expresses them – a member of one's own culture or a member of a foreign culture. This, along with the studies on similarities in expression between humans and other primates, provided solid evidence for the evolutionary basis of these six emotions (Ekman 1999). Ekman's findings have been replicated in a number of studies (for a review, see Elfenbein and Ambady 2002). Moreover, similar evidence has been found for vocal expression (Sauter et al. 2009). The universality of emotional expression has been also supported by studies on the spontaneous expressive behavior of congenitally blind individuals (Matsumoto and Willingham 2009). In general, these studies show that emotions considered basic are universally expressed and recognized, which – according to basic emotion theorists – suggests that their nonverbal expression is genetically coded.

Neural Networks Associated with Basic Emotions

Many theorists propose that basic emotions have consistent and specific brain activation profiles (Ekman and Cordaro 2011; Izard 2011; Levenson 2011; Panksepp and Watt 2011). A recent meta-analytic review of neuroimaging studies supports this view by indicating that happiness, sadness, anger, fear, and disgust may be associated with unique patterns of neural activation (Vytal and Hamann 2010). For instance, fear is linked to increased activation of the amygdala and insula, whereas happiness activates the rostral anterior cingulate cortex and right superior temporal gyrus. Importantly, these discrete patterns of neural activation clearly distinguish one basic emotion from another. Further evidence that basic emotions are associated with specific neural networks comes from neuropsychological lesion studies (e.g., Adolphs et al. 1994) and studies on subcortical substrates of emotions in nonhuman mammals (e.g., Panksepp 2011). Taken together, these findings indicate that basic emotions are associated with specific neural correlates, although there is lack of consensus over their precise location (i.e., only some theorist argue that neural networks associated with basic emotions should be located in *subcortical* brain structures; Panksepp and Watt 2011).

Emotion-Specific Autonomic Responding

A number of theorists state that basic emotions can be distinguished by unique patterns of autonomic nervous system activity (e.g., Ekman 1999; Ekman and Cordaro 2011; Levenson 2011). Although early research failed to support this view (for a review, see Larsen et al. 2008), more recent findings have provided evidence that happiness, sadness, anger, fear, and disgust can be associated with specific patterns of autonomic responding. These patterns, however, might differ across subtypes of emotions. For instance, the physiological response of crying sadness is characterized by increased cardiovascular activity, whereas the physiological response of noncrying sadness is characterized by decreased cardiovascular activity. Corresponding findings have been reported for cardiovascular, respiratory, and electrodermal correlates of other emotions, e.g., anger directed toward others versus anger directed toward the self, contamination-related disgust versus mutilation-related disgust (for a review, see Kreibig 2010). This suggests that autonomic system response might be the basis for distinguishing only the subforms of basic emotions. Importantly, for some emotions that are often considered basic (e.g., surprise), no unique autonomic response patterns have been reported yet. Furthermore, certain "nonbasic" emotions (e.g., pleasure) can also be identified by unique autonomic reactions (Kreibig 2010). On the whole, although there is some evidence for emotion-specific autonomic nervous system activity, future research is needed to explore this issue more thoroughly (Levenson 2014).

Distinctive Subjective Experience

The idea that basic emotions might be characterized by specific feeling components originates from peripheral theories of emotion according to which subjective emotional experience derives from bodily sensations such as changes in heart rate, breathing, or facial muscle activity (James 1884; but see Barrett 2006). Accordingly, anger, sadness, or disgust *feel differently* because they are associated with different patterns of interoceptive and proprioceptive signals. As these patterns are believed to be emotion-specific, they should give rise to distinct subjective emotional experience. This proposition has been supported by research showing coherence between experiential, behavioral, and – to a lesser extent – physiological responses to emotion-eliciting stimuli (Ekman 1999; Izard 2007; Levenson 2014). Importantly, the capacity for experiencing emotional feelings, similarly to the capacity for expressing basic emotions, cannot be learnt (Izard 2011). For instance, it is impossible to teach someone how it feels to be happy or angry. This suggests that the feeling component of a basic emotion, similarly to its expressive, neurobiological, and physiological components, is a product of evolution (Izard 2011; Levenson 2014).

Motivational and Regulatory Functions

Many emotional theorists assume that basic emotions evolved to serve crucial biological and social functions and thus they are characterized by distinct motivational and regulatory characteristics (e.g., Ekman 1999; Izard 2011; Levenson 2011). According to this view, basic-emotion feeling states have power to uniquely motivate and regulate behavioral and cognitive responses to a wide range of environmental and social challenges and opportunities. For example, fear is associated with actions and thoughts aimed at escaping the source of threat and maximizing safety, while anger promotes actions and thoughts concentrated on removing obstacles (Izard 1992). Importantly, after the early childhood period, such stereotypical, rapid, emotion-specific reactions may be perceived as inappropriate, and thus they are activated only in response to highly intense and ecologically-valid stimuli. Accordingly, fear increases the likelihood of escape, but typically does not lead to escape, because in ordinary life situations, actions and thoughts are multiply determined (Izard 2011; Levenson 2011).

"Nonbasic" Emotions

Emotions which do not meet the criteria for emotional "basicness" are considered "nonbasic" or secondary. According to most theorists, they cannot be characterized by distinct expressions or specific patterns of physiological response because

they are not preprogrammed by evolution (Ekman 1999; Levenson 2011; Panksepp and Watt 2011). In contrast to basic emotions, "nonbasic" emotions differ across individuals because they are thought to be largely shaped by sociocultural factors. For instance, the activation of embarrassment or guilt is determined by the development of cognitive abilities associated with self-other distinctions or social comparisons (Izard 2011). "Nonbasic" emotions are commonly believed to be formed out of basic emotions. For example, according to a multidimensional model of emotions (Plutchnik 1980), the blending of fear and surprise produces a mixed emotion of awe, while the blending of sadness and disgust produces a mixed emotion of remorse. Although most theorists agree that primary emotions might serve as "building blocks" for more complex emotional states (Ekman 1999; Izard 2011; Levenson 2011; Panksepp and Watt 2011), the mechanisms involved in this process have not yet been fully elucidated.

Controversies Over the Idea of Basic Emotion

Over the years, the notion of a "basic emotion" has been subjected to a detailed critique (e.g., Barrett 2006; Ortony and Turner 1990; Russell 1994; Turner and Ortony 1992). Several critics have commented on the lack of consensus on what emotional basicness is. For instance, Ortony and Turner (1990) distinguished three different levels at which an emotion may be basic – the conceptual level, the biological level, and the psychological level – and pointed out that although some emotions may be considered basic at one of these levels, they are nonbasic at other levels. This, according to Ortony and Turner, makes it difficult to decide which emotions are basic and thus challenges the utility of the concept of basic emotions. The methods used by basic emotion researchers have also met with criticism. For instance, Russell (1994) argued that the use of forced-choice response format, preselected, posed facial expressions, within-subject design, and lack of contextual information might have limited the validity of the findings. Basic emotions theorists have also been criticized for neglecting the social aspects of emotions. Psychological constructionists, for instance, have pointed out that conceptualizing basic emotions as biologically based cannot be supported by empirical data because, contrary to basic emotion theories, the coordination between expressive, neurobiological, physiological, experiential, behavioral, and cognitive responses to emotion-eliciting stimuli is low. For example, emotional signals – both vocal and facial – may not convey precise and reliable information about the expresser's feeling state because emotional expression is largely influenced by social context (e.g., smiling or laughing is not always associated with *being* happy but may also indicate confusion or embarrassment). This, according to the critics, suggests that basic emotions cannot be identified by a set of distinctive, coordinated characteristics based on emotion-specific central mechanisms (e.g., Barrett 2006). The core idea of a basic emotion theory – that certain emotions are innate – has also been called into question. For example, the fact that young children do not have the ability to differentiate between various emotion categories indicates that emotions may not be hardwired into the brain at birth. Psychological constructionists thus challenge the view that some emotions can be organized into discrete categories that are imposed by nature. Instead, they propose that mental states called basic emotions are, in fact, "classification schemes that people impose on their world during perception" (Barrett 2006, p. 46).

Conclusion

Although the concept of basic emotions has been highly popular in psychology, there is no generally acceptable list of basic emotions or generally acceptable criteria for their "basicness." Moreover, basic emotion researchers do not agree about the prevalence of basic emotions in ordinary life. While most of them state that "pure" basic emotions are rarely experienced by adults (because they interact with higher order cognitive processes to produce more complex emotional states; e.g., Izard 2011; Levenson 2011; Panksepp and Watt

2011), some authors suggest that basic emotions are more common (Ekman and Cordaro 2011). Thus, as it has been recently noted (Russell et al. 2011), the popular phrase *basic emotion theory* does not refer to a single model but to a set of overlapping and ever-changing theories. Yet, despite some noticeable differences between these theories, over the years several areas of agreement have been identified. First, most researchers agree that the number of basic emotions is limited. Second, even though the lists of basic emotions differ, happiness, sadness, anger, and fear appear in most of them (see Table 1). Third, there is some overlap with regard to the "basicness criteria" which, according to many theorists, are the universality of emotional expression, unique physiological correlates, distinct subjective experience, and characteristic adaptive functions. Overall, despite some differences, the theories of basic emotions show significant similarities and thus offer a conceptual framework for future research in the field.

Cross-References

- ▶ Anger
- ▶ Disgust
- ▶ Emotional Networks in the Brain
- ▶ Evolutionary Psychology and the Emotions
- ▶ Facial Expressions and Emotion
- ▶ Fear
- ▶ Happiness
- ▶ Interest
- ▶ McGrath, Robert E.
- ▶ Psychoevolutionary Theory of Emotion (Plutchik)
- ▶ Sadness
- ▶ Surprise

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Basic Emotions Theory

► Psychoevolutionary Theory of Emotion (Plutchik)

Basic Need

► Deficiency Motive

Basic Personality Inventory

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Definition

The Basic Personality Inventory (BPI; Jackson 1996) is a 12-scale, 240-item, true/false self-report measure of the general domain of psychopathology.

Introduction

The BPI is a multiscale inventory that assesses psychological problems. The inventory is appropriate for adults and adolescents and for both nonclinical and clinical populations. The BPI requires a grade 5 reading level and can be completed in approximately 30–40 min. The BPI's 20-item scales assess hypochondriasis, depression, denial, interpersonal problems, alienation, persecutory ideas, anxiety, thinking disorder, impulse expression, social introversion, self-depreciation, and deviation.

In developing the BPI, the independent psychopathology dimensions underlying the longer 566-item Minnesota Multiphasic Personality Inventory (Hathaway and McKinley 1967) were first ascertained. Based on these dimensions, ten conceptually relevant constructs were identified and defined. In addition, scales representing guarded test-taking style and critical deviant behaviors were conceptualized. Subsequently, item pools were written and items were selected for BPI scales based on these constructs. In particular, an innovative item selection procedure, termed the item efficiency index (Jackson 1996), simultaneously fostered scale internal consistency reliability and inter-scale independence thus serving to promote scale convergent and discriminant validity and concurrently reduce the potential contamination of socially desirable responding (Holden and Jackson 1992). To further promote scale independence, each item is scored on only one scale. In addition, each scale on the BPI (except the critical deviant behaviors scale) has a balanced number of items for direction of keying so as to reduce the impact of acquiescent (yea-saying) or resistant (nay-saying) response styles.

Psychometric Properties

Norms

Adult normative data for the BPI are based on the responses of 1419 community adults sampled from the United States and Canada. Separate norms are available for men and women because

significant sex differences do exist for some scales. Adolescent normative data, separately by sex, based on 2260 nonclinical respondents are also available as are normative data for samples of psychiatric patients, college students, and correctional officer job applicants (Jackson 1996).

Reliability

BPI scale scores demonstrate acceptable levels of internal consistency. Coefficient alpha reliabilities for scores on denial (test-taking style) and deviation (critical deviant behaviors) scales tend to be lower (alpha coefficients averaging 0.65 to 0.69) than for scores on the clinical content scales (alpha coefficients averaging 0.75 to 0.80). Test-retest reliabilities based on a 1-month interval vary from 0.63 for denial scale scores to 0.87 for social introversion scale scores. Across all 12 BPI scales, the median 1-month test-retest reliability is 0.75 for nonclinical samples. For a clinical sample, the median 2-month test-rest reliability was 0.77 (Jackson 1996).

Factor Structure

The structural validity of the inventory has been examined in a set of BPI item factor analyses with samples drawn from clinical adult, nonclinical adult, and high school populations (Holden et al. 1983). Congruence between observed factors and the BPI's scoring key indicated support for the convergent and discriminant structure at the item level, something not commonly investigated or found for multiscale measures of psychopathology.

Validity

Validity for BPI scale scores has been demonstrated for a variety of clinical and forensic samples. Holden et al. (1988) found a mean BPI scale score validity of 0.40 (0.56 when corrected for unreliability in the criteria) between the responses of 112 psychiatric inpatients and ratings by hospital mental health staff who were well acquainted with individual patients. For a sample of 64 adult psychiatric inpatients, Holden et al. (1990) reported BPI scale score validities with a median value of 0.35 where criteria comprised clinical staff member ratings. A subset of 26 of these inpatients completed the BPI again 9 weeks later and the median BPI scale score validity based on these clinical ratings was 0.47. With a sample of 101 incarcerated men in a federal institution, a median validity for BPI scale scores of 0.21 was found when correctional officers' ratings were used as criteria (Kroner et al. 1997). The ability of BPI scales to differentiate a sample of 352 psychiatric inpatients into correct diagnostic categories has also been demonstrated (Jackson 1996).

Supplementary Scales

In addition to the standard 12 scales of the BPI, additional scales and indices have been constructed subsequent to the original development of the inventory. Scales for higher-order factors (Austin et al. 1986) of psychiatric symptomatology (sum of scores on scales of hypochondriasis, persecutory ideas, anxiety, and thinking disorder), social symptomatology (sum of scores on scales of interpersonal problems, alienation, persecutory ideas, impulse expression, and deviation), and depression (sum of scores on scales of depression, social introversion, and self-depreciation) have been developed and validated (Holden et al. 1988, 1990). Validity indices (Helmes and Holden 1986) assessing person reliability, acquiescent responding, response perseveration, faking, and socially desirable response styles are also available.

Availability

The BPI is available in English, Spanish, and French versions. Administration, scoring, and reporting can be through paper-and-pencil answer sheets and profile sheets with reusable test booklets and scoring template. Alternatively, the BPI can be computer administered, scored, and interpreted using local software or the publisher's online assessment portal. A published BPI manual and a current bibliography of BPI research are available.

Uses

The BPI has an obvious role for the assessment of psychological problems in clinical inpatient and outpatient samples, including forensic samples. It can also be used to screen applicants for high-risk occupations, such as police officers, correctional officers, security guards, and so on. The Basic Personality Inventory has been used to assess psychological problems in a wide variety of research applications, ranging from research related to health, to stress and coping, to objective testing issues, to cultural differences, to other personality variables. At present, the extant bibliography on the BPI numbers over 180 papers.

Conclusion

The Basic Personality Inventory is a psychometrically sound, relatively concise self-report instrument assessing the broad domain of psychopathology. Based on its sophisticated multivariate test construction techniques applied to foster a construct approach to measurement, investigators and clinicians will find that the BPI can fulfill many research and applied needs.

Cross-References

- ▶ Acquiescent Responding
- ▶ Anxiety
- ▶ Denial
- ▶ Depression
- ▶ Inventory of Interpersonal Problems
- ▶ Minnesota Multiphasic Personality Inventory (MMPI)
- ▶ Persecutory Delusions
- ▶ Social Desirability Response Style
- ▶ Test-Retest Reliability

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Basic Tendencies

- ▶ Core and Surface Characteristics of Personality

Baumeister, Roy F.

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Roy F. Baumeister is a social and personality psychologist whose work spans a wide range of topics, including self and identity, motivation, emotion, social cognition, aggression, sexuality, self-regulation, self-esteem, and self-concept, thinking about the future, consciousness, free will, and how people find meaning in life. He

has long sought a broad, integrative understanding, and toward that end he seeks to explore diverse topics. One theme of his career is an interest in understanding the human self. Toward that end, he has published research on self-concept, self-presentation, self-esteem, self-control and self-regulation, identity crisis, self-awareness, and defense mechanism, and this work has included everything from laboratory experiments to interdisciplinary syntheses.

Early Life and Educational Background

Baumeister was born in 1953, as the son of an immigrant businessman and a schoolteacher. His parents were strict, skeptical of letting their offspring spend too much time with peers and insistent on consistent excellence in schoolwork. Apart from brief episodes of adolescent rebellion, Baumeister was a diligent and successful student. He was valedictorian of his high school class of a thousand students despite having skipped fifth grade, and he graduated summa cum laude from Princeton in 1974. He received his M.A. from Duke and then got his Ph.D. from Princeton in 1978. The return to Princeton was occasioned by his mentor, the great Edward E. Jones, moving from Duke to Princeton while Baumeister was in his lab. His graduate training was focused narrowly on experimentation in social psychology, though he (ever the contrarian) introduced some personality and individual difference aspects into his work.

Professional Career

Faced with a bleak job market, Baumeister was lucky enough to land a postdoc in sociology at the University of California, Berkeley, and then got a job as assistant professor of psychology at Case Western Reserve University. He remained there for 23 years, during which he built his career based on laboratory experimentation. However, his broad intellectual interests could not be easily shoehorned into a laboratory experimentation program, and he discovered that he could address bigger questions with literature review articles and books. Although his training had focused narrowly on laboratory work, much of his best-known and most influential works have been the books and literature reviews.

When still in his 30s and while building his career, Baumeister reflected on his strategy of writing integrative reviews and books on diverse topics (and even conducting experiments on different topics). He thought this plan would slow the process of gaining recognition, because researchers mostly follow work relevant to their own area, so colleagues would know only a small portion of his work, thus leaving him at a disadvantage when competing for awards – but he predicted it would lead to greater, broader influence in the long run. Both predictions have come true. As evidence, Baumeister did not receive any awards until very late in his career (nearing age 60), but his citation count indicates wide influence. As this is written, his lifetime citation count according to Google Scholar has recently surpassed the 100,000 milestone, which is unusual. He is routinely included among lists of most-cited researchers.

In 2003 Baumeister moved from Case Western Reserve University to Florida State University. Apart from readiness to move, more money, and more resources, a central reason for moving was the opportunity to build a prominent Ph.D. program. Baumeister has spent over a dozen years there and mentored an assortment of promising young researchers. He is now in the process of moving to University of Queensland (Australia), for both professional and personal reasons.

Research Interests

Personality and Individual Differences

Baumeister received his Ph.D. in social psychology during the late 1970s, a time when the two personality and social psychology had been drawing apart and indeed sometimes competing, with hostility, for resources such as faculty positions and student funding. Baumeister's professors were generally dismissive and skeptical of personality, consistent with the Zeitgeist at the

time. Unlike their professors, however, Baumeister and many of his age-mates saw the two fields as complementary and mutually indispensable. Even his dissertation, focused on the social psychology of self-presentation, contained some research on personality differences in self-esteem. Baumeister has generally identified himself with both fields. Students who work with him are routinely encouraged to examine both social context and individual differences as causes of behavior.

Self-Esteem and Narcissism

Self-esteem was Baumeister's first research interest (i.e., his undergraduate senior thesis) and has remained a prominent focus, though his views about it have changed quite radically over the years. In the 1970s, interest in self-esteem was just beginning, and he had a chance to ride the wave, which became a minor tsunami in the 1980s. He used laboratory studies to find how people with high self-esteem respond differently than those with low. One conclusion was that people with high self-esteem seek self-enhancement (pursuing ever new triumphs), while those with low self-esteem emphasize self-protection (avoiding failure and rejection).

Baumeister was gratified to see the field and indeed American society come round to embrace self-esteem as a powerful tool for benefiting people. However, he became disillusioned when the data failed to back up the ostensible, hoped-for benefits of high self-esteem. Although he does not normally use personal experience and intuition as a basis for research, he has since adolescence had a hefty skepticism of the dangers of thinking very favorably of oneself.

A turning point came when he was researching his book on evil. The idea that low self-esteem leads to violence and aggression had been widely repeated throughout the literature, but Baumeister could find no persuasive evidence that it was true, and indeed the evidence seemed to suggest that egotistical, conceited people were most likely to turn aggressive. Having been an enthusiastic contributor to and advocate of self-esteem research, Baumeister became identified as a skeptic and critic. His views changed further when he was appointed by the Association for Psychological Science to lead a team to write a comprehensive review of the evidence about the benefits of high self-esteem. The article concluded that some specific, circumscribed benefits were well established, but apart from that couple, the benefits were minimal or absent. To be sure, the benefits of high self-esteem are not the only reason to study self-esteem. Self-esteem is still an important dimension along which people differ, producing reliable differences in behavior, emotion, and responses to various situations. The enhancement versus protection idea has held up well over the years.

In seeking to break his bias in favor of high self-esteem, Baumeister became interested in narcissism, which seemed to him (at least initially) as a toxic and obnoxious version of high self-esteem. Laboratory experiments on aggression, for example, found only slight effects of self-esteem, whereas narcissism provided many significant and powerful effects. Some research led Baumeister to the suspicion that the problematic aspect of narcissism is not the favorable view of self (as if narcissism were just very high or inflated self-esteem), but rather the sense of entitlement, which impairs interpersonal harmony. Baumeister remains unclear about what is the core of narcissism – indeed, whether it is more about cognition (e.g., favorable opinion of self) or motivation (desire for favorable opinion of self). Open questions like this present a welcome opportunity to investigate further.

Self-Control

When Baumeister reluctantly concluded that self-esteem was not the vital key to understanding human selfhood, he began to study self-regulation and self-control. This has spawned a lively research program. One important part of it involved studying individual differences in self-control. Existing measures were problematic, and so he worked with June Tangney to develop a trait scale. This has become a popular measure of personality differences, and indeed within a decade of first publication, the article containing the original scale has been cited over a thousand times.

Clearly some people have better self-control than others. As with self-esteem, though, one can ask what are the key factors that make people different along that dimension? Theory of self-control has continued to evolve based on new evidence. The initial assumptions were that people with good self-control have high degrees of willpower that enable them to resist temptation. Those views have gradually been replaced by the view that people with high self-control use their self-control, not especially to resist temptation, but to form good habits (and break bad ones) so that life can run smoothly. In particular, the difference between high and low self-control individuals appears to be in avoiding temptation rather than resisting it.

Ever since graduate school, Baumeister embraced the ideal that science should be value-neutral. The self-esteem area presented a challenge to this, insofar as the assumption was that high self-esteem is better than low self-esteem – but as noted above, the data presented a much less homogeneous picture of the benefits of self-esteem than had been initially assumed. Self-control is however a much more profound and legitimate challenge to the ideal of neutral, impartial, value-free science. Baumeister and colleagues have searched diligently, even eagerly, for downsides of high self-control, but these have been few and far between. Self-control seems to resemble intelligence: although it can be used in destructive ways, in general more is always better. There are very few clear costs or disadvantages associated with having high self-control.

Metatraits

At one point early in his career, Baumeister became excited by the concept of "metatraits," defined as the trait of having a trait. This idea is now out of fashion (possibly for invalid reasons, so that it might resurface in the future, as the truth will presumably always emerge in the long run), but it was plausible at the time.

The idea of metatraits presented a challenge to the way personality and individual differences are studied. Most researchers who use a trait scale do so on the assumption that the trait is a single dimension of personality and all people can be correctly located at some point on it. Everybody has a level of self-esteem, for example.

Against that view, the metatraits theory proposed that different personalities may be described by different dimensions. Even with self-esteem, it is plausible that some people do not have a particular chronic level of self-esteem. The centrality of self-esteem may make it a poor example, although there is evidence that some people's self-esteem fluctuates more than other people's.

In order to test a hypothesis about a trait effectively, it may be helpful to limit the sample to people for whom that trait dimension is a stable aspect of their personality. Other people are "untraited" on that dimension, and so they mainly add error variance. Some reviewers objected to the idea by saying that personality dimensions are like height: everyone has a height. Baumeister conceded that everyone has a height, but the analogy to personality might have to acknowledge that some people change and fluctuate frequently on personality (less so on height, though weight already allows for fluctuation, and one can appreciate the difference between someone who has weighed the same for 20 years and someone else whose weight has oscillated wildly).

As a method for assessing metatraits, Baumeister and Dianne Tice studied item variance on trait scales. In principle, all the items on a scale measure the same construct in different ways, and so one could consider whether the items all furnish about the same conclusion – or instead fluctuate widely. Standard practice for computing trait scores is to sum across items. But two people might have the same sum yet differ substantially in item variance. Baumeister and Tice published several studies showing that testing hypotheses about traits yielded stronger and clearer results if one focused on people with low item variance, in contrast to the "untraited" others whose responses were all over the scale on different items.

The metatraits line of work came to a disappointing end. Baumeister lacked the expertise in personality measurement to fight the statistical battles that his work started. Some personality

researchers remained adamantly opposed to the idea that a particular trait scale score could be more meaningful and relevant for some respondents than for others. Item variance is an imperfect measure, though to be sure Baumeister thinks all personality measures, and indeed probably all measures of psychological functioning, are imperfect. His interest in metatraits was motivated by the theoretical question of whether all personalities are composed of the same ingredients – or, as the metatraits idea would suggest that different traits are differentially important in different people's personalities. As responses to his work converged on statistical and measurement issues rather than the grand theoretical questions, he decided to abandon this line of work. He hopes others may take it up and develop these ideas, which continue to strike him as having potentially profound implications. In particular, the recent shift in social and personality psychology toward insisting on large samples creates a terrific opportunity to analyze item variance as well as item sums and thereby to see how often and how effectively metatraits moderate the effects of individual differences.

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BDHI

► Aggression Questionnaire

Beck Anxiety Inventory

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Definition

Anxiety is the persistent expectation of a real or imagined threat. It is characterized by muscle tension and hypervigilance and may include cautious or avoidant behaviors. The thoughts and emotions that accompany anxiety are often viewed as excessive and outside of the developmental norm (American Psychiatric Association 2013). The Beck Anxiety Inventory (BAI) is a measure used to assess severity of anxiety (Beck and Steer 1993).

Introduction

The BAI is a 21-item self-report instrument designed as a screening tool, in which patients rate their experience of the severity of each symptom of anxiety. It is a widely used instrument that has been translated into a variety of languages (Steer et al. 1993). Patients are instructed to focus their answers on the last week, including the day of administration. Respondents rank symptoms on a Likert scale with the anchors of 0 (Not at All) to 3 (Severe). Examples of items found on the BAI include "Fear of the Worst Happening," "Unsteady," or "Difficulty Breathing" (Beck and Steer 1993).

Symptoms of anxiety and depression are highly correlated (Watson and Kendall 1989). Because of this issue, items of the BAI present symptoms which are minimally shared with symptoms of depression (Beck and Steer 1993). The BAI was originally constructed to identify severity of anxiety in adult and adolescent psychiatric populations. It has been used in research for both clinical and nonclinical samples (Bardhoshi et al. 2016).

Currently, scores falling in the range of 0–7 are classified as "Minimal" anxiety, scores in the range of 8–15 are indicative of "Mild" anxiety, scores falling in the range of 16–25 indicate "Moderate" anxiety, and scores falling in the range of 26–63 indicate a "Severe" level of anxiety. The BAI may be administered and scored by paraprofessionals. However, instruments of this type should only be used and interpreted by professionals with appropriate clinical training (Beck and Steer 1993).

Psychometric Properties

Although originally developed as an instrument to assess anxiety in psychiatric populations (Beck et al. 1988), the BAI has been used in various clinical and research settings (Muntingh et al. 2011; Palmer et al. 2016; Piotrowski 1999). The screening instrument is considered a reliable and valid measure of anxiety. Internal reliability is excellent for the instrument ($\alpha = .92$; Beck et al. 1988; Beck and Steer 1993), and it has high test–retest reliability ($r = .75$; Beck et al. 1988; Beck and Steer 1993).

According to Beck and Steer (1993), the BAI has been determined to have good content validity, and the items were chosen to correspond with the Diagnostic and Statistical Manual of Mental Disorders-3rd Edition, revised (DSM-III-R; American Psychiatric Association 1987) criteria for anxiety disorders, especially generalized anxiety disorder and panic disorder. Concurrent validity has been examined with a variety of different anxiety measures. For example, the Hamilton Rating Scale-Revised (Hamilton 1959; reconstructed by Riskind et al. 1987) revealed a moderate correlation ($r = .51$; Beck et al. 1988) with the BAI. The BAI was also compared State-Trait Anxiety Inventory-Form Y (STAI; Spielberger 1983). Fydrich et al. (1992) reported moderate correlations with the State ($r = .47$) and Trait ($r = .58$) subscales of the STAI.

Factor Structure

Beck et al. (1988) examined the factor structure of the BAI in a sample of diagnostically mixed psychiatric patients. Findings revealed that the BAI consisted of a two-factor structure. The first factor contained items consistent with somatic symptoms, and the second factor consisted of subjective anxiety and panic symptoms. Steer et al. (1993) identified a two-factor solution on a computer version of the BAI in an inpatient sample that included somatic and subjective factors.

Several studies have examined the factor structure of the BAI with both clinical and nonclinical samples. Studies have generally revealed models ranging from two- to five-factor structures. Beck and Steer (1991) conducted a study with a sample of outpatients that revealed a four-factor solution consisting of subjective, neurophysiological, autonomic, and panic. Osman et al. (1997) conducted a confirmatory factor analysis for BAIs completed by college students. Findings revealed a four-factor model that consisted of neurophysiological, subjective, panic, and autonomic factor loadings. They further found that a

single second-order factor of "general anxiety severity" also provided a good fit. In a sample of undergraduates, Borden et al. (1991) reported a five-factor solution consisting of subjective fear, somatic nervousness, neurophysiological, muscular/motoric, and respiration.

There has been some disagreement in the literature on whether the BAI actually serves as a good measure of overall anxiety (Cox et al. 1996a, b; Steer and Beck 1996; Palmer et al. 2016). There is research to indicate that the BAI might best serve as an instrument for assessing symptoms of panic with and without symptoms of agoraphobia (Cox et al. 1996b; Leyfer et al. 2006). Leyfer et al. (2006) noted that BAI items were chosen, at least in part, to be independent of symptoms of items of depression on the Beck Depression Inventory-2nd Edition (BDI-II; Beck et al. 1996). Select symptoms of anxiety that overlap with depression may have been excluded from the BAI. Therefore, the BAI might have sacrificed some construct validity regarding general symptoms of anxiety in order to ensure discriminant validity with the BDI-II (Leyfer et al. 2006).

Applications

Originally, the instrument was developed for use with psychiatric populations; and it was designed to help discriminate between symptoms of depression and anxiety (Fydrich et al. 1992). However, its application has since been expanded for use with a wide range of populations. For example, in a meta-analysis of the English version of the BAI, Bardhoshi et al. (2016) found excellent ($\alpha = .91$) internal consistency across clinical and nonclinical samples, and this suggests that the BAI has broad application for various groups. The BAI has also been researched and applied to assess anxiety in samples of cardiac patients (Clark et al. 2016), veterans (Palmer et al. 2016), primary care patients (Muntingh et al. 2011), persons with intellectual disabilities (Lindsay and Skene 2007), and African-American and European-American adults (Chapman et al. 2009). Further, the BAI has been found useful in evaluating anxiety symptoms in adolescents. In a study of adolescent inpatients, Jolly et al. (1993) found the BAI was significantly correlated with clinician ratings and self-report measures of anxiety.

Palmer et al. (2016) found that, for a sample of veterans referred to a polytrauma clinic who had served in combat zones, examination of responses to certain items thought to be related to fear of personal safety (i.e., fear of dying and feeling terrified) were uniquely correlated as compared to findings of studies with other groups. Gould et al. (2014) utilized the instrument in conjunction with other measures to examine levels of anxiety between subgroups in an older sample of male veterans and nonveterans. They found elevated anxiety symptoms were not associated with veteran status, rather symptoms were better explained by age, ethnicity, education, and medical condition.

The BAI has been studied in the Native American population. A study conducted by Gray et al. (2016) examined the validity and reliability of the BAI with Northern Plains Indians. However, they found that the instrument was not accurate in distinguishing between symptoms of mood disorders and anxiety disorders.

Despite the BAI's longevity, there remain specific limitations within subgroups that need to be considered before administering the instrument. For example, Carney et al. (2011) conducted a correlational study with a sample of insomnia patients and found that cutoff scores were not helpful in identifying anxiety disorders in this subgroup. In a study evaluating anxiety in adults age 55 and older, results indicated the BAI was useful in identifying somatic symptoms, but not useful in identifying the cognitive symptoms of anxiety (Wetherell and Gatz 2005).

Conclusion

The Beck Anxiety Inventory has been shown to be a psychometrically valid and reliable self-report instrument. There have been criticisms that the BAI may not serve as an overall measure of anxiety, and some researchers have suggested that the instrument may serve as a measure of panic rather than generalized anxiety. However, its utility has

been noted as being an effective tool to use within both a clinical and nonclinical population. Its value has also been recognized in research.

Cross-References

- ▶ Anxiety
- ▶ Beck Depression Inventory
- ▶ Depression
- ▶ Panic

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Beck Depression Inventory

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Definition

The Beck Depression Inventory-II (BDI-II; Beck et al. 1996) and its various adaptations assess the severity of self-reported depression symptoms. The BDI-II is a 21-item self-report measure scored on a 4-point Likert-type scale that can be administered by paper or in electronic format.

Introduction

Beck et al. (1961) created the original BDI to meet the need for a brief self-report measure that can quickly summarize recent symptoms of depression. Major Depressive Disorder is defined by the American Psychiatric Association (APA 2013) in the fifth edition of the Diagnostic and Statistical Manual (DSM-5) as one of several disorders that primarily involves sad or irritable mood along with somatic and cognitive symptoms that significantly impair a person's functioning. Symptoms of major depressive disorder include depressed mood, diminished interest in life activities, weight or appetite changes, sleep changes, psychomotor changes, feelings of worthlessness or guilt, problems with concentrating or making decisions, and recurrent thoughts of death or suicide (APA 2013).

Beck (1970) was influential in developing a cognitive theory of depression, noting that people with depression generally display negative thoughts about the world, the future, and the self. Items on the BDI were derived from clinical observations of symptoms frequently observed in depressed individuals and infrequently observed in people without depression (Beck et al. 1961). The items on the BDI assess negative cognitions along with somatic and mood symptoms. The second edition of the BDI (BDI-II; Beck et al. 1996) aligned the items to be consistent with revisions to the DSM's diagnostic criteria for depression.

Format and Scoring

The BDI-II provides a summary of the severity of self-reported symptoms of depression. Respondents are instructed to answer the items based on how they have been feeling over the past 2 weeks. The 21 items on the BDI-II are rated from 0 to 3, where 0 indicates no sign of the symptom and

3 indicates the most significant level of the symptom.

Item scores are summed to provide a total score with higher scores representing more severe depressive symptoms. Suggested cut-off scores on the BDI-II are such that scores less than 14 correspond with minimal depression, scores of 14 through 19 indicate mild depression, scores of 20 through 28 represent moderate depression, and scores over 28 indicate severe depression (Beck et al. 1996). Scores are not intended to replace a clinical diagnosis of depression but can be used to screen for the need for further assessment and assess the self-reported severity of depression symptoms in both clinical and research settings.

Psychometric Data

Numerous studies have determined that the psychometric properties of the BDI-II and its adaptations are very good. The internal consistency of the BDI-II is high, with alpha coefficients of .92 and .93 for psychiatric and nonpsychiatric populations, respectively (Beck et al. 1996). Adequate content, factorial, concurrent, and divergent validity have been demonstrated (Beck et al. 1996; Dozois et al. 1998). The BDI-II has demonstrated high test-retest reliability ($r = 0.93$) over a 1-week period (Beck et al. 1996). Studies also show correlations higher than .90 between different versions of the BDI (Beck et al. 1996). A quick literature search on PsycInfo reveals that the psychometric properties of the BDI-II have been found to be strong in various populations, such as adolescents, various racial and ethnic groups, individuals with chronic pain, incarcerated men, older adults, college students, cancer patients, adults with various psychiatric disorders, individuals with traumatic brain injuries, and primary care patients.

Adaptations

After the BDI was developed in 1961, it was amended in the 1970s to form the BDI-IA (Beck and Steer 1993) and in the 1990s to form the BDI-II (Beck et al. 1996). Both the BDI-IA and BDI-II are copyrighted and require fees for use. Instructions for both revisions were modified to request that respondents answer items according to how they had been feeling during the preceding 2 weeks instead of the 1-week time frame of the original BDI. Additionally, the BDI-II was revised to address the full criteria for major depressive disorder as outlined in the fourth edition of the Diagnostic and Statistical Manual (DSM-IV; APA 1994).

The BDI-II appears to have cross-cultural relevance. It has been translated into numerous languages and used in various countries (e.g., Kojima et al. 2002) and has been shown to have good validity across different cultural groups (e.g., Dere et al. 2015).

The BDI-II can be administered in paper or electronic format. Several studies have demonstrated equivalence of paper- versus computer-administration of the BDI (e.g., Schulenberg and Yutrzenka 2001).

Applications

The BDI-II has been used in a variety of settings and for a variety of purposes. It is frequently used to assess the severity of depression symptoms in both clinical and nonclinical samples and to examine relationships between depression symptoms and other constructs (cf. Richter et al. 1998). In addition to being used in numerous research studies, it can be used clinically to monitor patients' symptoms over time to evaluate the effectiveness of treatment (Beck et al. 1961) or as a way to screen for possible depression (e.g., Steer et al. 1999).

Conclusion

The 21-item BDI-II satisfies a growing need for rapid assessment or screening of the severity of depression symptoms. It has excellent reliability and validity and has proven to be a useful tool with both clinical and research applications.

Clinicians and researchers in various parts of the world have used the BDI-II in their work to understand, prevent, and treat depressive disorders.

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Beck Hopelessness Inventory

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Synonyms

BHS

Definition

Hopelessness is conceptualized as negative beliefs and expectations about the future. Hopelessness is comprised of two core elements: (1) negative expectations about outcomes, and (2) expectations of helplessness in relation to changing such outcomes (Zhou et al. 2013), and can be measured with the Beck Hopelessness Scale (BHS). The BHS is a 20-item, paper and pencil format, self-report inventory for adults. Respondents answer questions in a true or false fashion, and it takes approximately 5–10 min to complete in its entirety.

Introduction

Prior to the development of the BHS, many clinical investigators believed hopelessness was a diffuse feeling state that was too vague and fluid to define; however, Stotland (1969) disagreed with this conviction and proposed that hopelessness involved negative expectancies concerning the self and the future. Therefore, in the development of the BHS, a 20-item scale, nine items were chosen from a test of attitudes about the future and revised to reflect the present tense, and the other eleven items were drawn from a pool of pessimistic statements made by psychiatric patients who were assessed by clinicians as hopeless (Beck et al. 1974). The BHS items are in true-false answer choice format and measure negative

attitudes about the future. Of note, the BHS was originally developed to predict eventual death by suicide. Nine items are reverse scored and summed with the other items, and higher ratings reflect greater levels of hopelessness. Sample items include: "*I might as well give up because I can't make things better for myself," "My future seems dark to me,"* and "*Things just won't work out the way I want them to."*

Initial evidence reported by Beck et al. (1974) indicated that the BHS was a reliable and valid measure of hopelessness and resulted in three factors. The first factor assessed affectively toned associations with hopelessness (e.g., enthusiasm, happiness), the second factor measured motivational associations (e.g., giving up, deciding not to want anything), and the third factor assessed cognitive aspects of the future, including future anticipation. Hopelessness has been identified as one of the core characteristics of depression (Beck 1963) and research indicates its predictive ability in suicide ideation and attempts, and death by suicide in clinical and community samples (Beck et al. 1985; Liu et al. 2015).

Psychometric Properties

The BHS was normed on a sample of 294 psychiatric inpatients who had made a recent suicide attempt (Beck 1963). Item-total correlations ranged from .39 to .76. Internal consistency of the scale was assessed via KR-20 coefficients and was found to be excellent (0.93). To measure concurrent validity, Beck and colleagues examined the relationship between clinical ratings of hopelessness and the BHS in a sample of outpatients ($N = 23$) and a sample of inpatients recently hospitalized for a suicide attempt ($N = 62$). Concurrent validity was .74 ($p < .001$) and .62 ($p < .001$), respectively. Since the original study, the BHS has been utilized in numerous studies across a variety of populations. Among other studies, the BHS exhibited internal consistency ranging from .83 to .86 for psychiatric samples (Durham 1982), .92 for clinical populations (Dyce 1996; Young et al. 1992), and .88 to .91 for college populations (Chang et al. 2010; Steed 2001). Additionally, the BHS is indicated as a valid measure for detecting hopelessness in clinical and community adult and adolescent populations (Durham 1982; Lester 2015; Rosellini and Bagge 2014).

Related Constructs

Hopelessness research indicates that hopelessness is associated with a wide range of constructs, including being an important component in a variety of psychological conditions. When developing the BHS, Beck et al. (1974) summarized that hopelessness is a core characteristic of depression, but also related to suicidal behavior, schizophrenia, sociopathy, and physical illness. In addition to psychopathology, hopelessness is related to cognitive-emotional constructs; for instance, hopelessness is positively related to negative affect and perceived stress, and inversely related to optimism and hope (Steed 2001). Hopelessness is also related to many psychosocial stressors including older age, being divorced or widowed, lower education levels, being unemployed or retired, and financial difficulties (Soares et al. 2008). Further, certain personality traits, such as neuroticism, are positively related to hopelessness, whereas traits such as extraversion, openness, and agreeableness are inversely related to hopelessness (Bayrami et al. 2012; Chioqueta and Stiles 2005).

Working Model and Hypothesis Testing

Stotland (1969) proposed that hopelessness is defined in terms of a system of negative expectancies concerning the self and the future. Hopelessness is a significant component in many psychological conditions; however, it has particular salience with regard to depression. In 1988, Abramson and colleagues presented a working model for a particular subtype of depression, hopelessness depression. This model posits that attributional style and negative life events contribute to feelings of hopelessness (e.g., those who attribute negative events to stable, global,

and internal factors are more prone to hopelessness) which, in turn, leads to the development of depressive symptoms. The hopelessness theory of depression provides a framework for hypothesis formulation and testing when using the BHS and has been applied to other related constructs such as suicide and childhood trauma (Liu et al. 2015).

Applications

The BHS has been examined in many populations (e.g., inpatient, clinical and nonclinical adults, college students, adolescents, rural, medical conditions, older adults), highlighting its utility across multiple populations. The scale has also been adapted for use across persons speaking different languages. For example, there is a Yoruba version of the BHS used for Nigerian individuals (Aloba et al. 2015), as well as Italian (Innamorati et al. 2014) and Turkish (Erol and Ergun 2013) versions of the scale, among other translations. There are also short versions of the BHS, which utilize either three or four of the original 20 questions, and which have been validated in Chinese, French, Japanese, and Hungarian samples (Forintos et al. 2013). All adaptations and translations of the scale are reported to retain high internal consistency, correlate highly with the original version, and the BHS, overall, appears to generalize well across cultures.

Conclusion

The concept of hopelessness, as measured by the Beck Hopelessness Scale, contributes to the understanding of the role of negative expectancies about the self and the future for psychological, cognitive-emotional, physical, and social well-being. Researchers, as well as clinicians, have examined this construct and have utilized the BHS across a wide range of populations, disorders, and research areas, including clinical interventions, to further understand the impact of hopelessness on multiple aspects of health functioning and the human experience.

Cross-References

- Depression
- Hope
- Hopelessness
- Neuroticism
- Personality and Suicide
- Schizophrenia
- Suicidal Behavior

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Behav. Mod

▶ Behavior Modification

Behavior

▶ Personality and Disease Susceptibility
▶ Personality and Mortality

B

Behavior as Communication and Purpose

▶ Adlerian Group Interventions on Workplace Behavior

Behavior Genetics

▶ Behavioral Genetics
▶ Heritability of Personality Traits

Behavior Modification

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Synonyms

Behav. Mod; B. Mod

Definition

Procedure in which learning principles and procedures are systematically applied to observed behaviors and environmental conditions to increase adaptive behaviors and decrease maladaptive behaviors.

Introduction

Behavior modification entails methodically applying techniques and principles of learning

theory to change an individual's observable behavior through environmental manipulation, primarily focusing on events that occur immediately before and immediately after the behavior (Martin and Pear 2015; Horrow and Gochros 1970). Behavior modification gained popularity throughout the 1950s and 1960s as an antithesis to the prevailing psychodynamic approach to the treatment of mental illness. The earliest behaviorists were interested in manipulating the stimulus-response connection in order to change a maladaptive behavior into an adaptive behavior (Bruck 1968), extending and elaborating upon Thorndike's "law of effect" (Waters 1934). These foundational behaviorists based these techniques on learning theories, including Pavlov's classical conditioning, Wolpe's counterconditioning, and Skinner's operant conditioning (Bruck 1968).

The term "behavior modification" has historically been used to describe a wide variety of procedures and applications to decrease undesirable behaviors and increase desirable behaviors (Martin and Pear 2015). In fact, the first use of the term "behavior therapy" was to describe Wolpe's application of behavior modification techniques to the treatment of anxiety (Martin and Pear 2015). The techniques used in behavior modification are largely drawn from experimental work performed with animal subjects (Bruck 1968), especially the work of Skinner (Iverson 1992).

Principles of Behavior Modification

While behavior modification draws on several theories and types of learning, it relies significantly on the principles of operant conditioning (Kazdin 2012). This approach to learning is most concerned with behavioral contingencies – the environmental events factors that are maintaining a behavior. A behavioral contingency involves three components: (1) behaviors, (2) antecedents, and (3) consequences (Kazdin 2012). Antecedents can be defined as what occurs immediately prior to a behavior, and consequences are defined as what occurs immediately following a behavior. For example, consider a parent giving a child a command. The parent issues the command (antecedent), the child completes the command (behavior), and the child receives praise or a reward (consequence). In this example, the behavior (adhering to the command) is maintained by receiving praise or a reward.

Behavior modification focuses on modifying the antecedents and consequences of a behavior, which can lead to reinforcement of a behavior (i.e., increase the likelihood that it will occur again) or punishment of a behavior (i.e., decrease the likelihood that it will occur again; Bandura 1969). Reinforcement and punishment can be further divided into negative or positive. Positive reinforcement occurs when a behavior is followed by an advantageous consequence, increasing the probability that the behavior will occur again. Conversely, negative reinforcement involves removing an aversive stimulus immediately after a behavior, increasing the probability that the behavior will occur again. Both positive and negative reinforcement involve an increase in the likelihood that a behavior will occur again (Kazdin 2012). Conversely, punishment involves adding or removing a stimulus to decrease the probability that a behavior will occur. Positive punishment occurs when a behavior is followed by an adverse consequence, whereas negative punishment involves removing a positive stimulus immediately after a behavior (Kazdin 2012).

Behavior modification employs a variety of techniques to promote desired behaviors and suppress undesirable behaviors. For example, it is only possible to modify antecedents and consequences if an individual already has a behavior in their repertoire, which is not always the case. While it is sometimes possible to wait for a novel behavior to occur naturally, it can be helpful to use shaping, the reinforcement of "successive approximations" of the desired behavior. Another commonly implemented behavior modification technique is chaining, which involves the reinforcement of a combination or sequence of desired responses (Kazdin 2012). For example, washing one's hands involves a series of steps, each of which is necessary before proceeding to the subsequent step.

Key Characteristics of Behavior Modification

Behavior modification involves several primary characteristics: first, behaviors that are targeted for modification should be clearly defined and measurable, so that change in the behavior can be used to indicate if progress is occurring. Additionally, the techniques used in behavior modification typically involve altering the individual's environment to promote the target behavior and/or decrease other behaviors. In general, behavior modification has specific terminology that can be used across settings and contexts, allowing published behavior modification studies to be easily replicated by other trained professionals. Because behavior modification procedures are widely used to increase appropriate daily living skills or decrease undesirable behaviors that are interfering with functioning, using consistent terminology makes it easier for a variety of individuals to apply the same behavior modification techniques across settings (Martin and Pear 2015).

Applications of Behavior Modification

While the term behavior modification is sometimes used interchangeably with the term "applied behavior analysis," it can be argued that behavior modification is a broader, more comprehensive term for a variety of treatments in which learning principles and procedures are systematically applied to improve overt and covert behaviors in an effort to improve daily functioning (Martin and Pear 2015). A behavior-focused therapist focuses less on modifying the client's internal state and more on controlling environmental variables that are maintaining undesirable behaviors (Bruck 1968). However, treatments such as "cognitive behavior modification" or "cognitive behavior therapy" can fall under the purview of behavior modification, given that these treatments involve using improvement in a client's behavior as the primary measure of therapeutic progress (Martin and Pear 2015).

Early applications of behavior modification include smoking cessation (Wagner and Bragg 1970; Gerson and Lanyon 1972), treatment of exhibitionism (Maletzky 1974), and control of juvenile delinquency (Davidson and Seidman1974). Furthermore, a variety of more recent evidence-based treatments, such as Acceptance and Commitment Therapy (ACT) and Dialectical Behavioral Therapy (DBT), combine cognitive techniques with behavior modification procedures to address environmental contingencies that are maintaining maladaptive behaviors, which lead to negative thoughts and emotions (Martin and Pear 2015).

Behavior modification is a particularly advantageous approach when implementing interventions with individuals with specific psychological or neurodevelopmental concerns, as it can be effectively utilized as an intervention without requiring insight in the individual whose behaviors are being targeted. For example, behavior modification has been used to treat specific behavioral concerns in young children (e.g., treatment of encopresis; Wassom and Christophersen 2014), developmentally disabled individuals (e.g., Hanley 2012), and individuals with autism spectrum disorders (Smith 2010). Furthermore, it may be used with individuals who lack self-motivation (e.g., juvenile offenders; Davidson and Seidman 1974) or the cognitive capacity for other treatments (e.g., individuals with dementia; Kasl-Godley and Gatz 2000).

Criticisms of Behavior Modification

Behavior modification has been the subject of criticism since it was first developed. For example, a critical review of behavior modification literature and practice by Bruck (1968) pointed out that nearly all studies published at that point were case studies. Bruck's early criticism of behavior modification also includes the assertion that behaviorists see individuals as mechanistic organisms whose "behavior may be shaped in an infinite number of ways by feeding him. . .a series of positive or aversive stimuli" (Bruck 1968, p. 49). This notion that behavior modification is

mechanistic is based on the assumption that individuals who adhere to this approach are ignoring the thoughts, feelings, and individual differences inherent in the person they are treating (Morrow and Gochros 1970). While early proponents of behavior modification (e.g., Bandura 1969) sought to discount internal processes in favor of focusing on environmental manipulations (Bruck 1968), it can be argued that covert behaviors (i.e. thoughts and feelings) can be used to determine stimulus cues for overt actions (Morrow and Gochros 1970).

Other criticisms of behavior modification are that it can be applied unethically and manipulatively (Morrow and Gochros 1970). For example, behavior modification has been implicated in the use of aversive techniques (e.g., electroshock therapy, public shaming) with institutionalized children and adults (Morrow and Gochros 1970; Baily and Burch 2016). The efficacy of behavior modification-based practices in which physical injury is used as an aversive stimulus to decrease a maladaptive behavior has long been debated in the psychological literature (Gershoff 2002). Abuses of behavior modification procedures in the 1970s (e.g., Sunland Miami Scandal) led to the formation of laws and measures to protect developmentally disabled patients and clients. These laws and procedures included establishing standards for treatment, as well as oversight by advocacy groups and peer committees (Bailey and Burch 2016).

Summary

In summary, behavior modification can be a beneficial component of many treatments and applications when it is effectively and ethically applied. The behavior modification approach can lead to dramatic improvements in a client's adaptive behaviors and provide a framework through which cognitive therapy can be used successfully. Lastly, behavior modification is particularly useful when working with individuals who cannot acquire the insight or internal motivation necessary to respond to some other interventions.

Cross-References

▶ Operant Conditioning

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Behavior Potential

► Expectancy (Rotter)

Behavior Problems

► Externalizing Behavior

Behavior Therapy

► Assertiveness Training

Behavioral and Performance Measures of Personality

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Synonyms

Experiment-based assessment; Objective personality tests; Objective-analytic tests; Performance tests of personality

Definition

Behavioral and performance measures of personality, also referred to as *objective personality tests* (OPTs) or *objective tests*, are used to gather information about people's characteristics by assessing their overt behavior in highly standardized miniature situations (Cattell and Warburton 1967). Scores from such measures are not based on introspection, self-estimation, or self-ratings with reference to these characteristics. Such tests also lack face validity with reference to the assessed characteristic or how the scores are obtained. Compared with self-report measures, OPTs are designed to be less susceptible to the manipulation and distortion of information, including faking and self-deception (see Ortner and Proyer 2015).

Introduction

It is remarkable that most researchers would estimate *objective* tests of people's cognitive abilities or knowledge as more valid than people's self-reports of their abilities or knowledge. But when it comes to personality assessment, most researchers still rely on self-reports. Whereas questionnaires are easy and convenient to use, they have a number of problems (e.g., social desirability, faking, etc.), and in some cases (e.g., in clinical psychology or counseling), patients or clients will not be fully capable of providing a fine-grained report of their symptoms or career aspirations. Personality is reflected in many different ways in everyday behavior. For example, people focus their leisure time on their interests, they focus their available time and money on their personal preferences, and they have greater attention for and gather more knowledge about topics that reflect their interests (Cattell 1935). In personality research there have been many attempts to develop measures for the assessment of these specific behaviors that allow for assessing personality without using subjective data.

In recent decades, several further names and definitions for this group of tests have been proposed, for example, *Objective-Analytic Tests* (Cattell 1955), *cursive miniature situations* (Cattell 1944), or simply *objective tests* (e.g., Cattell 1946), as well as *performance tests of personality* (Cronbach 1970) or *behavioral measures* (Lejuez et al. 2002). Inconsistent labeling has been identified as one challenge for their scientific reception. The fact that the term *objective personality tests* was also used to refer to self-report questionnaires has further impeded scientific communication.

History

There are four essential milestones in the history of OPTs: James McKeen Cattell introduced so-called mental tests, which encompassed the early ideas of OPTs. In 1890, he proposed a series of ten tests that involved very heterogeneous tasks (e.g., sensation, just-noticeable differences in weight comparisons, reaction times, and memory span). With these measures of personality, he sought to apply the exactness of the physical sciences. For example, his battery included the dynamometer pressure test, which considered a person's maximum possible squeeze of the hand as a measure of effort and volition. *Second*, a few decades later and during World War II, behavior-based procedures were employed by the German and US militaries (see Fitts 1946), for example, to assess emotional stability. *Third*, Raymond Bernard Cattell was responsible for the most prominent OPT approaches. More than 500 heterogeneous concepts for new personality tests in line with his new theoretical approach led to the publication of the classic *Objective-Analytic Test Batteries* (Cattell & Schuerger 1976). The development of tests was based on the notion that a comprehensive investigation of personality requires heterogeneous data sources including self-report data (Q-data), life indicators of personality often obtained from observer reports (L-data), and objective performance or test data (T-data; Cattell 1946). Cattell's tests varied strongly with regard to the materials and formats used for items and scoring (e.g., Cattell 1968). For example, he included behavior samples, physical performance checks, and psychophysiological data as well as so-called projective techniques and creative design tasks. *Fourth*, the emergence of electronic OPTs began in the 1990s with the broad distribution of personal computers. Tests were created independently by different research groups and authors, and each addressed a specific construct, such as achievement motivation, reflexivity versus impulsivity, the ability to work under pressure, or vocational interests (see Ortner and Proyer 2015). Technological progress enabled a broader variety of task presentation with reference to test conceptualizations, materials, required responses, and the computation of more complex and different kinds of scores. Examples of scores are the recognition of tachistoscopically presented pictures and viewing times (e.g., Proyer 2007; Proyer and Häusler 2007), reaction times (e.g., Proyer 2007), reaction speed (Schmidt-Atzert 2007), and the number of simulated pumps executed in order to inflate a balloon (Lejuez et al. 2002).

Three Categories of Tests

Several researchers tried to create categories for the miniature situations used in the behavior-based tests. As one of the first, Hundleby (1973) proposed a classification that differentiated the large variety of assessment approaches at the time into four groups of tests: (1) The assessment of *expressive movements* (e.g., characteristic movements of hand and body, allowing only a reduced assessment of very specific aspects of human personality), (2) *simulated real-life* data (i.e., the assessment of behavior in situations that resembled a target situation as much as possible), (3) *physiological variables*, and (4) *motor-perceptual and performance tests* (including measures of preference, response styles). The last group included most of the tests that existed during the time when this system was proposed. More recently, Ortner and Proyer (2015) identified three categories of OPTs: (1) *pseudo-achievement tests*, on tests from this category, test takers are instructed to work accurately and/or as quickly as possible on achievement tasks while not being aware of what is actually being measured or how the behavior will be scored. As a characteristic of this group of tests, the task is *not* embedded in a real-life context or real-life situation but is designed as a typical achievement task. Test takers usually cannot distinguish these tests from classical (cognitive) performance tests. On most tests from this category, higher scores on the construct of interest are associated with a more accurate or faster performance on the task. Newer examples from this group are the Objective Achievement Motivation Test (OAT; Schmidt-Atzert 2007) and a battery of tests designed to assess stress resistance characterized by performance not impaired by typical work-related short-term stressors (see Ortner 2012). (2) *Real-life simulations*: On tests from this category, items or tasks are embedded in

a real-life situation or setting. The particular behavior shown in this situation is evaluated as an indicator of a test taker's expression of a specific personality characteristic, although the construct being measured is usually not made transparent. In contrast to the first group, the tasks from this group do not look like pure achievement tests. Several newer tests for assessing risk propensity are representative of this group, for example, the Balloon Analogue Risk Task (BART; Lejuez et al. 2002), the betting dice test, and the roulette test (e.g., Rubio et al. 2010). (3) *Questionnaire-type OPTs*: Test takers are instructed to answer items that are similar to questionnaire items that ask for evaluations or decisions. Different from traditional self-report questionnaires for assessing personality, these tests should lack face validity as they assess something different than suggested by the instructions or what is normally deduced by the specific content. Many tests in the classic Objective-Analytic Test Kit (Cattell and Schuerger 1976) fall into this category.

Psychometric Properties of Objective Personality Tests

As almost every test concept is different from the others, no general statements about the psychometric properties of OPTs can be made – they are as diverse as the test concepts, items, and test materials.

Accordingly, *reliability* estimates differ widely between OPTs (see Ortner and Proyer 2015) and are related to test design, score conception, and materials. Obviously, the assessment of measurement precision in terms of split-half correlations or internal consistency must fail when only one score or item is available on a specific test. Interpretation of retest correlations may be problematic when test takers receive information during a test trial that influences their attitudes toward or expectations of forthcoming trials. However, analyses regarding a number of newer tests have revealed sufficient reliabilities (e.g., Santacreau et al. 2006; Jasper and Ortner 2014). Nevertheless, low retest correlations may also, even if not necessarily, indicate that a larger amount of state variance was assessed in comparison with trait variance. Recent research has indicated that data obtained by using experimental games as OPTs and OPTs for assessing conscientiousness identified levels of systematic person variance that were comparable to those from self-report measures of specific personality dispositions (Baumert et al. 2014; Koch et al. 2014).

With regard to the *validity* of OPTs, several recent studies have revealed substantial relations between test scores and relevant behavioral criteria (see Ortner and Proyer 2015). These results suggest that at least certain tests have criterion validity; nevertheless, one test's validity does not imply the validity of others. With regard to investigations of the construct validity of OPTs, findings from recent decades have revealed low correlations between data obtained with OPTs and scores from self-report questionnaires (Cattell 1957; Koch et al. 2014). As a test's construct validity is established when empirical data confirm claims that were made on the basis of a theory describing the given construct (Cronbach and Meehl 1955), researchers have begun to work on the questions of which *theory* on the relations of OPTs with other methods would serve as a starting point for empirical analyses and what claims such a theory would make. Using large data sets, Hundleby et al. (1965) concluded that different methods assess different aspects of the underlying traits and that OPTs and self-report questionnaires may thus systematically assess different aspects of personality. This approach has been adopted in newer research more comprehensively with reference to dual-process theories (e.g., Strack and Deutsch 2004). For example, Schmitt et al. (2015) argued that different OPTs may assess structurally more spontaneous or reflective aspects of a construct and may therefore converge better with indirect measures or traditional self-report questionnaires, respectively. Some OPTs may assess more associative, automatic, and spontaneous dispositions and may consequently show higher convergence with indirect measures than with direct measures (and vice versa). Supporting the idea of more reflective and more impulsive OPTs, a recent fMRI-study revealed activation in overlapping brain areas in test takers when they were working on either a more spontaneous or a more reflective OPT for assessing risk propensity. On the score level, data obtained with

these two tests showed no convergence (Pletzer and Ortner 2016).

Furthermore, research including indirect approaches has suggested that additional *moderators* of convergence may serve as a starting point from which to formulate more complex but also more successful hypotheses on the validity of OPTs (Dislich et al. 2010). Proposed moderators of convergence are personality traits, situational characteristics, attributes of the construct, and attributes of the measurement procedure (see Schmitt et al. 2015).

With regard to the opportunity to manipulate data provided by OPTs, studies have further revealed that scores are more difficult to fake on OPTs than on questionnaires (see Ziegler et al. 2007).

Conclusion

Several conclusions can be made from the last decade's research: First, general statements about OPTs or their psychometric properties are impossible; OPTs differ strongly with respect to their structure, materials, and scoring. There is no "common paradigm" used for all tests. Each test is more or less suitable for assessing a certain construct but cannot be used to assess all possible constructs or attitudes, and the test design can usually also not be adapted to assess a different construct. The usefulness of each new measure critically depends on the stimuli used (or the technical procedure implemented or how data are interpreted) and their appropriateness for evoking and measuring a certain construct. Therefore, empirical investigations of psychometric properties are needed for each proposed test. No overall conclusions can be made, and it is especially important to test for and establish the reliability and validity of each test or assessment procedure separately. As a second conclusion, recent research has revealed that not all trait or state constructs that have been identified and established through the psycholexical approach (Allport and Odbert 1936) can be measured with behavior-based assessment approaches. As Ortner and Proyer (2015) mentioned, interpersonal behavior and personality variables (e.g., extraversion) might not be validly assessed with computerized miniature situations as represented by OPTs today, but they may be validity assessed by applying behavioral observation. On the other hand, it may be more difficult to assess introspective processes or evaluations with behavioral observations. Nevertheless, all new technologies (e.g., assessments using virtual reality) may be used as a standardized miniature situation that evokes certain personality constructs. Whereas indirect approaches (e.g., IATs) have been revealed to assess more implicit aspects of attitudes (see Hofmann et al. 2005), OPTs have been postulated to assess explicit or implicit aspects, depending on test design (see Schmitt et al. 2015). This means that methods cannot be employed interchangeably; the valid assessment of a certain aspect of a construct or attitude of interest is often inseparably bound to one or several particular methods of measurement.

The utility of OPTs also depends on the context of application. For example, clinicians should not rely exclusively on self-reports in clinical settings because self-reports of traits and symptoms reflect only people's tendencies to view or present themselves in a certain way. Also in forensic psychology, questionnaires and interviews are transparent and can easily be faked by respondents who are aware of the personal consequences of the assessment outcome (Ortner and van de Vijver 2015).

In sum, only a little research exists on OPTs compared with research on indirect measures or questionnaires as most research in psychology is still based on self-reports. Enlarging the *multimethodological* toolbox of psychological assessment in the domain of personality may enable researchers to make more valid predictions of relevant behavior and outcomes in the long term.

Cross-References

- ▶ Faking
- ▶ Moderation (Statistical)
- ▶ Multitrait-Multimethod Analysis
- ▶ T-Data (Tests)
- ▶ Validity

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Behavioral Consistency

► Cross-Situational Consistency

Behavioral Disinhibition

► Impulsivity

Behavioral Ecology

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Background and Definition

Behavioral ecology studies ecological dynamics that drive behavioral adaptations within evolutionary context. This approach was developed from research of ethologists, such as Lorenz and Tinbergen (Krebs and Davies 1997). Lorenz and Tinbergen examined animal behavior in their natural environment in which the focus of the research was determining the function and fruition of the behaviors. Another contributor to the development of behavioral ecology was the field of sociobiology (Wilson 1975). Sociobiology "is a field of study in which principles of population biology and evolutionary theory are applied to social organizations" (Olmstead and Kuhlmeier 2015, p. 17). Behavioral ecology emerged from research within ethology and sociobiology. Questions in the field of behavioral ecology initially explored were related to predictions of survival and reproductive success. More specifically, how is the behavior traditionally used and does it increase survival? General topics of interest included fitness (e.g., behavior), the selection of behaviors, and genetic distinction, which if given enough time and raw material, selection led to optimal designs (behavior). Over time, behavioral ecologists expanded their understanding of processes to other areas such as perception and learning (Shettleworth 2010).

Measures and Examples

Behavioral ecologists utilize several types of measures: behavioral observations, correlations of inheritance, experimental studies, and optimality models. Based on Tinbergen's questions regarding proximate and ultimate causes, behavioral ecologists used observational research to explore the possible context of adaptiveness and evolutionary history. This approach was a useful way to examine the conditions of the environment and behaviors that could lead to investigating specific patterns. One way this technique has been utilized is by identifying the dominance hierarchy within a social group. In this case, identifying the hierarchy position of an individual animal is achieved by detecting the animal's observed size and various behaviors (Hausfater 1975). For example, Altmann and Alberts (2005) used this method to identify the maternal characteristics of baboons. This approach was then used to assess the impact of maternal characteristics on the growth of the offspring. Correlations of inheritance are used to examine

patterns of similarities or differences between parents and offspring. For example, do they both show similar migration patterns? Experimental studies explore questions related to the mechanisms behind a pattern of behavior or the environmental conditions that facilitate a particular behavioral outcome. One example is a phenotype manipulation experiment. Saino et al. (2003) examined the influence of the concentration of a compound (carotenoid), inside the egg of a Barn Swallow, on the growth and immune system of the offspring. Another type of experiment is a selection experiment. Wilkinson and Reillo (1994) examined the difference in male eye spans of flies and if those with long or short eye spans would influence the mate choice by a female fly. Both of these types of experiments specifically examined the characteristics that play a role in survival and reproduction. Finally, optimality models explore the historical function within the context of mathematical programming. More specifically, to study "decision problems in which one seeks to minimize (min) or maximize (max) a function by systematically choosing the values of variables within their allowed sets" (Zhang et al. 2015, p. 26). This model focuses on decision, result and uncontrolled variables.

Applications and Future Research

The research in the field of behavioral ecology is important to animal conservation in regards to a variety of species and environment situations. This is especially important with threatened species and significant ecological occurrences such as alterations in sex ratio and ecological parameters (e.g., temperature, resource availability). Bradbury and Vehrencamp (2014) propose that future research in behavioral ecology should utilize the complexity theory. Within this theory, topics such as communication, social coordination, cooperation, and personality (individual differences) can be explored. In doing so, they suggested that behavioral ethologists could still maintain their emphasis on linear interactions and dyadic behavior but should start exploring the complex nonlinear interactions.

A Variation: Human Behavioral Ecology

Background and Definition

Behavioral ecology was extended to humans shortly after its emergence in the animal behavior field in the 1960s and 1970s. With objectives to explain the evolution of human behavioral patterns and the selection of specific characteristics and behaviors that maximized fitness in an environment, human behavioral ecology concentrated on ultimate causes including the function of different behavioral patterns and the environmental pressures that produced them. Humans adapt to new environmental niches very quickly – faster than genetics can evolve. Interested in variation and diversity, human behavioral ecologists seek to determine the mechanisms that lie behind this diverse behavioral plasticity. Through their review, Nettle et al. (2013) argue that the plasticity of the processes used by individuals to independently and socially learn underlies their abilities to adapt to novel environments quickly. The role of cultural transmission is part of this adaptation based on social learning and is a frequent question in the study of human behavioral ecology. Human behavioral ecologists focus on traditional behavioral ecology questions involving the evolution of foraging, mating, social living, cooperation, among other social practices as they have evolved in humans while also examining the current evolutionary process. Gurven (2006) provides a very detailed summary of each of these major topics and the assumptions underlying the behavioral ecology approach.

Measures

Like behavioral ecology, human behavioral ecology uses a mix of theoretical and data-driven approaches. The use of models derived from various theories (optimization models, game-theoretic models) approaches the study of some aspect of human behavior from a series of logical assumptions with various hypothetical outcomes. Data-driven ethnographic approaches of traditional societies, experimental hypothetical situations, and data from large, culturally diverse datasets examine questions of fitness based on patterns observed based on the approach utilized. More current reproductive success is used to measure fitness rather than lifetime and overall offspring.

Key Examples and Applications

As summarized by Gurven (2006), "Behavioral ecologists evaluate the adaptiveness of behavior given the set of constraints and options in the natural, social, and cultural environment. There has been a renewed appreciation for the ways in which cultural history can provide insight into the content and form of these constraints, and help to explain behavioral variation among peoples living in similar ecologies." (p. 5). Since this statement, research in the traditional areas of behavioral ecology, foraging approaches, mating strategies, reproductive success including fertilization and offspring care, and life history continue to promote productive research although topics such as foraging elicit less research today. More current topics such as social living, urbanization, effectiveness of public policies and interventions, and other culturally transmitted beliefs are experiencing increased attention, especially in an effort to explain diverse human societies.

Future Considerations

One concern about the field is its relative independence from behavioral ecology in general, such that although many questions of interest overlap between human behavioral ecology and behavioral ecology, human behavioral ecology tends to consider only the human perspective instead of a cross-species approach, which is reflected by the primary journals publishing human behavioral ecology research (Nettle et al. 2013).

Cross-References

- ▶ Behavioral Ecology
- ▶ Evolutionary Theory

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Behavioral Engagement and Facilitation System

- ▶ BIS/BAS Systems

Behavioral Flexibility

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Synonyms

Adaptability; Behavioral plasticity; Cognitive flexibility

Definition

Behavioral flexibility refers to the ability to adapt effectively to the changing external or internal environment.

Behavioral flexibility is the ability to adapt effectively to the changing external or internal environment (Ragozzino et al. 1999). The term is used interchangeably with cognitive flexibility and behavioral plasticity. It involves the ability to inhibit behaviors that are inappropriate in the social milieu while promoting adaptive behavior corresponding to the current environment. It refers to behavior reflecting a conscious, cognitive change, thereby excluding reflexive, automatic behaviors.

Flexible behavior is often controlled by basic cognitive systems. For example, shivering due to a drop in temperature may elicit a behavioral response such as putting on a coat or lighting a fire which is an example of behavioral flexibility. In this respect, the ongoing (maybe inactive) behavior is stopped or changed with a new behavior initiated. In addition, behavioral responses that occur due to a change in either the internal or external environment demonstrate behavioral flexibility. For example, planning how to find food in response to hunger illustrates an internal cue while planning a route to escape from a threatening stimulus demonstrates an external environmental cue.

Behavioral Flexibility in Social Psychology

Research on behavioral flexibility has occurred for decades in the field of psychology. Early accounts of the issue include the works of Gestalt Psychologists as *p* factors (preservation, Spearman 1927) and *Open and Closed Mind* (Rokeach 1960). *Self-monitoring* is one of the measures used in social psychology. It includes the concern for social appropriateness and the control of behavioral expression. In other words, self-monitoring incorporates the ability for intentional social observation and the ability to use social clues for adaptive behavioral adjustment. *Androgyny* is another formulation to evaluate flexibility. Bem (1974) suggested that those who identify as androgynous report having both masculine and feminine traits are inherently more flexible since they instrumentally and expressively behave in accordance with a possible combination of dimensions including dominance versus submission and warmth versus coldness.

Behavioral flexibility is viewed as a temperamental trait for some scholars (e.g., Rusalov and Biryukov 1993), while others define it as stable trait marking individual differences (e.g., Schmuck and Wobken-Blachnik 1996). Scholars conceptualizing flexibility as a stable behavioral pattern pointed out two components of behavioral flexibility: (a) a wide behavioral repertoire and (b) the ability to adaptively adjust to situational demands. Flexible behavior has been suggested to be one of the cardinal factors of psychological adjustment (e.g., Leary 1957). Reported anxiety, difficulty, and avoidance indexes are more closely linked to a lack of functional flexibility, as it relates to deliberate control and behavioral adjustment.

Both age and gender differences emerge with regard to behavioral flexibility. Generally speaking, an increase in competency occurs from late childhood to early adulthood. In early adolescents, females perform better when compared with males, yet males show increasing competence throughout the adolescent phase.

Behavioral Flexibility in Experimental Psychology

In experimental psychology, the concept of behavioral flexibility emerges from both animal and human research on learning. Reversal learning, set-shifting, and self-control have been used commonly to test behavioral flexibility. In the *reversal learning paradigm*, the individual first learns to discriminate between relevant and irrelevant stimuli after which they are expected to reverse their choice. Related to reversal learning, *set-shifting*, which is an executive function, involves the ability to unconsciously shift

attention from one task to another. *Self-control*, sometimes referred to as cognitive control, is considered to be another key aspect of behavioral flexibility. Self-control refers to the ability to critically evaluate a situation, rather than reflexively responding. One inhibits their initial reaction replacing it with an indirect but more effective and socially appropriate behavioral response.

Behavioral Flexibility in Neuropsychology

Neurological researchers have highlighted the importance of the neural mechanisms underlying behavioral flexibility. Studies have shown that behavioral flexibility is sensitive to changes in prefrontal cortex function (e.g., Dalton et al. 2016) with different subregions governing distinct components of flexible behavior. The findings have suggested that different prefrontal regions of the brain make distinct contributions to separate aspects of behavioral flexibility. One such region, the *orbital prefrontal cortex* (OFC), functions in emotion regulation and inhibition; another key region, the *striatum*, is integral to social behavior and is activated in response to rewards occurring in social situations. Another area, the nucleus accumbens (NAc), is involved in the mediation of various components of behavioral flexibility. The midline *thalamic* areas, which consist of the mediodorsal (MD) and the interlaminar brain regions, are reciprocally connected with the entire prefrontal region, and in addition, this area send signals to the aforementioned NAc (Florescoa et al. 2009). Concordantly, the prefrontal cortex is paramount in adaptive behavioral control, and lesions to this area can have detrimental consequences on behavioral flexibility. Research results have revealed neurological disorders characterized by damage or impaired functioning in the prefrontal cortex such as schizophrenia, obsessive compulsive disorder, depression, and Parkinson's disease manifest a state of cognitive inflexibility or an impaired ability to shift attention effectively.

Conclusion

For decades psychologist have studied behavioral flexibility due to its importance in intra- and interpersonal functioning. The prefrontal cortex and related regions are paramount in regulating behavior and decision-making by rapidly responding to both internal and external cues promoting conscious, prosocial behavioral choices in place of reflexive responses. Research has shown that damage or impaired functioning in the prefrontal cortex detrimentally impacts cognitive flexibility and the ability to shift attention which is a cardinal component in various neurological disorders.

Cross-References

- ▶ Androgyny
- ▶ Theory of Cognitive Adaptation

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Behavioral Game Theory

► Game Theory

Behavioral Genetics

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Synonyms

Behavior genetics

Definition

The study of how genes and environments contribute to behavioral variation.

Introduction

Behavioral (or behavior) genetics has a long past, dating back to the breeding of animals for behavioral characteristics. For example, some 50 different breeds of dogs are mentioned in surviving Greek and Roman documents, in such behaviorally distinct categories as hunting dogs, shepherd dogs, guard dogs, war dogs, and pets (Brewer et al. 2001).

The present account of behavior genetics will, however, be primarily focused on differences among individuals, not breeds. It will chiefly address individual differences among humans. Work with other species – in laboratories and in the wild – will be mentioned, but not reviewed in detail. For a more comprehensive account of both human and animal behavior genetics and the biological background, the reader may wish to consult a standard textbook on behavior genetics, such as Plomin et al. (2013).

The behavior genetic research on human individual differences will here be addressed in terms of two broad questions raised by Anastasi (1958): "How much?" and "How?" Anastasi actually asked three questions. The first, "Which one?," refers to whether variation on a behavioral trait is a result of genetic or environmental factors. A straightforward answer to this question is an animal breeding study. Such a study selects males and females high on some trait to mate with one another and males and females low on the trait also to mate. All the animals are otherwise subject to identical conditions. If genes are involved, over several generations the high and low lines are expected to diverge. For example, in one study two separate lines of mice were bred for showing high activity in a laboratory apparatus known as an "open field," two separate lines of mice were bred for low levels of activity, and two lines were bred at random to act as control groups (DeFries et al. 1978). After 30 generations of selection, there was no overlap in activity levels between the high lines and the low lines – that is, the least active mouse in a high line was more active than the most active mouse in a low line. As expected, the control lines remained intermediate. Thus genes can be shown to influence open-field behavior in mice. Environment can also be shown to influence mouse open-field behavior. A study by Henderson (1967) involved mice that had previously been exposed to a relatively strong stimulus (electric shock) and an intermediate stimulus (sound of a buzzer) or left undisturbed. The mice that had received the intermediate stimulus were, on the whole, the most active in the open-field apparatus, showing that environment had an effect. However, not all mouse strains responded equally, suggesting that the effects of an environmental stimulus could depend on the genes and thus that an either-or question (Which one?) was inadequate.

On the other hand, the question "How much?" addressed to human traits asks about the extent to which differences in some characteristic in a human population reflect three causal sources: genes, environmental features shared by persons growing up in the same family, and environmental features unique to individuals within families. Anyone with even mild curiosity, observing the considerable variety in

the people around her/him on almost any characteristic, may wonder what is responsible for it. Is it the difference in the individuals' genes? Is it the difference in the families in which they were raised? Is it the effect of events unique to each individual? If all three, how much does each account for? Studies involving twins and adoptees, to be described shortly, address such "How much?" questions.

Finally, the question "How?" asks for the details of how genetic differences or environmental differences get transformed into behavioral differences. This is a harder question, but one increasingly being addressed in behavior genetic and related research.

Note that despite the word "genetics" in "behavior genetics," the goals of the discipline, as addressed both in the "How much?" and "How?" questions, are as much environmental as genetic. Indeed, it has sometimes been suggested that the immediate impact of behavior genetic research may be more on the environmental than the genetic side. Knowing the extent to which differences in a behavioral outcome, such as academic achievement, are a function of environmental variables shared by family members (such as socioeconomic status) or of environmental variables unique to individuals (such as an inspiring teacher) can point the way to fruitful directions both for research and for social policy.

Answering "How Much?" Questions

Our interest may be aroused by the behavior of a particular individual, but it should be emphasized that the "How much?" questions are not for explaining any one person's behavior, but are addressed to the proportion of individual differences in some trait in some population which results from genetic variation in that population, from environment shared in families, or from environment not shared. The primary methods that behavior geneticists have used for answering such "How much?" questions for humans are the twin study and the adoption study, plus elaborations of these.

Twin Studies

The basic twin study involves comparing two kinds of twin, identical twins (monozygotic, MZ) and fraternal twins (dizygotic, DZ). MZ twins come from a single combination of egg and sperm that has split in two very early in prenatal development and resulted in two individuals with the same set of genes. DZ twins come from a pair of simultaneous fertilizations that result in two individuals who are genetically ordinary brothers and sisters, that is, who share on average half their segregating genes. If both kinds of twin are reared together in families, as is typical, they will both share common family influences; moreover, they will both tend to be exposed to particular features of the family environment at the same age.

In the simplest case, if P stands for observed resemblance ("phenotypic" in genetic parlance), G stands for resemblance due to genes, and C stands for resemblance due to shared family environment, then $P_{MZ} = G + C$, because MZ twins share both genes and family environment, and $P_{DZ} = 1/2G + C$, because DZ twins share environment, but only half their genes.

If we take the observed resemblance P to be measured by the correlation between the twins on some trait in some population, from the above equations, we can deduce G to be equal to $2(P_{MZ} - P_{DZ})$ and C to be equal to $2(P_{\mathrm{DZ}} - P_{\mathrm{MZ}})$. Thus if MZ twins are correlated 0.65 on some trait and DZ twins 0.40, G comes out to be twice the difference between these, or 50%, and C comes out to be the excess of twice P_{DZ} over P_{MZ}, or 15%. What we have left after both G and C are accounted for ($100\% - 50\% - 15\% = 35\%$) represents factors that make even MZ twins different, which includes environmental events not shared by twins, plus such things as random errors in gene expression or trait measurement.

Now of course it can get more complicated than this. If parents are genetically similar for the trait, due to marriages among related individuals or to a tendency for similar people to mate ("assortative mating"), one needs to use a slightly higher figure than 0.5 to describe the genetic resemblance between siblings (including DZ twins) – the

resemblance between MZ twins will not be affected. Or if some of the differences between twins are due to errors in measuring the trait involved, one may wish to deduct measurement error (i.e., 1 – reliability) from the unshared environment component. Or if the effects of genes on a trait do not simply add up, but depend on the other genes present, MZ differences will not be affected, because MZ twins, being genetically identical, will share gene configurations as well as individual genes, whereas gene configurations will tend to be broken up in the transmission of genes from parents to offspring, lowering the genetic resemblance of DZs below 0.5. And there may be correlations and interactions between genes and environments to be taken into account: persons with certain genetic makeup may preferentially seek out certain environments, or some specific combinations of genes and environments may have effects unpredictable from either. Investigators actually carrying out research in a given area must pay attention to such factors, but broad surveys typically assume that genetic and environmental contributions to the variation of a given trait in a particular population mostly just add together and that the average degree of genetic resemblance between ordinary siblings on most traits does not depart radically from 0.5. A meta-analysis of thousands of twin studies of a variety of human traits over 50 years found that most of the findings were consistent with the simple formulas given above (Polderman et al. 2015). We consider some exceptions later.

Twin studies of higher-level cognitive functions. Many twin studies have been done for higher-level cognitive traits, as measured by IQ tests or tests of general cognitive ability. In the Polderman et al. review just mentioned, MZ twins were correlated on average 0.710 on tests of higher-level cognitive functions, DZ twins on average 0.441. Thus, the application of the simple formulas above suggests that individual differences for these traits in these populations were due about 53% to genetic differences, 17% to environmental differences shared by families, and 29% to a residual category including events unique to individuals, errors of measurement, and the like. But these figures vary by age. Table 1 shows a breakdown from Polderman et al.'s meta-analysis.

Behavioral Genetics, Table 1 Estimates from twins of genetic and environmental contributions to higher-level cognitive functions at different ages, from the meta-analysis of twin studies by Polderman et al. (2015)

Age range	Genes	Shared environment	Unshared and other	Pairings
0–11	0.451	0.316	0.233	215,731
12–17	0.606	0.080	0.314	75,766
18–64	0.795	−0.113	0.318	9296
65+	0.658	−0.055	0.397	10,030

Note that after childhood, genetic differences account for the bulk of observed individual differences in higher cognitive skills, the proportion due to having shared a family environment drops sharply, and the proportion due to other factors remains a fairly steady minority, increasing slightly with age. The column headed Pairings refers to the number of paired scores involved in the estimates: it is the largest for the childhood category, still quite large in adolescence, and smaller, but still substantial, in adulthood and old age. It is larger than the actual numbers of twins involved, for two reasons. In longitudinal twin studies, of which there are a number in the data, a particular pair of twins will typically be measured at several ages, contributing several pairings to the total. Or twins may be given a number of different measures on a given occasion, again increasing the number of paired scores. This, for example, is quite typical in the case of temperament and personality measures.

Twin studies of temperament or personality. Many twin studies during the past 50 years have been centered on, or have included, measures of personality or temperament. Table 2 summarizes the results of such studies in the same fashion as Table 1 for higher cognitive functions.

Several resemblances and some differences from the results for higher cognitive functions may be noted. First, the genes contribute substantially to personality resemblance, as to cognitive resemblance, at all ages. However, the genetic contribution tends to go down with age for personality, rather than up. For personality, the contribution of shared family environment is minor at

Behavioral Genetics, Table 2 Estimates from twins of genetic and environmental contributions to temperament and personality at different ages, from the Polderman et al. (2015) meta-analysis

Age range	Genes	Shared environment	Unshared and other	Pairings
0–11	0.543	0.068	0.399	213,182
12–17	0.587	−0.081	0.594	72,119
18–64	0.423	0.001	0.576	338,257
65+	0.386	−0.030	0.644	6746

Behavioral Genetics, Table 3 Estimates from twins of genetic and environmental contributions to diagnoses of conduct disorder at different ages, from the Polderman et al. (2015) meta-analysis

Age range	Genes	Shared environment	Unshared and other	Pairings
0–11	0.503	0.181	0.316	240,984
12–17	0.504	0.126	0.370	91,616
18–64	0.652	0.014	0.334	8092
65+	Insufficient data to analyze			

any age; it is individual experiences (or other factors contributing to twin differences) that are playing an increasing role.

Twin studies of psychopathology. Many of the studies included in Polderman et al.'s meta-analysis were focused on physiological variables or psychopathological conditions. A good many of these involved much smaller samples due to the rarity of the condition or the difficulty of the measurement. However, an example of a psychopathological condition for which a reasonable amount of data was available is conduct disorder, as shown in Table 3.

Whether or not someone is diagnosed with a conduct disorder again appears to be more a matter of genes than of environment; there is a modest contribution of shared family environment, decreasing with age, and most of the environmental influences are unique to the individual. Also, one might conjecture that conduct disorder tends not to be much of an issue for people over 65.

Adoption Studies

Another way of addressing the question "How much?" is via families in which one or more children are adopted into the family at birth. These children share a family environment with each other and with any existing biological children, but (unless adopted from relatives) not genes. The correlation between adopted children (first equation below) provides a direct estimate of the effect of shared environment, an estimate arrived at indirectly in twin studies.

$$P_{UnrelatedAdoptees} = C,$$
$$P_{OrdinarySiblings} = 1/2G + C.$$

Twice the difference between the correlations provides an estimate of the genetic contribution G. For example, if for some trait in some population, ordinary siblings are correlated 0.40 and adoptive siblings 0.15, we can estimate from the adoptees that 15% of resemblance on the trait is due to shared family environment and, from twice the difference between the correlations, that 50% is due to genes.

In adoption studies, we can also compare correlations of parents with their biological and adopted children.

$$P_{Parent,AdoptedChild} = C_{PC},$$
$$P_{Parent,BiologicalChild} = 1/2\,G + C_{PC}.$$

Again, twice the difference estimates the genetic contribution, G. In this case C_{PC} represents the environmental contribution to the child's similarity to the parent, which may well include some of the factors involved in the C of the previous equations (socioeconomic status and the like), but is not necessarily identical to it. Thus, if parent-child correlations on some trait are 0.40 for biological children and 0.10 for adopted children, our estimate for G is twice the difference, or 60%, and for C_{PC} 10%. Adoption studies are considerably rarer than twin studies, because recruiting twins is easier than recruiting the necessary combinations of individuals from families who have adopted one or more children. Accounts of two recent US adoption studies may be found in Petrill et al. (2002) and Horn and Loehlin (2010).

Twins Reared Apart

An interesting design, but one requiring great effort to collect enough data for stable analyses,

combines the twin and adoption studies. It is the study of identical twins who have been reared apart in separate families.

$$P_{MZ\ apart} = G,$$
$$P_{MZ\ together} = G + C.$$

The MZ apart correlation directly estimates G, the genetic component of trait variation, and the difference between the two correlations estimates the shared environment component C. Although the study of MZ twins reared apart is more dramatic, the study of DZ twins reared together and apart is also informative:

$$P_{DZ\ apart} = 1/2\ G,$$
$$P_{DZ\ together} = 1/2\ G + C.$$

Here, twice the DZ apart correlation estimates G, the genetic contribution, and the difference between the two correlations again estimates C, the effect of shared family environment. A large study of twins reared apart, which for the most part supported the results of ordinary twin and adoption studies, was carried out at the University of Minnesota. An account may be found in Segal (2012).

More Complex Designs

It is quite possible to extend the above designs to encompass a multiplicity of groups. Thus, a twin family design may include the children of MZ and DZ twin pairs. Since MZ pairs are genetically identical, an MZ twin parent is genetically as similar to his twin's children as he is to his own, but a DZ twin is not. Or one can bring spouses or parents of twins into the design. Or one can study blended families resulting from divorce and remarriage, in which the children may be genetically full siblings, half siblings, or unrelated (e.g., Reiss et al. 2000). In principle, one could write and solve a series of equations of the sort just illustrated, but in practice, overall models of the design are created and are fit by computer to the data. This process can result in overall estimates of genetic and environmental contributions to trait variation, breaking down shared environment into that shared by parent and child and that shared by siblings.

Behavioral Genetics, Table 4 Estimates of genetic contributions to personality traits in twin and family designs, after Vukasovic' and Bratko (2015)

Design	Effect of genes	95% Confidence interval	Number of studies
Twin studies	0.47	(0.45–0.49)	38
Adoption and family studies	0.22	(0.17–0.28)	16

A meta-analysis of personality traits (Vukasovic' and Bratko 2015) included both twin studies and adoption and other family studies (Table 4).

Clearly, twin studies are yielding higher estimates of the contribution of the genes to individual differences in personality than are adoption and other family studies. One reason this could happen is that the genetic contribution to personality traits may include a substantial nonadditive component. That is, the effects of individual genes may not just add together, but a substantial role may be played by genetic dominance (the effect of a gene depends on the other gene it is paired with at the same chromosomal locus) or epistasis (the effect of a gene depends on genes present at other chromosomal loci). Because gene configurations tend to get broken up in the transmission of genes from parent to child, ordinary family correlations, including DZ correlations, mostly reflect additive effects of genes. Not so for MZ correlations, identical twins share gene configurations as well as individual genes. For traits involving substantial nonadditive genetic components, designs that depend on comparisons of MZ twins with other groups, such as the classical twin design, will give higher estimates of the genetic contribution than will designs that do not. Here we are beginning to get into the question "How?," but before we pursue this further, let us look briefly at studies of individual differences in other species and at multivariate and longitudinal extensions of behavior genetic designs.

Studies of Individual Differences in Nonhuman Species

Successful domestication of animals is in itself evidence that genetic variation for behavioral

traits exists in wild populations. Studies in a number of such populations have made estimates of the genetic contribution to individual differences in species as diverse as garter snakes, bighorn sheep, and squid. A review of such studies (Réale et al. 2007) reported estimates of the genetic contribution to individual differences on behavioral traits. These estimates ranged from 0.00 to 0.89 across traits and species, with a median of 0.21.

Laboratory Studies of Animals

Many laboratory studies with lower animals have been carried out by behavior geneticists. Such studies allow the investigator to control the environments to a high degree in order to isolate effects due to genes. They also allow the control of mating patterns in a manner not feasible with humans and thus permit genetic manipulations of various kinds.

Selection studies. These have already been mentioned, with an example involving high and low levels of activity of mice in an open-field apparatus. Other selection studies have involved, among other traits, rats learning to perform in a particular maze (Tryon 1940) and fruit flies choosing to move toward or away from the light at choice points (Hirsch and Boudreau 1958).

Inbred strains. Another useful possibility in lower animal studies is inbred strains. Brother-sister mating over many generations can result in a strain of genetically identical individuals. One might think of an inbred strain as analogous to identical twins multiplied to 20 or 100, or however many one's study requires, with the reservation that identical twins have not been subject to an inbreeding process which may eliminate certain categories of genes. Behavioral differences between inbred strains reared under the same conditions reflect genetic differences between the strains. Behavioral differences occurring when members of an inbred strain are subjected to different environmental conditions demonstrate effects of environment. The Henderson study mentioned earlier provides an example. It involved four inbred strains and crosses among them. The effect of the environmental stimulus largely depended on two of the strains and their crosses and was more sensitive to the strain of the female than of the male parent, suggesting that the relation between genetic and environmental effects on behavior may not always be a simple one.

Multivariate Behavior Genetic Designs

So far, we have considered behavior genetic designs as breaking down differences in causal factors for single traits. Such methods can also do this for the correlations or covariances between two traits, and this can be extended to the pattern of relationships among a set of traits.

Multivariate designs have been much less widely employed than univariate ones. They require larger samples, for one thing. In assessing resemblances or differences between two or more traits, the error in measuring each of them enters in. Moreover, the decision whether to analyze correlations or covariances may be important. Two traits may each be only slightly influenced by the genes, but have 100% of their genetic variance in common, and hence loom large in a study of genetic correlations, but not contribute much to genetic covariance.

An example of a multivariate behavior genetic design is a study by Loehlin and Martin (2013), which analyzed genetic and environmental correlations from two samples totaling 3159 same-sex twin pairs. Similar personality factors emerged in both genetic and within-family environmental sources of covariation.

Longitudinal Behavior Genetic Designs

Most of the designs considered in this chapter can be made longitudinal by measuring the individuals concerned more than once. Studies of this kind can support the results of cross-sectional studies carried out with different individuals at different ages. For example, the increasing genetic contribution to general cognitive ability with age was confirmed in a meta-analysis of longitudinal behavior genetic studies spanning infancy to adolescence (Briley and Tucker-Drob 2014). Longitudinal studies can also address the nature of the increasing genetic contribution. The same meta-analysis found that in the early years of life, this mostly reflected new genes coming on line,

whereas later on it mostly reflected the amplification of the effects of existing genes.

Longitudinal studies can also address continuity and change. They suggest that the genes contribute to the continuity of cognitive ability throughout the life span, but shared environment does only in childhood (Plomin and Spinath 2004).

Gene-Environment Correlation and Interaction

As noted earlier, an additional source of complexity in analyzing genetic and environmental contributions to individual differences is that genes and environments may be correlated or may interact (Plomin et al. 1977).

Gene-environment correlation may take various forms: it may be passive, in that parents may supply environments to their children that are correlated with the genes they provide them – intellectual parents, for example, provide their children with genes favoring cognitive ability and are likely to have many books around the house. Or the correlation may be active, in that individuals with certain genotypes may seek out environments that enhance their predispositions – i.e., the amplification referred to in the preceding section. Because of gene-environment correlation, many environment measures, such as parents' treatment of their children or the family's socioeconomic status, turn out to have an appreciable genetic component (Plomin and Bergeman 1991).

With respect to passive correlations, adoption studies are helpful, since different parents supply the genes and the environments. Longitudinal studies, as noted, may be useful in assessing active gene-environment correlation.

Gene-environment interaction, in this context, does not refer to the obvious fact that interactions between genes and environments are necessary for human development. It refers, rather, to interaction in the statistical sense – the fact that some outcomes may depend on particular gene-environment combinations and be unpredictable from either genes or environment separately. A particular instance, a greater genetic contribution to cognitive performance in higher socioeconomic groups, has been reported in two US samples at different age and socioeconomic levels (Turkheimer et al. 2003; Harden et al. 2007). However, a broad investigation of the topic of $G \times E$ interaction in cognitive ability in 14 studies in 4 countries and 4 age groups concluded that "we did not find a consistent pattern of results between age groups, data sets, and countries" (Molenaar et al. 2013).

Attempting to Answer "How?" Questions

Answering "How much?" questions has, on the whole, been highly successful. Behavior geneticists have shown that individual differences on a great variety of behavioral traits reflect genetic differences to a substantial degree. No longer do psychologists attribute almost everything to environment, as many did before the rise of behavior genetics in the 1950s and 1960s.

Behavior geneticists, however, have also found that individual differences reflect environmental differences. And, strikingly, their studies have shown that – at least past childhood – the environmentally caused differences mostly do *not* reflect the environmental features that family members share, but rather environmental features that affect different family members differently.

A Different Strategy: Assessing Genetic Effects at Population, Not Family, Levels

With the development of relatively fast and inexpensive ways of genotyping individuals, it has become feasible to compare genetic and phenotypic similarity in individuals while excluding close relatives, for whom environmental similarity may exist. In a way, this is just a new approach to "How much?" questions, but it can go beyond them in providing, for example, evidence about the effects of genes of different frequencies and about the relative plausibility of different evolutionary mechanisms for maintaining genetic variability in a population.

A study of this kind is Verweij et al. (2012), which is also an example of the large, multi-authored studies becoming increasingly common,

studies that pool the data from several samples, often from different countries, in order to address genetic issues requiring a lot of power in the analyses. The study did not attempt to locate particular genes associated with a trait, but rather asked about the extent to which genetic similarity (measured over hundreds of thousands of genetic loci that differ among humans) corresponds to phenotypic similarity (measured by four subscales of Cloninger's Tridimensional Personality Questionnaire). The analysis also obtained an index of inbreeding for each individual, based on the length of runs of homozygosity in his or her genotype, reflecting the extent to which an individual's ancestors were drawn from a limited genetic pool. Large existing samples, one from Australia and three from Finland, were used for the analyses. If there were pairs of individuals in the samples who were more closely related than second cousins, one from each pair was eliminated. Thus the sample consisted of individuals, with no close relatives involved. The methodology is referred to as genome-wide complex trait analysis (GCTA).

The results were used to assess the likelihood of different mechanisms for maintaining genetic variability in a population. They were judged to fit best with a model of mutation-selection balance, a model that assumed that new mutations continuously arose and were continuously but gradually selected against, so that at any given time many, particularly those with small effects, would still be present. The estimates of the effects of genes on the personality traits were lower than those arrived at in the usual twin and family studies – about one-fifth as large. The authors speculate that their methods are largely picking up the additive effects of relatively common genetic variants and that the discrepancy largely reflects the effects of numerous relatively rare genetic variants and/or a substantial nonadditive contribution of genes affecting personality. Evidence for the latter had earlier been provided by large twin and family studies in the USA and Australia (Lake et al. 2000). The Australian samples overlapped, but the twin and family relationships from which the conclusions were drawn in the Lake et al. study were eliminated in Verweij et al.

The Role of Particular Genes in Accounting for Individual Differences

As the possibility arose of measuring genes at many loci at which humans show variation, an obvious step toward answering the "How?" question about human individual differences was simply to correlate genetic differences at specific loci with trait differences. If several loci were found that together could account for a large proportion of the genetic contribution to differences on a trait – i.e., the "How much?" that had been estimated from twin and adoption studies – a major step would have been taken along the road to figuring out "How?"

The *If* has proved to be a big one. Many genetic loci are uniform across the human species, but a large number are not. Such varying loci are called "single-nucleotide polymorphisms" (SNPs). Modern methods permit assessing hundreds of thousands of them – even millions. This leads to an immediate statistical problem: if one were to assess relationships between a hundred thousand SNPs and a psychological trait in a dozen people, one would expect to find a large number of relationships merely by chance. In the early days, many associations between genes and behavioral traits were reported, but in further studies, the associations failed to replicate. More recently, larger and larger samples have been used in such "genome-wide association studies" (GWAS), with built-in replication schemes included. And as the authors of one such study of general cognitive ability, carried out with 7100 subjects and ~2.5 million SNPs, concluded: "Taken together, our results concur with other recent studies: they support a substantial heritability of [general cognitive ability], arising from a very large number of causal SNPs, each of very small effect" (Kirkpatrick et al. 2015, p. 1).

Similar results have been found for personality traits. A meta-analysis of genome-wide association studies (van den Berg et al. 2016) located 29 samples that included some measure of the trait extraversion – samples from Australia, the USA, the UK, and at least a half-dozen European countries. Genes were assessed in these samples for 1.1–6.5 million SNPs in a total of 63,030 subjects, with an additional 9783

individuals in a cross replication sample. After allowing for the number of comparisons, no association of a SNP with extraversion was deemed to be statistically reliable. None of the SNPs with the strongest observed associations had been previously reported to be related to personality, psychopathology, or brain functioning, and all failed the cross replication test. As in the earlier-mentioned study by Verweij et al., a GWAS analysis accounted for some, but much less genetic variation than that estimated from twin and adoption studies, suggesting that either the genetic variation mostly came from rare variants not sampled by the measured SNPs or resulted from nonadditive genetic effects of gene combinations rather than individual genes.

Within-Family Environmental Variation

Twin and family studies had shown that for most traits, the bulk of the substantial environmental contribution to individual differences was within families rather than shared by family members. So behavior geneticists attempted to isolate the causes of this within-family variation. They have had, on the whole, results similar to those of the gene finders. One review of studies on this topic (Turkheimer and Waldron 2000) concluded that the demonstrable effect of environmental differences upon behavioral differences between siblings was small and got smaller in better controlled studies, e.g., when genetic differences were incorporated into the design. They suggest that the relationships between phenotypes, genotypes, and environments are so complex that "some aspects of the development of complex human behavior may remain outside the domain of systematic scientific investigation for a very long time" (p. 93).

One study (Loehlin and Martin 2011) looked at personality structure assessed solely from within-family environmental differences via an analysis of MZ twin differences, which are by definition not genetically caused, and compared it with personality structure resulting from both genetic and within-family environmental differences, via the differences within DZ twin pairs. The structures were very similar. In a later paper (Loehlin and Martin 2013), the authors concluded that personality structure – how behaviors hang together – is a feature of the phenotype. Thus, it can be found in any phenotypic data, but won't be separately localizable in the structure either of the genes or the environment – although, presumably, complex causal chains lie between both of them and the phenotype.

Turkheimer and his colleagues (Turkheimer et al. 2014) urge a "phenotypic null hypothesis for the genetics of personality," which holds that genetic variance is not an independent mechanism of individual differences in personality – these, and their consequences, occur at the phenotypic level. Rather, the genetic contribution to personality is complex and unfocused. More closely related individuals are more similar and share more genes, but that in itself does not tell us much about personality. Where behavior genetic designs are most useful is in rejecting particular causal hypotheses. To take one example, an earlier age at first sexual intercourse is related in the population to adult delinquency, suggesting that the latter may be a consequence of the former. However, it turns out that within MZ twin pairs, an earlier age at first sexual intercourse tends to go with *less* adult delinquency (Harden et al. 2008), suggesting that the relationship in the population has some other explanation – for example, that the same genes or common environmental factors affect both.

Conclusion

Behavior geneticists have learned a great deal about the "How much?" question from twin, adoption, and family studies – knowledge that renders the "Which one?" question obsolete. They have learned less about the "How?" question, except that, for normal human behavioral traits, substantial relationships between particular genes and particular dimensions of variation do not appear to exist. The ability to split environmental differences into those shared by family members and those not shared and to look at environmental effects controlling for genetic differences (e.g., within MZ twin pairs) should, however, continue to be useful. And much scope remains for extending these methods into multivariate and longitudinal designs.

Cross-References

- Additive and Nonadditive Genetic Patterns
- Animal Personality
- Dizygotic Twins
- Epigenetics
- Eugenics Movement
- Gene-Environment Correlation
- Gene-Environment Interaction
- Gene-Environment Interplay in Developmental Psychopathology
- Genetic Basis of Traits
- Heritability of Personality Traits
- Jang, Kerry L.
- Monozygotic Twins
- Nature-Nurture Debate
- Segal, Nancy L.
- Twin Studies

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Behavioral Inhibition

▶ Harm Avoidance
▶ Neuroticism
▶ Personality and Anxiety
▶ Shyness

Behavioral Investigative Advice

▶ Offender Profiling

Behavioral Perspectives on Personality

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Synonyms

Radical behaviorism; Reinforcement; Relational frame theory; Rule-governed behavior

Overview

The American Psychological Association defines *personality* as "individual differences in characteristic patterns of thinking, feeling and behaving" (Kazdin 2000). Many undergraduate psychology textbooks include reviews of various theories of personality, including psychoanalytic, neo-analytic, biological, cognitive, social-cognitive, trait, humanistic, existential, positive, and person-situation interactionist (see Friedman and Schustack 2012, as an example). Although many texts omit learning theory or behavior analytic positions, contemporary behavioral science has a well-articulated stance on what constitutes an individual's personality repertoire. Other texts that do include behavioral explanations tend to use an overly simplistic and outdated critique wrought with misconceptions (Arntzen et al. 2010). For example, Friedman and Schustack (2012) consistently refer to radical behaviorism as a "stimulus-response" analysis of human behavior, which is a common misconception of Skinnerian behaviorism (for a more thorough description of radical behaviorism, see Lundy, Moore, & Bishop, this edition). Although most theories of personality disagree on topics such as free will and offer divergent concepts and methods, the majority explain these phenomena as by-products of some underlying force or state, such as the notion of unconscious drives or instincts focused in specific ways. In contrast, a behavioral perspective tends to examine the observable, measurable manifestations of the person and, when consistent over time, paints the picture of that individual's "personality." The root of the problem comes from the lack of understanding by most historians of personality theory that the behavioral approach has changed drastically over the past 100 or so years. Today, most behavioral scientists would have no concerns speaking about the personality of a given individual. The core distinction between a behavioral and non-behavioral stance on personality and individual differences rests on the cause of the personality, not the presence of the personality itself.

Historical Development

Although Sigmund Freud often represents the most well-known pop-personality theorist, believing the causes of behavior stem from childhood experiences locked deep within the psyche, the scientific and philosophical study of personality can be traced as far back as Ancient Greece. Though much of Greek literature focused on mythology and themes of mysticism, Hellenic culture and philosophy was largely naturalistic (Kantor 1963). According to Delprato (2003), many Greek philosophers adhered to a strict form of humanism, placing humans as the measure and maker of all things. While the Greek gods were viewed as superhuman, there were not considered supernatural. Scientists and philosophers at the time never applied the mystical, invisible attributes of Olympus to human experiences, but rather sought measurable, observable truths. Perhaps this preference for the tangible led to Hippocrates (400 BCE) developing personality types based on excesses or deficiencies of bodily fluids (humors). The four humors included choleric (yellow bile), melancholic (black bile), sanguine (blood), and phlegmatic (phlegm) and determined irritable, depressed, optimistic, and calm personalities, respectively. A proper balance of these humors was considered essential to maintaining health, with an imbalance thought to drive an individual's personality in the direction of the imbalance. For example, a person with an overabundance of black bile may tend to show signs of depression.

From the Ancient Greeks, a belief in both mysticism (or modern mentalism) as well as an appeal to natural science explanations of human behavior emerged. J. R. Kantor (1924) was an American psychologist in the early 1900s who was greatly influenced by the naturalism of Ancient Greek philosophy. His multivolume work *Principles of Psychology* introduced the term interbehavioral to describe a radical system of psychology that used naturalistic methods to understand behavior. Kantor felt that psychology should use the same objective scientific rigor as any other natural science, namely, the scientific method. Kantor's (1938) theory defined personality as "the basis for psychological unity, coherence and identity" (p. 310). He considered personality as stable responding based on biological identity and membership in a cohesive social unit (e.g., a family). In an unstable environment, the individual develops disorder in their personality, resulting in psychopathy or multiple personalities. Furthermore, personality comprises specific traits that develop based on one's reactional biography including an individual's history of skill acquisition, preference development, and how their communication evolves. Though Kantor never used the word reinforcement, he wrote about how our personality traits are shaped by the environment. He viewed evolution and natural selection as key factors driving personality development and explored how these variables impact the creation of traits that can be categorized as universal, social, or individual. Kantor explained differences in individual personalities as the result of cultural conditioning. He gave the example of two children in the same household who may be treated in different ways based on sex, appearance, birth order, etc. While Kantor's theories contained elements of mentalism, he moved from psychological phenomena as mental states toward a scientific explanation for behavior as an interaction with various environmental stimuli.

During the time of Kantor, introspection still dominated psychology. In J. B. Watson (1913) argued against introspection and championed psychology as the science of behavior, with the overarching goals of description, prediction, and control. Watson developed stimulus-response behaviorism, referred to as methodological behaviorism which posited that psychology should only be concerned with observable behavior (as opposed to mental states), specifically how stimuli evoked responses (Cooper et al. 2007). However, Watson did not deny that important events occur inside the skin; he stated that these events should be viewed as behavior and understood in the same way as behaviors that occur outside the skin (Moore 2015). He believed that personalities resulted from habit systems, repeated responses to external stimuli, and that personalities could be changed

with conditioning or unconditioning. His well-known experiment with Little Albert showed how personality traits, such as emotional reactions, could be created through classical conditioning.

In 1938, B. F. Skinner, a contemporary of Kantor and Watson, founded the experimental branch of behaviorism that would later develop into the variation termed radical behaviorism. This approach offered a stark departure from the stimulus-response psychology of Watson by focusing on the selection of behavior via consequences (Skinner 1981). The environment, which includes public and private stimuli, leads to the selection of behaviors that benefit the organism (for a more detailed explanation of Radical Behaviorism, see Lundy, Moore, & Bishop, this edition). While behaviorists have historically avoided the use of the term *personality*, there are key areas of overlap in what is often referred to as personality and individual differences that also interests the behaviorist, who has discussed the phenomena simply as a stable behavior pattern still influenced by historical environmental factors (e.g., Kanfer and Karoly 1972). Regardless of theoretical orientation, most psychologists find keen interest in the behavior of individuals across space and time, especially when considering the causes and consistency of behavior. As such, it is important to note that despite popular belief, behaviorists do not deny the existence of feelings, thinking, or other aspects of what some call the "mental life." For the radical behaviorist, all experiences (whether public or private) constitute either behavior or stimulus events. While many personality theories treat behavior as the by-product of some underlying, psychic cause, more contemporary behaviorists see behavior as the direct result of an environmental interaction that serves a specific *cause*. Furthermore, some behaviorists have even expanded the potential causes behind why people do the things they do to include neurological components (Heilman et al. 1993; Raine et al. 2000). Measurability of such neurological elements allows for an objective verification of their existence, rather than previously hypothesized internal forces.

Causes of Personality and Individual Differences

An important and rather novel consideration regarding the nature of how an individual's personality appeared to observers also developed from the behavioral perspective. Instead of determining the reason for these individual differences by examining what they looked like to the casual observer, the more contemporary behavioral community begged the question of cause, cause found on the outside of the person, not the inside. Could a behavior that looked the same in two instances arise from different environmental events to function in dissimilar ways? Could the cause be different when the manifestations of a personality were the same? A variety of explorations on this very notion of cause occurred across topics such as syndromal classification (Hayes and Follette 1992), maladaptive motor behaviors (Woods et al. 2001), and addictions (Dixon and Johnson 2007). Together the conclusion appears to be that when we appraise the dimensions of behavior (i.e., frequency, severity, probability), the investigation should also consider the controlling events, which surround the behavior, and not rely on the topography, or the way a behavior looks, in isolation. Evolving into what has been termed the "functional approach" (Haynes et al. 1995), the behaviorist eye is toward function over form, with the realization that many behaviors may look the same yet are present because of and sustained by quite different reasons. This perhaps speaks to the very nature of what an individual difference should be defined as.

Contemporary treatment approaches to personality disorders follow in their heterogeneous applications to identical presenting problems, based upon the primary maintaining variables that have manifested the condition. For example, a client who engages in chronic psychedelic substance use (addictive personality) may be treated by focusing on alternative competing behaviors such as attending church or taking a college course, while another client with the same disorder may be given an opiate blocker. In the first case the client may be using drugs to increase attendance in peer activities such as going to

rock concerts or hiking in the woods with drug-using peers. Yet in the second case, the client may be seeking the neurological stimulation of the drugs and be perfectly content sitting home in isolation. Same presenting problems (drug use) are exhibited across clients, yet the function sustaining the behavior (social reinforcement versus neurological stimulation) is radically different – hence the necessity of a functional approach to treatment which is at the core of behavioral science. There are a wide variety of core behavioral processes for presenting personality problems ranging from positive reinforcement procedures (Leitenberg et al. 1977), negative reinforcement procedures (Iwata 1987), differential reinforcement (Patel et al. 2002), non-contingent reinforcement (Carr et al. 2000), to introducing choices (Shogren et al. 2004), each of which is selected based on the hypothesized functional account of what is sustaining an individual client's challenges. When the root cause of the personality disorder remains outside of the client, it seems plausible that changing such environmental conditions could alter the presenting problems. However, when cause remains within the person themselves, a subjective interpretation rests on the clinician as how to initiate the change process. Potentially, even worse prognoses may occur when the clinician deduces a disease model approach that further limits treatment options.

Environmental Factors that Develop a Personality

With the behavioral perspective resting on the pre-analytic assumptions of prediction and control, a few well-established principles of the approach contribute in orderly ways to craft the eventual personality of a given individual. When these principles remain consistent across time and place, a fair amount of predictability develops which aids the clinician in understanding the why of an individual's behavior.

Consequences and Behavioral Economics. Perhaps there is no more important principle within the behavioral framework than that of consequential control. Within the context of a behavioral perspective, dispositional traits are viewed as behaviors that are reinforced. Keeping with a functional approach, the behavior of any individual essentially functions to "get" or "get out of something."

In terms of "getting" something, behavior may function to obtain certain stimuli, called reinforcers. Behaviors that contingently produce reinforcers typically increase over time. This type of contingency is called *positive reinforcement*. Several factors determine the reinforcing properties of a consequent stimulus and tend to be idiosyncratic over time. Therefore, stimuli that function as reinforcers for the behavior of one individual may or may not function in a similar manner for someone else. In general, social positive reinforcement refers to the delivery of reinforcers in public, such as attention, toys, food, and many other examples. Appropriate and inappropriate behaviors are said to be maintained by social positive reinforcement if a functional relationship is observed between the behavior and the putative reinforcer. For example, if a child tantrums in line at the grocery store and this tantrum behavior is typically followed by access to a candy bar, then the tantrum behavior is likely maintained, or supported, by a contingency of social positive reinforcement. The form of the behavior is secondary to the function it serves (i.e., obtaining the candy bar). Automatic positive reinforcement refers to the delivery of private reinforcers produced directly by the behavior and may include such things as neurotransmitter release, self-generated speech, or other internal consequences directly produced by the behavior. People who engage in extreme exercise often refer to a "runner's high" or a general feeling of euphoria following a hard workout. Their description likely refers to the private release of a reinforcer (e.g., endogenous opiates) following exercise.

Behaviors may also function to "get out" of something. In other words, the behavior serves to remove an aversive stimulus. Behaviors that result in the removal of aversive stimuli also tend to increase over time. This type of contingency is commonly labeled *negative reinforcement*. As with reinforcers, aversives are also idiosyncratic across people and situations. Many people

incorrectly assume that their personal preferences are universal. Additionally, it is easy to allow the intended function of some stimulus arrangement to blind one to the actual function. To correctly identify the function of behavior requires careful observation of the effect of various stimulus arrangements on behavior over time. As with positive reinforcement, negative reinforcement may also maintain control of appropriate and inappropriate behavior. If a teacher tells a student, "great job working quietly at your desk. You do not need to complete your math homework tonight" and, over time, the student's quiet work behavior increases, it is likely that negative reinforcement is at work. Again, social negative reinforcement refers to the removal of public aversive stimuli, while automatic negative reinforcement applies to private aversive stimuli.

Let's examine a hypothetical example that represents a common issue for applied behavior analysts who work with children. Billy, an 8-year-old male with developmental delays, is referred to a clinician for problem behavior. Billy's mother describes him as whiny, dramatic, and occasionally aggressive. However, Billy's teacher describes him as polite, helpful, and independent. If asked about this discrepancy, Mom might suggest that Billy is shy with new adults or perhaps he is being manipulative. These dispositional adjectives are all descriptors that paint a vague picture of Billy and his behavior across two environments. One can create a mental picture of what is meant by "whiny" or "helpful"; however, the behaviorist is more interested in what contingences are in place to support those behaviors. Upon observation, the behaviorist observes Mom, after an 8-h shift, returns home and allows Billy access to just about anything as long as he stops the whining so she can make dinner in peace. Or perhaps she can sometimes ignore the whining, but gives in during a full-blown tantrum. His teacher, however, ignores all bad behavior but delivers praise and rewards only for completing work quietly or assisting a classmate. In this example, one can easily see that Billy's behavior is a product of consequences, in this case involving two different environments, not predisposed traits living somewhere inside Billy. Billy's behavior reflects what pays off for him in each environment. As such, an intervention that focuses on the function of Billy's behavior will likely produce a more desirable result than one targeting dispositional forces or diagnostic labels.

The above discussion detailed powerful functional contingencies that produce or generate behavior. For example, one might be labeled "extrovert," not because of dispositional forces, but rather a history of reinforcement for behaviors commonly viewed as "extroverted." Consequences within the environment may also suppress behavior. These contingencies also involve reinforcers and aversive stimuli, but in different actions. Sometimes, a behavior leads to the presentation of an aversive stimulus. A wrong turn on a bicycle may cause you to wreck and injure yourself. In the future, you are now less likely to make a similar wrong turn. This stimulus arrangement is known as *positive punishment*, not because something great has happened, but due to the addition (positive) of an aversive stimulus contingent on behavior. The contingent removal of a reinforcer also leads to a suppression of behavior in a contingency termed *negative punishment*. Imagine that you are sitting with friends having a great time telling jokes. Your friends are laughing and pouring on the attention. Your next joke is a bit off-color and falls flat. Your friends stop laughing no longer attend to you. For the rest of the night, you sit quietly and then decide to leave early. The contingent removal of reinforcers (your friends' laughter and attention) caused this reduction in your extroverted behavior. Conversely, it was the same reinforcers that initially maintained your extroverted behaviors. Contingencies of punishment may offer parsimonious environmental explanations for a number of traits, such as introversion.

Contrary to popular belief, radical behaviorists do not view behavior as the product of single or simple contingencies. Rather, the behavior emitted by an individual at any given time is the result of competition between multiple available contingencies. More recent behavior analytic research has incorporated principles of behavioral economics to better capture the dynamic nature of reinforcement contingencies within various

environmental contexts. Just as commodities compete for consumer dollars, multiple contingencies operate within a context competing for behavior. Consider a child engaging in oral reading during an elementary school lesson. A cursory analysis of the environment might unveil several competing contingencies for the behavior of reading out loud: (a) how well the child reads (in other words, is reading naturally reinforcing or aversive due to the child's skill), (b) teacher attention (presumably a contingency of positive reinforcement), (c) potential ridicule and/or bullying from peers (presumably a contingency of positive punishment), and (d) any other number of potential functional contingencies. Now assume that another contingency exists: the student tells the teacher that reading out loud makes him anxious, so the teacher allows him to escape oral reading. Which behavior will be chosen?

From a behavioral economics view (see Reed et al. 2013 for a more thorough review), the behavior that produces greatest cost to benefit ratio, also known as *unit price*, will be chosen. Let's assume that teacher attention is available on a very thin schedule of reinforcement (e.g., variable interval 200 s) and is of both low quality and magnitude. If peer ridicule is available on a richer schedule and presents a stimulus condition in which the aversive properties outweigh the reinforcing quality of teacher attention, the child would predictably report anxiety to the teacher. This has much more to do with the benefit of escaping the potentially aversive situation than any "anxiety" the child may or may not be experiencing. A preponderance of aversive stimulation, or even the potential for aversive stimulation within the context, will likely produce escape behaviors. In order for the child to choose oral reading, the reinforcement (or benefit) must outweigh the cost (the difficulty of the reading and the peer-mediated contingency).

A more complicated arrangement is encountered when comparing immediate versus delayed contingencies. Suppose some friends invited a college student named Bob to a party at the most popular sorority house on campus. Bob loves to drink and have fun with his friends, especially female friends, but he also has a big exam coming up. This same cost-benefit approach would help understand the dynamic factors that could lead Bob to choose either option under differing circumstances. If the test is scheduled for the next morning, Bob may be more likely to choose studying than if the test was a week or more away. His current standing in the class may also impact his choice. Even additional specific information about the party, such as who exactly will attend, could also influence his choice. Still, environmental variables offer a more concrete analysis of his choice behavior than a consideration of dispositional or other internal forces. The integration of behavioral economics into the field of behavior analysis offers much promise in the design of effective interventions, especially when traditional trait constructs, such as self-control, may be involved.

Motivating Operations. A relatively new principle adopted by the behavioral approach is one of motivation. Although the concept of motivation has been a part of psychology for quite some time, behaviorists have only recently acknowledged the critical role this may play in the development of eventual behavior. In a series of seminal papers, Jack Michael (1982, 1988, 2000) introduced the term motivating operations (MO) and described two primary effects an MO exudes over behavior: value-altering and behavior-altering effects. A stimulus event, such as deprivation, satiation, or aversive stimulation, may temporarily alter the value of some consequent event. Specifically, the MO may make a consequence more or less reinforcing or more or less aversive. If you like cookies, for example, but just gorged yourself at the local buffet, cookies would likely not function as an effective reinforcer for your behavior at that time. An MO may also temporarily increase or decrease behaviors that have produced that consequence in the past. This behavior-altering effect has been described by Michael (2000) as either an evocative or abative effect. Consider the individual whose wife hides his junk food due to his tendency to binge eat. For the most part, he never searches for food, but on nights that he works late and does not eat for 6–7 h, he tears the kitchen apart searching for calorie-dense snacks. He may finally jump back in his car and

drive to a nearby fast-food restaurant to obtain reinforcement.

Motivating operations have temporary effects; as such, when the MO is not in place, the individual may behave very differently than when he or she is under the influence of an MO. Again, MOs can typically be grouped into conditions of deprivation (which typically establish the effectiveness of a reinforcer and evoke behaviors that have produced reinforcement in the past), satiation (which typically abolish the effectiveness of a reinforcer and abate behaviors that have produced reinforcement in the past), and aversive stimulation (which can have both types of effect on behavior). From a practical standpoint, MOs help to explain situations in which people engage in uncharacteristic behavior. These irregularities are not the result of some invisible force or internal psychological disorder, but again an interaction between behavior and environmental events.

Language. As the behavioral approach to understanding behavior evolved from the study of nonhuman animals to that of fully developed humans, it became apparent that simple consequential control was insufficient to explain everything a human being may do on a day to day basis. The initial attempt at understanding how language could play a role in altering the behavior was crafted by Skinner's theoretical text "Verbal Behavior" in (Skinner 1957). Adapted from a long series of experiments with rats and pigeons, this book has been met with both support (Knapp 1992) and criticism (Chomsky 1971) since its publication. Subsequent variations of the behavioral account continued, each with an increasing amount of empirical support to justify its evolution from the initial Skinnerian doctrine (Sidman 1997; Hayes et al. 2001). In totality, the way language factors into an individual's personality is by providing a set of rules by which we may try and live by. When done successfully, reinforcement for following such rules is delivered by the social community. When we fail do adhere to socially approved rules, the community may punish us or remove reinforcing consequences from the near future. For example, when a history of reinforcement has been established for an individual to comply with instructions or rules by their parent (pick up your toys; be nice to your sister; do not steal), similar more personality-type rules may also be followed when delivered by the same caregiver (always keep to yourself unless you must talk; the key to happiness is by loving others; never show someone you are scared). Unfortunately, not all rules are adaptive and thus may plant the seeds for abnormal personalities to emerge (never be late or people will dislike you; happiness is found in the bottom of a bottle of wine; most people in this world suck).

Behavioral Selection and Cultural Practices

To this point, it should become apparent that the behaviorist would find great interest in behaviors related to the construct of personality, though the employed approach to study it may differ greatly from traditional methodologies. When it comes to individual differences, behaviorists always consider how a behavior interacts with its environment. Humans learn, develop, prosper, adapt, and change all due to natural selection. At the most basic level, natural selection refers to the Darwinian view of evolution related to the survival and reproduction of some species and the extinction of others. Behaviorists refer to this level of selection as *phylogenic selection* which is exclusively related to innate behaviors related to survival of the species. According to Catania (1998), the influence over behavior involves gradual changes at the genetic and/or physical level. Giraffes developed long necks over a gradual period because those with longer necks tended to survive and give birth to offspring with longer necks. Similarly, Russians have systematically bred tameability into red foxes, so much so that domesticated red foxes serve as house pets in Russian households.

A second type of selection, *ontogenic selection*, is attributable to the unique life history of a person and what contingencies reinforced specific classes of behavior. While evolution for our species occurs slowly and on a macro-level, the behavior of individuals also "evolves" through what is selected during their personal timeline.

As discussed earlier, traits, which are viewed as behaviors, that are reinforced survive, while those that do not produce favorable outcomes are extinguished.

The third type of behavioral selection is *cultural selection* which accounts for behavior passed from one person to the next, allowing the behavior to outlive the organism. The general mechanics of cultural selection and ontogenic selection are the same in that they affect classes of behavior. Imitation, observational learning, and rule-governed behavior allow members of a culture to share behavior with each other, no matter how those individuals are genetically related. The emergence of language offers one of the most glorious examples of cultural selection. It can be taught informally, perhaps from mother to child, or formally, within an education system. Whether a baby's repeating of "mama" is praised or a child receives a sticker for spelling a difficult word, it is the social environment that ensures language survives within that culture through contingencies (reinforcement and punishment) that promote language-producing behavior. Reinforcement and punishment also shape how we, as a culture, celebrate holidays, raise our children, and treat the disenfranchised members of our communities.

The notion of morality or ethical standards of behavior is one that has been a point of contention for humans throughout the history of the species and one that offers a poignant example of cultural selection. Cultural selection, along with language, allows humans to engage in a type of behavior unique to the species: following rules. Rather than conceptualizing morals or ethics as some form of a priori knowledge, behavior analysts explain morality and ethics in the context of *rule-governed behavior*; that is, behavior that is controlled and maintained by verbal or private self-imposed rules or instructions rather than the direct-acting contingencies and programmed consequences that govern other behavior (Peláez 2001). In other words, rule-governed behavior is not maintained by the direct consequences of engaging or not engaging in the behavior, but rather, these responses are maintained by the consequences following compliance with the rules that are established related to the behaviors. For example, it can be assumed that most individuals who regularly operate vehicles are going to stop at red lights often, even though they never have personally experienced consequences associated with running a red light. Most individuals stop at a red light because of rules that have been verbally passed on (avoiding a car crash or receiving a traffic citation, for instance).

Many of these rules align with specific forms of cultural practices that come to shape what our society deems as moral or ethical behavior. For example, if a culture perpetuates the rule "an eye for an eye," it should not come as a surprise that members of that culture may find revenge morally acceptable. Due to the differential reinforcement of a variety of behaviors that are declared "good" or "bad" in different cultures (which ultimately make up cultural contingencies), individuals in one context develop a repertoire of behaviors that are deemed "good/moral" in one environment and "bad/immoral" in another environment. Human history accounts for many examples (racial discrimination, social injustice, religious intolerance, etc.) of the conflict that can arise when incompatible cultural contingencies encounter one another.

The interplay of the three forms of selection lead to what Kantor called personality traits (1938). Traits may be thought of as the individual differences that make up the personality. Traditional psychologists measure them systematically and believe they account for stability in behavior patterns. Measured traits usually consist of paired opposites, like extroversion and introversion, and a ratings scale will determine which trait a person exhibits. For the radical behaviorist, however, a trait is considered a general description of contingencies that cause behavior (Moore 2015).

Treatment of Personality Disorders

The behavioral perspective for the treatment of a personality disorder begins with the examination of the possible factors that have contributed to the development of the condition. This will include a careful examination of the controlling functional relationships between the observed behaviors and

the contextual field of variables that surround them. Such variables will include the client's motivation levels and how they are increased or decreased via the exhibition of certain behaviors to produce consequences from the social community. Next, the behaviorist will seek to understand how language (in the form of rules delivered by others or crafted by the client) governs their behavior patterns in maladaptive ways. Furthermore, when such rules are temporally paired with what is irrationally deduced as casual accomplishments of success, they become even more detrimental to the client. In order to improve the human condition of a client by altering their personality, a rich series of alternative positive consequences will need to be contacted by the individual. Initially these consequences may be contrived, but for long-term successful change to occur, the natural environment must sustain these changes in behavior.

To illustrate this change process, let us examine the behavior of an introverted graduate student named John who is fearful of speaking in public. John has reported anxiety of public speaking, large crowds, and any event that results in others paying him close attention. As a result, John has avoided these experiences as much as possible. He never speaks up in classes, reluctantly presents his work when required, and never volunteers for any speaking opportunities at professional meetings. John is worried that he may never succeed in his long-term plan of becoming a professor because he knows he will eventually need to lecture to students and also present research at conferences in front his peers. Additionally, a history of antianxiety medication has left John with decreased social interest, and thus he has not had a romantic relationship in many years.

The behaviorist seeking to alter John's anxious personality begins by unpacking the motivation behind what is sustaining John's disengagement from the social community. If anxiety occurs under a set of predictable conditions (speaking in public, large crowds), it seems rationale for John to avoid these events. John is motivated to avoid or reduce his anxiety and seeks a variety of ways of behaving to do so.

Next the behaviorist explores the consequences that follow from John's avoidance behavior. Any context in which John must engage in verbal behavior in the presence of other individuals is generally paired with aversive consequences, but this does not necessarily mean that all of the behaviors in which John has engaged in similar contexts have contacted aversive consequences. Rather, it is more likely that verbal behavior specifically has not contacted sufficient reinforcement to compete with the aversive consequences (or lack of reinforcement) paired with these behaviors, thus reducing the likelihood that John will engage in these behaviors in this context. Consequently, John likely established a rule that he will always become anxious when he is forced to speak in public. As previously mentioned, the source of reinforcement associated with rule-governed behavior is compliance with the rule; therefore, John's self-imposed rule may be comprised of the statements: "If I speak in front of a large crowd, I will encounter significant anxiety. However, if I do not speak in front of a large crowd, then I will avoid this anxiety." Now, if John must speak in front of a crowd and experiences anxiety, then the first statement of the rule has contacted a direct-acting contingency and now lends further credibility to the validity of the rule, increasing the probability that John will continue avoiding such contexts. If John avoids speaking to crowds and does not experience anxiety, then the second statement of the rule has been reinforced through adherence to the rule, and the validity and reliability of the rule's if/then statement has increased. Unfortunately for John, adherence to such rules is maladaptive if John is to continue a career in academia, as such contexts will likely remain aversive and John's verbal repertoire associated with such situations will not increase in complexity.

Finally, to treat the anxiety associated with John's public speaking, the behaviorist could work with John to systematically decrease the aversive stimuli and tap into naturally occurring reinforcement that occurs with learning a new skill. John begins to speak in front of small groups of people and then gradually speaks in front of larger groups of people, experiencing less anxiety

and subsequently becoming more successful in the future through the subsequent improvement in his skills associated with verbal behavior in the presence of many individuals. A new rule is established that the momentary discomfort associated with public speaking is worth the delayed benefit of mastering a new skill and establishing a successful career in academia.

Conclusion

The behavioral perspective of personality and individual differences focuses on measurable behaviors shaped by the environment and the consequences that follow. Given its natural science approach, the theoretical goal of behaviorism is prediction and control of behavior. While individual differences may be helpful when referring to a repertoire of behavior, specific prediction based on broad strokes, like personality, can be challenging. Individuals show great variation in the ways they respond to stimuli. Jack Marr's (1996) chaos theory reminds us that the real world is messy and surprise can thwart our best predictions. Marr provides a thorough (though incomplete) list of sources for surprise, "stochastic processes, chaotic behavior, instabilities (catastrophic or otherwise), noncomputable systems, irreducible systems, many-variable interactions, combinations of positive and negative feedback (with and without delays), emergence, and, of course, combinations and interactions of all these" (p. 23). Another source of surprise can be the mysterious epigenetic changes in an individual caused by environmental stimuli. The study of epigenetics is still in its infancy, but beyond chemicals and environmental stresses, the study of behavioral epigenetics looks at how our experiences (and even our grandmother's experiences) can create changes in gene expression (Carere et al. 2005).

With such a great potential for variance, constructs such as personality and individual differences are helpful to the behaviorist in quickly defining a repertoire of individual behaviors that tend to function in accordance with a limited set of reinforcers. However, these concepts should remain a descriptive summary of observation and not a causal agent, as the latter limits the basic assumptions of human behavior as a natural science. The functional approach to human behavior continues to offer tangible solutions to many societal problems and has made inroads into less traditional applications, such as depression, anxiety, and self-control. New treatments, such as Acceptance and Commitment Therapy, which is grounded in the foundations of behavior analysis, offer exciting new frontiers in the study of human behavior (Hayes et al. 1999).

Cross-References

- ▶ Extinction (Conditioning)
- ▶ Operant Conditioning
- ▶ Punishment
- ▶ Radical Behaviorism
- ▶ Reinforcement
- ▶ Reinforcement Value
- ▶ Skinner, B. F.

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Behavioral Plasticity

▶ Behavioral Flexibility

Behavioral Signatures

▶ If-Then Behavioral Contingencies
▶ Situation-Behavior Signatures

Behavioral Syndrome

▶ Comparative Perspective

Behaviorism

▶ Operant Conditioning
▶ Radical Behaviorism

Being Free

▶ Spontaneity

Being Ignored and Excluded

▶ Ostracism

Being Love

▶ B-Love

"Being on the Make"

▶ Initiative Versus Guilt

Being-in-the-World

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Introduction

Being-in-the-world is a term adopted by Martin Heidegger to describe one aspect of *Dasein*, of the engaged, authentic human being. Heidegger (1962) crafted this term with special significance, which he explained in his foremost work, *Being and Time.* Heidegger created this hyphenated word to indicate that one's being cannot be separated from the world in which he or she exists. One finds one's being in the world; the world exists in relation to each being. They exist in unity, the being and the world. Heidegger (1962) termed this being *Dasein.* Much of Heidegger's phenomenological (1962) exploration of being in *Being and Time* was concerned with the natural arising of concern or caring that would occur if one were to authentically engage and respond to this world; conversely, the *Dasein* or individual being could leave things undone, neglected, or turned away from, and that would be a *deficient* being-in-the-world. However, with being itself comes being-in-the-world; there is no otherwise. Furthermore, the "world" in which one finds one's being is multidimensional: interior, social, material, and spiritual.

Dasein

In *Being and Time*, Heidegger (1962) attempted a phenomenological exploration of what it means to be a human being. In order to try and bypass associations and preestablished concepts people might have, he started with fresh terminology and so called the human being *Dasein* and proceeded to explore the attributes of the human being.

Firmly grounded in the European existential analysis, based largely on Heidegger, May (1958) explained *Dasein* thus:

> Composed of *sein* (being) plus *da* (there), *Dasein* indicates that man is the being who *is there* and implies also that he *has* a "there" in the sense that he can know he is there and can take a stand with reference to that fact. The "there" is moreover not just any place, but the particular "there" that is mine, the particular point *in time* as well as space of my existence at this given moment. Man is the being who can be conscious of, and therefore responsible for, his existence. (p. 41)

Dasein was thus introduced as a fundamental construct in existential psychology, a construct that ties human beingness to presence, and presence both to responsibility and, as May (1958) went on to indicate, to engagement. In this sense, May (1958) said that when existentialists refer to "*Dasein* choosing," they are actually saying "the being-responsible-for-its-existence choosing" (p. 41).

Being

Being is the essence of who one is. Heidegger (1962) also created his own term for being, *dasein.* Contemporary existential, humanistic, and existential-humanistic psychologists often refer simply to being (see also May 1953, 1958, 1983; Rogers 1980, 1989; van Deurzen-Smith 1984, 2005).

These are abstract and somewhat esoteric topics, best understood through direct experience. Distinguishing *being* from the ego, May (1958) pointed to the ontological dimension of being by saying:

> The ego is a reflection of the outside world; the sense of being is rooted in one's own experience of existence, and if it is a mirroring of, a reflection of the outside world alone, it is then precisely not one's own sense of existence. My sense of being is *not* my capacity to see the outside world, to size it up, to assess reality; it is rather my capacity to see myself as a being in the world, *to know myself as the being who can do these things*. . .Being means not "I am the subject" but "I am the being who can, among other things, know himself as the subject of what is occurring." (p. 46)

Authenticity of being is considered moving toward the full embodiment of one's potentialities and nature (May 1953; van Deurzen 2007).

Care and Responsibility

The authentic human being engages with people around him or her "as one existence communicating with another" (May 1958). Heidegger (1962) remarked upon an interior function of *conscience* which causes the *Dasein*, or the person living authentically in the world, to respond with care toward the people and things around one. May (1953, 1981) tied being to responsibility, both toward others and for one's own choices and actions.

The Existential Worlds

May (1958) stated, "World is the structure of meaningful relationships in which a person exists and in the design of which he participates" (p. 53). Heidegger (1962) and May (1958) identified three worlds in which one finds one's being: the *Umwelt*, the *Mitwelt*, and the *Eigenwelt.* van Deurzen-Smith (1984) added the *Überwelt.*

The *Umwelt* can be understood as the natural world: one's own biology and physical needs, as well as the environment in which a person finds him or herself. The *Mitwelt* is the world of one's relations with other people, both social and intimate relations. Characteristic of a being's *Mitwelt* is how he or she relates, what might now be considered styles of attachment acted out in the realm of the *Mitwelt.* The *Eigenwelt*, literally, the "own-world," is the inner life of one's experience, sense of self, and meanings one makes of that experience (May 1958; van Deurzen 2007), one's relation to oneself and one's psychological functioning. van Deurzen added to the three existential worlds or dimensions another, the Ü*berwelt*, or the spiritual dimension. One's being is found in all these worlds simultaneously, whether one is present to this or not.

Presence and the Present Moment

Existential psychologists tie authentic being-in-the-world to being present in the moment. Bugental (1978) defined presence:

> Presence is the quality of being in a situation in which one intends to be as aware and participative as one is able to be at that time and in those circumstances. Presence is carried into effect by the mobilization of one's inner (toward subjective experiencing) and outer (toward the situation and any other person/s in it) sensitivities.
>
> Presence is immensely more than just being there physically, it is obvious. It's being totally in the situation . . . . Presence is being there in body, in emotions, in thoughts, in every way. (pp. 36–37)

Existential psychologists stress that one finds one's being only in the present moment, which is where being meets one's existence. This was one of the main postulates of Heidegger's (1962) *Being and Time.* It is also eloquently and clearly expressed by American existential-humanistic psychologist, Bugental (1978) in this passage:

> Presence, being here, centeredness, and immediacy—all are terms to point to a fundamental reality. Only in this moment am I alive. All else is in some measure speculative. Only now, *now,* can I make my life different. The client who experiences this fact of great power realizes that its importance goes far beyond the therapeutic office. (p. 121)

Presence remains a key construct in existential psychotherapy, being considered both the means and the goal of therapy (Schneider and Krug 2010).

Bugental's observation above highlights another key existential principle related to being-in-the-world, the possibility of nonbeing, when one is not able to face "showing up" authentically in the moment or remaining engaged with the people or circumstances with which one finds oneself.

Anxiety or *Angst:* Deficient *Being-in-the-World*

Existential psychologists value and work toward the authentic embodiment and integration of the human being. Yet both Heidegger (1962) and May (1950, 1953) recognized that it is not always possible to engage fully from the nature of *Dasein*, or one's authentic being. Anxiety arises, and in moments of extreme anxiety it seems impossible to have a sense of or connection with one's being. Yet it is the aspect of *awareness* or *innate consciousness* within being that it can become aware of this inauthenticity. This is where psychotherapy may be of use. There may be outer pressures inhibiting one's ability to embody the fullness of who one really is. May (1950, 1958) diagnosed the social phenomenon of alienation from one's relational and inner worlds as an increasing problem connected with the rise of corporate culture and consequent pressures to conformity. Schneider (2004) explored the social milieu that represses the discovery and expression of *awe* in daily life, a healthy attitude toward one's experience of being-in-the-world. Heidegger (1962) recognized this, referring to "the they" as the people and circumstances one has been "thrown" into that do not reflect true being, and the pull of a herd mentality to deny one's authentic being. May (1969, 1981) also pointed out the paradoxical nature of competing forces that must be balanced, for example, *Love and Will*, *Freedom and Destiny.* Contemporary existentialists such as Schneider (1999, 2013) have pointed out both the paradoxical nature of the self as well as the polarizing tendency within society.

Therapeutic Concerns

Existential and existential-humanistic therapists work in a mode of presence, evaluating their client's ability to be authentically in the world, in all the four domains described above. They track or take note of both the client's inner world: the meanings implied but possibly unregarded by the individual, ways of relating, bodily postures and tone of voice, and also implied awareness or lack thereof of the spiritual qualities and dimensions of their own lives and circumstances (Schneider and Krug 2010; van Deurzen 2007). Helping to bring these meanings, behaviors and ways of presenting, and relationships into clients' awareness in the moment, clients then have the

opportunity to choose more authentic ways of being-in-the-world. Some psychotherapists, such as those of the Bugental, May, and Yalom lineages, do this more by working with what presents in the moment (Schneider and Krug 2010). Others, such as van Deurzen, focus more heavily on the philosophical.

Conclusion

Being-in-the-world is a term generated by Heidegger (1962), often considered one of the earliest philosophers to lay the foundation for existentialism, in his exploration of being, *Being and Time.* Sometimes referred to by existential and humanistic psychologists simply as *being*, nonetheless it is generally considered that being is found and forged in the present moment, in the world in which one finds one's existence. This world encompasses the physical realities, social relationships, inner experience and meanings, and spiritual or cosmological dimension of life. One's being in the world may be authentic, caring, responsive and engaged, or inauthentic, avoidant, or not respectful and engaged with others. Anxiety arises when one cannot manage being authentically in the world. Through experiencing presence in existential psychotherapy, an individual can find his or her being-in-the-world and live more authentically.

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B

Belief-Desire Reasoning

▶ Theory of Mind

Belief-Desire Theory of Emotion

▶ Cognitive Theory of Emotion

Beliefs

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Synonyms

Assumptions; Axioms; Conclusions; Conjectures; Convictions; Presumptions

Definition

Subjective judgments of what is true or false.

Introduction

Drawing from traditional philosophical conceptions of belief, psychologists define "beliefs" as fundamental units of thought (i.e., subjective judgments of what is true or false) upon which attitudes are often built. Attitudes, by contrast, are global evaluations – liking or disliking – toward an object (e.g., person, thing, event, idea). For instance, one might hold a *belief* that Heaven does [does not] exist. One might also hold a positive [negative] *attitude* – that is, be in favor of [opposed to] – the idea that good people spend eternity in Heaven after death. Beliefs and attitudes, though distinct, are not mutually exclusive. Thus, it is possible to like an idea while not necessarily believing it, and vice versa. For example, most people enjoy the fantastical idea of having superpowers but do not believe superpowers are possible. Baumeister and Bushman (2011) offer a simple explanation for the distinction between attitudes and beliefs: "Attitudes are for choosing, whereas beliefs are for explaining" (p. 200). In other words, beliefs help us predict and make sense of phenomena such as attitudes, choices, behaviors, and cause-and-effect relationships, whereas attitudes influence our choices and behaviors.

Before forming new and modifying existing beliefs, three important cognitive operations take place: sensation (i.e., detecting stimuli via eyes, ears, nose, skin, and tongue), perception (i.e., decoding and interpreting sensory information), and evaluation (i.e., determining the veracity of the information). However, what we perceive is not necessarily reality; beliefs and knowledge are thus distinct. For example, you may *believe* you know the word "disinterested" means "not interested," when it actually means "unbiased." Rather than being objectively true or false (as is knowledge), beliefs exist along a continuum such that degrees of belief are often expressed in terms of certainty or confidence. That is, we can be anywhere from absolutely uncertain to absolutely certain that something is true.

How Are Beliefs Formed?

The process by which we form beliefs has been explained primarily via the cartesian and spinozan schools of thought. According to the cartesian view, potential beliefs are thought to be comprehended first and then either accepted or rejected. For example, Connors and Halligan (2015) put forth a five-stage account of belief formation: (1) perception of sensory information, (2) generation of potential beliefs to explain this information, (3) evaluation of the veracity of potential beliefs and their relation to existing beliefs, (4) acceptance of one or more potential beliefs, and (5) consequences of the accepted belief(s) for memory, cognitive processing, interpretation of existing beliefs, and evaluation of subsequent potential beliefs. In contrast, according to the spinozan view, comprehension and acceptance automatically take place simultaneously, and only later are beliefs evaluated to determine whether they will be maintained or rejected. For instance, the two-factor framework for explaining delusional beliefs (Coltheart et al. 2011) suggests that, when presented with perceptual input (e.g., a rabbit in the sky), we first automatically accept a potential belief (e.g., a rabbit is flying in the sky) and then later evaluate it against alternative potential beliefs (e.g., all rabbits can fly vs. a rabbit is falling from a tall structure vs. this "rabbit" is actually a bird that only resembles a rabbit). We evaluate the accepted belief against the alternatives according to which best explains the perceived information and is most consistent with our existing beliefs. Because our existing beliefs are likely to contain the proposition "rabbits cannot fly," one of the alternatives is more likely to be accepted and stored in memory. Also supporting the spinozan view, Wyer and Radvansky's (1999) research suggests that individuals perceive and comprehend information based on its similarity to existing information stored in memory. If the similarity exceeds a certain point, the new information is not only comprehended but also regarded as true. Regardless of which model is most accurate, individuals are susceptible to

many cognitive processing biases, which are very much capable of influencing the process of belief formation and its consequences.

How Are Beliefs Influenced and Modified?

Belief formation mostly occurs implicitly (i.e., outside conscious awareness) and thus employs fast and efficient, rather than slow and deliberative, thinking. Cognitive processing of this sort frequently relies on judgmental heuristics and increases susceptibility to bias (Kahneman 2013). Consider the availability heuristic (i.e., ease-of-retrieval): a mental shortcut where beliefs most easily retrieved from memory exert greater influence upon the evaluation of incoming information (Tversky and Kahneman 1973). Beliefs may be more accessible depending upon their novelty, frequency (i.e., how often they are conjured, reinforced, and/or applied), and context. As an example, people watching the news are more likely to hear about accidental deaths compared to those caused by diabetes. Thus, participants believed accidental deaths to be over 300 times more likely than those due to diabetes – even though people are four times more likely to die from diabetes (Kahneman 2013). Though easily available information can exert an undue influence, so too can our existing beliefs. Confirmation bias, for instance, is the tendency to favor information that adheres to our existing beliefs (Kahneman 2013). Similarly, the backfire effect refers to people's tendencies to reinforce their existing beliefs when presented with opposing evidence. Both biases are motivated by an overall desire to avoid meaning threats and maintain cognitive consistency. As such, confirmation bias and the backfire effect are most likely to affect strongly held beliefs and make modifying existing beliefs very difficult, even in the face of robust disconfirmatory evidence.

Our strongest and oldest beliefs are sometimes referred to as foundational or basic beliefs and are central to our belief systems (i.e., interconnected sets of mutually supportive beliefs). Foundational beliefs link to other beliefs, which themselves link to others, and so on – thereby forming associative belief networks. If foundational beliefs are somehow undermined, other beliefs within the belief network will be jeopardized as well. Consequently, foundational beliefs are especially important to our understanding of the world and very difficult to modify.

However, there are circumstances in which people are motivated to modify even their foundational beliefs. One such circumstance is cognitive dissonance, an aversive mental state that occurs when holding conflicting thoughts, beliefs, and/or attitudes. To illustrate, someone might strongly believe in both creationism and evolution. If these beliefs are perceived as inconsistent, he or she will likely experience internal conflict and be driven to modify one or both beliefs.

What Are the Purposes of Beliefs?

Humans have an innate desire to make sense of the world. Beliefs have two principal functions toward this end: (1) to understand and explain phenomena and (2) to make predictions about the future. However, when people perceive their beliefs are unable to accomplish these functions (e.g., when their beliefs are inconsistent or conflict with one another as with cognitive dissonance), they experience threat – an anxious mental and physiological response characterized by a fear of potential harm. To alleviate the negative consequences of such threats, people employ meaning-making strategies such as generalization and representativeness.

Because belief systems are incomplete representations (i.e., they do not contain all possible information about their referents) and this incompleteness can be threatening, people often rely on generalization to fill gaps within their representations. Generalization is a largely implicit process that allows for quick and efficient predictions about specific objects and broader categories. Deductive generalization is when people apply their beliefs about a set of exemplars to the general

category. Consider the category *birds* containing the following exemplars: *robin*, *hawk*, and *penguin*. One might reason that because robins, hawks, and penguins have beaks, all birds must have beaks. By contrast, inductive generalization is when one applies information about a general category to its exemplars. For example, because birds can fly, one might therefore conclude that robins, hawks, and penguins can fly. Though generalizations usually yield accurate predictions, they are not infallible. For instance, you may have noticed that the above example of inductive generalization produced the erroneous conclusion that penguins can fly. Indeed, there are circumstances under which making strong generalizations can be problematic.

When making generalizations, people disproportionately assign more value to the beliefs most representative (i.e., generally true) of the object in question. To illustrate this representativeness heuristic (Tversky and Kahneman 1973) consider seeing a woman reading *The New York Times* on a New York subway. In this particular situation, our most prototypical belief about highly educated women might be that they enjoy acquiring information more than do those less educated. As a result, people tend to believe the woman on the subway is more likely to have a PhD than no college degree (Kahneman 2013). In making such predictions, people seem to ignore several important factors, such as how many more people without a college degree exist relative to PhDs. Using such stereotypical beliefs to make predictions can lead to not only forecasting errors but also negative consequences for those being stereotyped.

What Are Some Special Cases of Beliefs?

Stereotypes are commonly held, stable beliefs about members of a social category (e.g., race, gender, ethnicity, nationality, age). They are a specific form of generalization and an application of the representativeness heuristic described above. With some exceptions, stereotypes are often oversimplified and incorrect, as they are especially likely to develop when people have little information about a group or have limited time to process information. For example, people are more prone to apply their existing stereotypes about Asian-Americans (e.g., shy, polite, short) when they are cognitively busy (Gilbert and Hixon 1991), and individuals are more susceptible to stereotyping outgroup members as "all the same" when they have not had much contact with the outgroup in question (Islam and Hewstone 1993). Negative stereotypes can have pernicious consequences for their targets (e.g., women who are made aware of the stereotype that women are bad drivers perform more poorly on a driving simulation task than do those not made aware of the stereotype, regardless of whether they believe the stereotype is true; Yeung and von Hippel 2008). However, *positive* stereotypes can also be very problematic for members of targeted groups who fear they cannot conform to the stereotype. Consider the stereotype that Asian-Americans are good at math. This stereotype can lead members of the target group to find it difficult to meet society's high expectations of them and can produce feelings of inferiority among those who feel they are not good at math.

Another special case of beliefs involves religion. Religious beliefs are, themselves, powerful tools for dealing with psychological threat. Indeed, religious beliefs prescribe appropriate behavior – especially helpful during uncertainty – and offer individuals a sense of meaning. Many scholars theorize that religious beliefs developed from our desire to understand the world. For instance, rather than endure uncertainty about the origins and purpose of human life, most people rely on their belief in God (or other such supernatural beings; Park 2005). Notably, though, religious beliefs differ from the other beliefs discussed thus far in that the former require faith (i.e., strength in one's belief despite not having confirmatory evidence). Because faith-based (religious) beliefs do not require empirical evidence, they cannot be proven true nor can they be falsified. As a result and in addition to their perceived explanatory power, faith-based (religious) beliefs have endured for millennia and continue to protect against psychological threat.

Conclusion

In sum, beliefs are distinct from both attitudes and knowledge. Though there is some disagreement about how beliefs are initially formed, the conditions under which beliefs are most influential as well as the impact of biases and heuristics are well documented. Additionally, beliefs can take particular forms, such as stereotypes or faith-based (religious) beliefs. Given people's desires to simplify and generate meaning in a complex world, it is little wonder that beliefs are such powerful determinants of attitudes and behavior.

Cross-References

- ▶ Attributions
- ▶ Cognitive-Affective Processing System
- ▶ Observational Learning
- ▶ Outcome Expectancies
- ▶ Religion
- ▶ Values

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Bell, Carl C.

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Introduction

This short chapter highlights the career and contributions of Dr. Carl C. Bell, M.D. Dr. Bell has provided direction for the inquiry into whether racism might, in some cases, be a symptom of a narcissistic personality dynamics. Further, Dr. Bell and his colleague Dr. Ed Dunbar have proposed that at times racism may even be a symptom of a narcissistic personality disorder.

Carl Compton Bell, M.D., is the retired president/CEO of the Community Mental Health Council, Inc. and the retired director of the Institute for Juvenile Research (birthplace of child psychiatry) who is a clinical psychiatrist in Jackson Park Hospital's Family Medicine Center. He is a retired professor of psychiatry at the College of Medicine and a retired professor of public health at the School of Public Health University of Illinois at Chicago. In addition, he is a distinguished life fellow of the American Psychiatric Association and a fellow of the American College of Psychiatrists.

Early Life and Educational Background

Bell was born in Chicago, Illinois, in 1947. A product of Chicago Public Schools, he graduated from Hyde Park High School in 1965, and he obtained a bachelor's degree at the University of Illinois in 1967. After graduating from Meharry

Medical College in 1971, Dr. Bell went on to pursue a psychiatry residency at the Illinois Psychiatric Institute/Institute for Juvenile Research from 1971 to 1974, where he assisted Dr. Theodore Millon in developing his Millon Clinical Multiaxial Inventory. After residency, Dr. Bell spent 2 years in the US Navy reading thousands of MMPIs and screening navy recruits.

Professional Career

During his 40 years of psychiatric practice since leaving the Navy, Dr. Bell has published 500+ articles, chapters, and books on mental health issues. He's an editor of *Psychiatric Aspects on Violence*; coeditor of *Family and HIV/AIDS: Cultural and Contextual Issues in Prevention and Treatment* and *Psychiatric Clinics of North America – Prevention in Psychiatry*; author of *The Sanity of Survival*; coauthor of *Suicide and Homicide Among Adolescents;* and coauthor of *The Harvard Medical School Guide to Overcoming Prejudice at Work* and chapters on "Psychiatry for People of African Descent in the USA" in *The Massachusetts General Hospital Textbook on Diversity and Cultural Sensitivity in Mental Health*, "Black Psychiatry" in *Mental Health and People of Color*, "Black-on-Black Homicide" in *Mental Health and Mental Illness Among Black Americans*, "Isolated Sleep Paralysis" and "Violence Exposure, Psychological Distress and High Risk Behaviors Among Inner-City High School Students" in *Anxiety Disorders in African-Americans*, and "Is psychoanalytic therapy relevant for public mental health programs" in *Controversial Issues in Mental Health*. He has been interviewed by *Ebony*, *Jet*, *Essence*, *Emerge*, *New York Times*, *Chicago Tribune Magazine*, *Chicago Sun-Times*, *People Magazine*, *Chicago Reporter*, "Nightline", ABC News, NPR, "CBS Sunday Morning", The News Hour with Jim Lehrer, the Tom Joyner Morning Show, Chicago Tonight, and the "Today" show. He's a former writer/commentator for "Prevention in Action" in *Clinical Psychiatry News* 2004–2011 and a medical editor, *The Bipolar Report*, December 2013. In addition, he has had several radio shows most notably "The Black Couch." He has also been a member of several Institute of Medicine and National Academy of Sciences committees. He was an international fellow at the Institute of Philosophy, Diversity, and Mental Health, Center for Ethnicity and Health, Faculty of Health, University of Central Lancashire, Preston, United Kingdom 2007–2009. Dr. Bell has won many awards and honors such as American Psychiatric Association's 2014 Distinguished Service Award, Special Presidential Commendation of the American Psychiatric Association in recognition of his outstanding advocacy for mental illness prevention, and for person-centered mental health wellness and recovery, the 2012 Agnes Purcell McGavin Award for Prevention in Child and Adolescent Psychiatry. He has been appointed a founding executive committee member of the National Action Alliance for Suicide Prevention by Pamela Hyde the administrator of Substance Abuse and Mental Health Services Administration; the National Research Council's Committee on Assessing Juvenile Justice Reform of the Division of Behavioral and Social Sciences and Education; and the National Institute of Mental Health National Mental Health Advisory Council by secretary of Health and Human Services, Michael O. Leavitt, from January 2008 ending September 30, 2011, resigned January 14, 2011; a member of the Chicago Board of Health by Mayor Richard M Daley in 2002; and a member of the Planning Boards for Dr. Satcher's Surgeon General's Reports on Mental Health – Culture, Race, and Ethnicity and Youth Violence.

Research Interests

Bell's primary research interests have focused on African-American issues, public health, and prevention and resiliency. Accordingly, he has studied issues related to misdiagnosis of African-Americans with bipolar disorder, traumatic stress in children, prevention of violence (homicide and suicide), prevention of HIV, isolated sleep paralysis, racism, correctional health care, and fetal alcohol spectrum disorders. After being a Co-PI on a dozen NIMH-funded research grants, he was

a principal investigator of NIMH R-01 international HIV prevention grant. He has also served as mentor for several K-Awards.

In 1978, Dr. Bell published "Racism, Narcissism and Integrity" about which he corresponded with Heinz Kohut, M.D. (Bell 1978), and in 1980, he published "Racism: A Symptom of the Narcissistic Personality Disorder (Bell 1980)." This issue has been the subject of numerous presentations and has been received internationally over the years. In the early 1980s, Dr. Bell began collaborating with Dr. Edward Dunbar on studying racism as a possible personality trait (Bell 2004), and in 2012, Drs. Bell and Dunbar authored Racism and Psychopathology in *The Oxford Handbook of Personality Disorders* (Bell and Dunbar 2012). From 2004 to 2009, Dr. Bell was a member of American Psychiatric Association's Personality Disorders Work Group (Bell 2013) and helped to develop a proposed personality model that was relegated to DSM-5 in the "Emerging Measures and Models" section (Skodol et al. 2011a, b).

Conclusion

There is a need to do more research into the question of whether or not racism might not be a symptom of narcissistic psychodynamics as Heinz Kohut suggested in some of his essays. Further, although, learned behavior shapes racist behavior, there is a need to do more research regarding whether some racist behavior is rooted in primitive neurological brain structures driving stereotypic assumptions about racial differences. Moreover, whether these drivers, along with poorly developed frontal lobe control over these automatic stereotypes, and the socially accepted biases toward some out-groups, facilitate these primitive neurological brain structures in imposing pathological bias toward people that are different.

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Bell-Shaped Distribution of Personality Traits

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Synonyms

Normal curve

Definition

A symmetrical, unimodal distribution of individual differences along a personality trait dimension.

Introduction

The distribution of most normal personality traits tends to have a more or less symmetrical,

bell-shaped form. Such a distribution has a single mode, its mean is very close to its median, the majority of individuals congregate in the vicinity of the mean and median, and relatively few individuals fall in the two tails. Bell-shaped distributions are sometimes incorrectly equated to the normal (Gaussian) distribution, but that distribution is only one form that bell-shaped distributions can take. For instance, non-Gaussian bell-shaped distributions include the logistic and Student's *t* distributions, and they may differ from the normal curve in being narrower with heavier tails (leptokurtic) or flatter with fewer extreme outliers (platykurtic).

The processes that give rise to bell-shaped distributions are consistent with what is known about the origins and underpinnings of personality traits. Bell-shaped distributions tend to result from the summation of many independent influences of small effect, just as traits represent the combination of numerous small genetic and environmental influences. Thus, the fact that most personality traits are distributed in a bell-shaped fashion accords with the causal structure of these traits.

Not all personality trait measures do yield bell-shaped distributions, however, and these variations may be valid or spurious (Micceri 1989). Two variations are especially important: skewed (asymmetrical) distributions and bimodal distributions. Skewness is not uncommon in measures of personality traits and especially those traits that are pathological in nature. Measures of personality disorders, for example, are often positively skewed (i.e., having a relatively long tail of high-scoring individuals), consistent with the distribution of mental disorder symptoms. This form of skewness reflects the fact that most individuals outside clinical settings have few pathological attributes, but people with some pathological features vary widely in how many they display. Skewed distributions in measures of personality traits may therefore validly reflect the underlying nature of the traits in question. However, it is also possible for skewness to reflect a measurement artifact. For example, a trait scale composed of correlated true/false items that consistently have a low-frequency high-scoring response will yield a positively scored distribution, even if the underlying trait is normally distributed.

Bimodal distributions are another departure from the typical bell-shaped distribution of personality traits. Although such double-peaked distributions are sometimes taken as evidence that two underlying latent classes – such as personality types – are admixed in the same sample, they are much more likely to be the outcome of a measurement artifact (Meehl 1992). To generate a valid bimodal distribution, the two underlying component distributions must barely overlap, a rarity in psychological measurement. Indeed, two admixed but overlapping distributions may generate a bell-shaped distribution when combined, as occurs in the distribution of human height, which represents the sum of diverging component distributions of male and female height. Thus, when bell-shaped distributions are observed, they may conceal two (or more) latent personality classes, but when bimodal distributions are found, they are unlikely to do so.

Conclusions

The fact that personality traits tend to have a bell-shaped distribution is convenient for researchers because parametric statistics such as Pearson correlations and *t*-tests rest on assumptions that variables are distributed normally. Generally personality trait measures oblige. It is also true that most parametric statistics are relatively robust to departures from normality. However, in cases where, for whatever reason, personality trait measures are distributed in markedly non-normal (or non-bell-shaped) ways, researchers should be mindful that the assumptions of default parametric statistics are violated. In this eventuality, researchers may be advised to employ nonparametric (i.e., rank-based) statistics or to transform their measures so that distributions become more normal (e.g., log transforms to reduce positive skew).

Cross-References

- ▶ Continuum Models
- ▶ Genetics
- ▶ Personality Structure
- ▶ Trait

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Belsky-Steinberg-Draper Hypothesis

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Synonyms

Psychosocial acceleration theory

Definition

Belsky, Steinberg, and Draper's (1991; Belsky 2012) theory of the development of reproductive strategies – also known as "psychosocial acceleration theory" – stipulates that the degree to which children experience supportive vs. unsupportive care in their first 5–7 years of life influences their orientation toward others, the timing of their pubertal development (distinguishing fast vs. slow developers), their sexual behavior, the stability of their male-female relationships, the quality of their parenting, and the number of children they bear (i.e., their reproductive strategy), all in the service of dispersing their genes in future generations (i.e., reproductive fitness).

Introduction

Most theory and research concerned with how developmental experiences and environmental exposures influence human development, especially in the early years of life, are guided by a mental-health framework. This presumes that certain environmental influences and outcomes are good (e.g., sensitive parenting/secure attachment) and others bad (e.g., harsh parenting/aggression). According to Belsky, Steinberg, and Draper's (1991) evolutionary inspired psychosocial acceleration theory, however, what many conceptualize as manifestations of "nonoptimal" development (e.g., insecure attachment, aggression, risk-taking, early sexual debut) represent instead alternative tactics for dispersing genes across generations – the ultimate goal of all living things – and thereby enhancing reproductive fitness under the ecological conditions that give rise to them.

In the Beginning

Psychosocial acceleration theory built on anthropologists' Draper and Harpending's (1982) proposal that girls growing up in father-absent families develop psychologies and behavior consistent with an expectation that paternal involvement in child-rearing (i.e., parental investment) will not be forthcoming and that male-female relationships (i.e., pair-bonds) will not be enduring, behaving as a result in sexually promiscuous ways – because such a "reproductive strategy" would increase the dispersion of genes in future generations given the future that would likely accrue to father-absent children. Thus, Draper and Harpending (1982) recast traditional thinking about developmental effects of experience in the family in evolutionary terms, emphasizing effects on sexual behavior, parental investment, pair-bonds, and, fundamentally, the dispersion of genes in future generations (i.e., not mental health). But two things were missing from their analysis. First, no developmental process was offered to explain *how* father absence shapes adolescent and adult functioning. Second, no original predictions were advanced, raising issues of whether reproductive-strategy thinking represented anything more than "old wine (about how early-life experience affects later development) in a new (reproductive-strategy) bottle."

Considered reflection on these limitations led Belsky, Steinberg, and Draper (1991) to advance an evolutionary theory of socialization linking childhood experience, interpersonal orientation, and reproductive strategy. It has come to be known as "psychosocial acceleration theory," although it is expressly about the regulation – not

just acceleration – of development. Central to the theory was the thesis that stressful and supportive extrafamilial environments influence family dynamics, most especially parent-child and marital relations. These then shape or regulate children's early emotional and behavioral development, including attachment security, and, thereby, subsequent social development, including sexual/mating behavior, pair-bonding, and parenting. Following Draper and Harpending (1982), Belsky et al. (1991) argued that this complex and environmentally sensitive developmental system – and thus suite of interrelated phenotypes – evolved as a means of fitting the organism to its anticipated future environment in order to enhance the dispersion of genes in future generations, and thus not mental health, or at least did so in the ancestral environments in which human development evolved.

Of central importance to psychosocial acceleration theory was the view that parent-child processes and, in particular, attachment security/insecurity mediated the influence of stressors and supports external to the parent-child relationship on (a) the child's general trustful-mistrustful outlook on the world, (b) his/her opportunistic-exploitative vs. mutually beneficial orientation toward others, and (c) his/her behavior. But what fundamentally distinguished this theory from all traditional psychological and developmental theories addressing family and other influences on human development was the rate-of-development prediction regarding processes instantiating faster vs. slower development. Specifically, developmental experiences and psychological orientations regulate reproductive development by affecting *the timing of puberty* and, thereby, a cascade of processes involving sexual behavior, pair-bonding, and parenting.

Thus, accelerated development eventuating in a fast, quantity-oriented reproductive strategy was most likely to emerge in the context of a variety of stressors, including inadequate financial resources and marital discord (i.e., not just father absence), which would undermine parental well-being, thereby giving rise to harsh, rejecting, insensitive, and/or inconsistent parenting; these would then foster in the child insecure attachment, a mistrustful internal working model, and an opportunistic, advantage-taking interpersonal orientation. Such developments would themselves stimulate earlier pubertal maturation and initiation of sexual activity, short-term and unstable pair-bonds, and limited parental investment as individuals sought to bear more children but not care for them intensively. The alternative, slower, quality-oriented developmental trajectory would be induced by exposure to a supportive rearing environment, characterized by spousal harmony and adequate financial resources. Such intrafamilial conditions, shaped as they would be by extrafamilial ones, would give rise to sensitive, supportive, responsive, and positively affectionate styles of mothering and fathering and, thereby, secure attachments, a trusting internal working model, and a reciprocally rewarding interpersonal orientation. Collectively, these developments would delay pubertal maturation and defer the onset of sexual activity, eventually fostering enduring pair-bonds and greater parental investment in fewer offspring.

Testing the Puberty Prediction

Although there is now theoretical reason to conclude that the puberty hypothesis does not apply to males (James et al. 2012), research over the past quarter century has generated much evidence – in the case of females – linking adverse family rearing environments (e.g., sexual abuse, harsh parenting, marital conflict) with accelerated pubertal development (for review see Belsky 2012). For example, Costello and associates (2007) discovered that maltreated girls reached pubertal maturity 8 months earlier than non-maltreated girls. Belsky and associates (2007, 2010) extended such longitudinal work, showing that not only did harsh parenting at age 4.5 years predict earlier menarche but, via this effect, it indirectly fostered greater sexual risk-taking in adolescence.

There is also evidence that such contextual regulation of pubertal development applies to some females more than others as a result their genetic and physiological makeup (Ellis et al. 2011; Hartman et al. 2015; Manuck et al. 2011). What still remains uncertain, however, is the

extent to which true environmental causation is operative, as it remains possible that some environmental effects on female pubertal development discerned in longitudinal research is at least partly a function of genes shared by parents and offspring (Mendle et al. 2006). In fact, it is unlikely that family experiences are entirely responsible for female pubertal timing.

Conclusion

The process of evolution by natural selection did not shape humans to develop in one way rather than another; and thus developing in ways that middle-class Westerners' value is not the inherently "optimal" or natural way that humans should develop. Rather, as Darwinian natural selection crafts all living things in ways that increase the likelihood of passing on their genes to descendants, the best way in which to develop – and do so – will not be the same for all humans under all ecological conditions. Sometimes the most effective way to realize nature's ambition involves developing and behaving in ways that modern societies do not favor. This means that such developments and behavior do not reflect inherently "bad" or "dysfunctional" ways of developing, just ones that are not liked and thus not encouraged.

Cross-References

- ▶ Developmental Changes in Personality Traits
- ▶ Developmental Plasticity
- ▶ Life History Theory

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Bem Sex-Role Inventory

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Synonyms

Androgyny measure; Gender measure; Masculinity-femininity measure; Sex role measure; Sex role self-ratings

Definition

The Bem Sex-Role Inventory (BSRI) is a self-rating inventory of masculine, feminine, and neutral personality characteristics; the BSRI score is calculated in a way that reflects the relative weight of the scores on the independently measured Masculinity scale and Femininity scale.

Introduction

Prior to the 1970s, masculinity and femininity were conceptualized and measured as opposite ends of a singular continuum, such that an individual high on masculinity was low on femininity and an individual high on femininity was low on masculinity. In the early 1970s, Sandra Bem (1974) began developing the Bem Sex-Role Inventory (BSRI), an instrument designed so that respondents could rate themselves on personality characteristics in a way that allowed the separate measures of masculinity and femininity to vary independently of one another. On the BSRI, the score on the Masculinity scale and the score on the Femininity scale could then be used together in a calculation that classifies respondents into one of four groups: androgynous (high masculine-high feminine), masculine (high masculine-low feminine), feminine (low masculine-high feminine), and undifferentiated (low masculine-low feminine) (Bem 1981).

Development of the BSRI

In order to develop the BSRI, Bem (1974) gave a list of approximately 400 personality traits to 100 Stanford University undergraduate students in the winter ($N = 40$) and summer ($N = 60$) of 1972. Respondents were instructed: "We would like you to indicate how desirable it is in American society for a man/woman to possess each of these characteristics. Note: We are not interested in your personal opinion of how desirable each of these characteristics is. Rather, we want your judgment of how our society evaluates each of these characteristics in a man/woman" (1981, p. 17). The 50 male and 50 female respondents acting as judges were asked to rate the desirability of each characteristic using a seven-point scale ranging from 1 ("Not at all desirable") to 7 ("Extremely desirable") (Bem 1974, p. 157). Each respondent was asked about the desirability of traits for a man or for a woman but not for both.

In order to develop the BSRI, characteristics were labeled as masculine, feminine, or neutral based on the ratings of these 100 undergraduate students about the desirability of the characteristics. "A personality characteristic qualified as masculine if it was independently judged by both males and females in both samples to be significantly more desirable for a man than for a woman ($p < 0.05$). Similarly, a personality characteristic qualified as feminine if it was independently judged by both males and females in both samples to be significantly more desirable for a woman than for a man ($p < 0.05$). Of those personality characteristics that satisfied these criteria, 20 were selected for the Masculinity scale and 20 were selected for the Femininity scale" (1974, p. 157).

The Masculinity scale is composed of the following personality characteristics: acts as a leader, aggressive, ambitious, analytical, assertive, athletic, competitive, defends own beliefs, dominant, forceful, has leadership abilities, independent, individualistic, makes decisions easily, masculine, self-reliant, self-sufficient, strong personality, willing to take a stand, and willing to take risks. The Femininity scale is composed of the following personality characteristics: affectionate, cheerful, childlike, compassionate, does not use harsh language, eager to soothe hurt feelings, feminine, flatterable, gentle, gullible, loves children, loyal, sensitive to the needs of others, shy, soft spoken, sympathetic, tender, understanding, warm, and yielding. The BSRI also includes 20 neutral personality characteristics, that is, those that could not be classified as either masculine or feminine based on the criteria used by Bem. The 20 neutral items are as follows: adaptable, conceited, conscientious, conventional, friendly, happy, helpful, inefficient, jealous,

likable, moody, reliable, secretive, sincere, solemn, tactful, theatrical, truthful, unpredictable, and unsystematic. In addition to the original 60-item BSRI, a short form BSRI was developed using statistical techniques, including factor analysis and item-total correlations, and consists of a 30-item subset of the 60 personality characters that appear on the long form BSRI (Bem 1981). The 30-item short form BSRI is composed of a 10-item Masculinity scale, a 10-item Femininity scale, and a 10-item scale of neutral personality characteristics.

Administration and Scoring of the BSRI

Respondents are given either the 60-item original form or the 30-item short form and instructed to consider the personality characteristics on the list and indicate the degree they believe each personality characteristic describes them by using a 7-point scale (1, Never or almost never true, to 7, Almost or almost always true) for their self-ratings. For both the long and short form BSRI, the list begins with a personality characteristic from the Masculine scale (e.g., assertive) followed by a personality characteristic from the Feminine scale (e.g., gentle) and then by a neutral personality characteristic (e.g., helpful). This pattern is repeated for the listing of the remaining personality characteristics on the instrument, though at the time of administration, the respondent is not made aware of this pattern nor to which scale (Masculinity scale, Femininity scale, Neutral scale) each personality characteristic belongs.

Although a respondent is asked to provide self-ratings of all 60 of the personality characteristics, the 20 neutral personality characteristics are not used in the calculation of the BSRI score. Measuring the extent to which a respondent adheres to sex-typical expectations or not based on their BSRI score, also referred to as the androgyny score, involves several calculations. The first two calculations determine a respondent's (1) masculinity score, based on the mean of the self-ratings of the 20 personality characteristics on the Masculinity scale, and (2) femininity score, based on the mean of the self-ratings of the 20 personality characteristics on the Femininity scale. These two scores are then used to determine the final BSRI score and classification, which takes into account the relative weight of the masculinity score and femininity score (Bem 1974, 1981). The simplest version of the BSRI score is calculated by subtracting the Masculinity score from the Femininity score (Bem 1977, p. 322). Another more complex version of scoring involves separately converting the Masculinity score and the Femininity score to standardized T-scores and calculating the difference between the two standardized T-scores (Bem 1981, p. 5).

Regardless of the method used, larger absolute values, either positive or negative, indicate that the respondent is more sex typed. As a result of the way in which the masculinity and femininity scores are used in the calculation, a large positive value reflects a much higher mean score on the Femininity scale than on the Masculinity scale, whereas a large negative value reflects a much higher mean score on the Masculinity scale than on the Femininity scale. When a respondent's BSRI score is closer to zero, this reveals more equal self-ratings of personality characteristics on the two scales with moderate to high scores on both scales yielding a classification of the respondent as androgynous. For Bem, this particular classification category was part of the purpose of developing an instrument that allows the measures of masculinity and femininity to vary independently of one another. That is, the instrument allows individuals to provide responses that reflect a mix of both masculine and feminine personality characteristics.

Bem suggested that androgynous individuals may "come to define a more human standard of psychological health" (1974, p. 162). Using the BSRI score as an independent variable, Bem and her colleagues (Bem, 1975; Bem et al. 1976) later conducted experiments that revealed that those whose scores classified them as androgynous had a wider repertoire of behavior that allowed them to "engage in situationally effective behavior without regard for its stereotype as masculine or feminine" (1975, p. 643).

Assessment and Use of the BSRI

More than 25 years after the development of the BSRI, researchers asked respondents to rate the 60 personality characteristics on the BSRI as desirable for a man and for woman using the same wording and criteria as Bem (Auster and Ohm 2000). The results showed that all but 2 (i.e., childlike, yielding) of the 20 personality characteristics on the Femininity scale still qualified as feminine, but only 8 (i.e., acts as a leader, aggressive, ambitious, dominant, forceful, has leadership abilities, independent, and masculine) of the 20 personality characteristics on the Masculinity scale still qualified as masculine. The belief by both male and female respondents that most of personality characteristics on the Femininity scale were significantly more desirable "for a woman" than "for a man" but that this was no longer the case for a majority of the personality characteristics on the Masculinity scale revealed societal changes over that time period regarding expectations for women and men, most notably that many characteristics previously labeled as masculine are now seen as desirable for both women and men. Konrad and Harris (2002) examined the impact of gender, race (European American, African American), region (northeast, south), and size of urban area (large, small) and found variations in the ratings of the desirability of the 40 personality characteristics that compose the Masculinity and Femininity scales. These two studies show that the desirability ratings have varied over time as well as by the demographics of the respondents.

In addition to the assessing the BSRI, researchers have used the BSRI in a variety of ways. Some interested in how BSRI self-ratings might vary by the context asked respondents to think of themselves as a parent, student, or romantic partner (Uleman and Weston 1986) or to consider the social context, such as interacting at home, at work, and at school, with same-sex friends, with other-sex friends, and where one does not know many people (Smith et al. 1999). The findings of such studies revealed that the social role and context have some impact on self-ratings on the BSRI. Other researchers have looked at changes in BSRI self-rating scores over time. A meta-analysis of 63 studies that used the BSRI revealed that women's self-ratings on the Masculinity scale have been increasing steadily over time; this has also resulted in male-female differences in self-ratings on the Masculinity scale decreasing over time (Twenge 1997). In addition, more than 25 years after the development of the BSRI, when respondents were given a list of the 60 personality characteristics on the BSRI and asked to indicate the importance of these personality characteristics for themselves rather than actually rating themselves, 13 of the highest rated 15 personality characteristics were the same for women and men and were a mix of the personality characteristics that make up the Masculinity scale and the Femininity scale on the BSRI (Auster and Ohm 2000). Most recently, researchers have used the BSRI instrument to compare respondents' ratings of personality characteristics for ideal political candidates and actual women and men running for office (Powell and Butterfield 2016).

Conclusion

The Bem Sex-Role Inventory was groundbreaking in that it allowed masculinity and femininity to be measured independently rather than as part of a singular continuum, and as a result, the BSRI became a commonly used measure. Despite changes in gender expectations, variations in desirability ratings by respondents' demographic characteristics, and variations in respondents' BSRI score depending on social context or social role, the BSRI persists as a popular instrument that is still used to measure the extent of adherence to traditional, perhaps stereotypical, expectations for women and men.

Cross-References

- ▶ Androgyny
- ▶ Bem, Sandra
- ▶ Feminine Psychology
- ▶ Femininity
- ▶ Gender Roles
- ▶ Masculinity

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Bem, Sandra

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Definition

Sandra Lipsitz Bem (1944–2014) was an American feminist psychologist.

Introduction

Sandra Bem, feminist psychologist, died in 2014, leaving a legacy of scholarship which challenged us to (re)conceptualize gender and consider how gender prescriptions impact our lives and relationships (Golden and McHugh 2015). Sandra Bem presented ideas that challenged established notions of gender and sexuality. For example, Sandra Bem (1974) challenged the traditional position that masculinity and femininity were bipolar opposites and that being sex typed (expressing characteristics thought to be consistent with one's biological sex) is mentally healthy. She introduced a theory of androgyny in which masculinity and femininity are conceptualized and measured independently. In her theory, an individual who enacts high levels of positive masculine and feminine characteristics is androgynous. She also detailed the concepts of gender schemas and androcentrism and critiqued biological essentialism and gender role restrictions. Her work has transformed psychological approaches to gender and gender roles.

Sandra's publications won her enduring recognition and several important awards, including The American Psychological Association Distinguished Scientific Award for Early Career Contribution (1976), Distinguished Publication Awards from the Association for Women in Psychology (in 1977 and again in 1994), The Young Scholar Award from the American Association of University Women (1980), designation as an eminent woman in psychology (1995), and most recently, the posthumous Distinguished Career Award (AWP, 2014).

Bem's life story, summarized here, is detailed in her own words (Bem 1998) and by Golden and McHugh (2016); Bem is also included in *Psychology's Feminist Voices Multimedia Internet Archive* (George 2012).

Life Story

Sandra Lipsitz was born in Pittsburgh on June 22, 1944. She lived with her working-class Jewish family – her parents, Peter and Lilian Lipsitz, and

a sister. Sandra Bem enrolled as an undergraduate student at Margaret Morison College, a part of Carnegie Tech, because it adjoined her neighborhood. In her senior year of college, Sandra met Daryl Bem, an assistant professor of psychology, and they subsequently became romantically involved. After discussing her objections to traditional family roles and marriage, Sandra and Daryl wrote a marriage contract that pledged an egalitarian marriage; they married shortly after Sandra's graduation. Bem enrolled in a PhD program at University of Michigan and completed her PhD in developmental psychology in 1968. After graduate school, Sandra Bem moved back to Pittsburgh and got a job teaching at Carnegie Tech (soon to become Carnegie-Mellon University) where Daryl also had a faculty appointment. It was at this time that Bem became professionally interested in gender and sex roles (Bem 1998). Her early research on sex-biased job ads and labor force recruitment had an activist approach.

The Bems left Pittsburgh in 1971 when Daryl was offered a position at Stanford University, and Sandra obtained a position there as well. It was at Stanford that Sandra Bem began her work on androgyny by constructing the Bem Sex-Role Inventory (BSRI). Despite the increasing visibility of Bem's work on psychological androgyny, and at least seven journal publications related to it during the years she was at Stanford (1971–1978), Bem was denied tenure there. In 1978, she was invited to become the Director of the Women's Studies Program at Cornell University, and Daryl joined her there. Within 3 years of arriving at Cornell, Sandy was promoted to Full Professor in 1981. She served as Director of the Women's Studies Program until 1985 and did a second stint as Director of the renamed Feminist, Gender, and Sexuality Studies Program from 2000 to 2004. During this period she developed the concept of gender schemas and wrote *The Lenses of Gender* (Bem 1993). Her memoir, *An Unconventional Family* (Bem 1998), is a frankly detailed portrait of her own family life and how she and Daryl raised their two children.

In 1997, when she was in her early 50s, Bem reduced her teaching to half-time and enrolled in the Psy. D. program at Rutgers University. Her 2 years of training and her PhD in psychology allowed her to earn a NY State psychologist license. She opened a private practice in Ithaca in 2000, while continuing to teach part-time at Cornell. Between 2004 and 2010, she initiated a phased retirement plan with the university, teaching part-time and doing clinical work part-time. When she was diagnosed with Alzheimer's disease, she made plans to take her own life before she became someone unrecognizable to herself. She committed suicide in 2014.

Early Work on Gender Roles and Gender Discrimination

The Bems worked with the National Organization for Women (NOW) in 1969 to challenge gender-segregated job advertisements in a lawsuit against the Pittsburgh Press. Sandra provided expert testimony by reporting the results of their research which demonstrated that women were unlikely to apply for jobs listed under the heading "Male Help Wanted" (Bem and Bem 1973). The case was heard by the US Supreme Court, which ruled against the Pittsburgh Press in 1973. This decision was important in effecting gender desegregation of the workplace, changing not only how newspapers across the country listed job ads but also how employers and employees constructed employment positions. The Bems also confronted sex discrimination in the workplace by serving as expert witnesses in Federal Communication Commission hearings regarding discrimination against women at AT&T. The Bems provided evidence of the differential impact of sexist vs. gender-neutral ads. In the publicly announced settlement, AT&T agreed to modify its recruiting and hiring practices.

The Bems were featured for their newsworthy egalitarian marriage in the inaugural issue of *Ms. Magazine* in 1970, and they lectured widely on this topic since having an equal marriage was such a radical idea at the time. In Pittsburgh, the Bems gave community lectures on gender roles, egalitarian marriage, and how they shared housework. In discussion of Sandra's resistance to gendered divisions of domestic responsibilities, the Bems

composed an article entitled *Training the woman to know her place: The power of a nonconscious ideology* (Bem and Bem 1970). This monograph was distributed in pamphlet style through women's study courses in the late 1960s and early 1970s and was reprinted in anthologies. In this groundbreaking article, the Bems critiqued gendered assumptions about men and women's roles in relationships. The article cleverly reveals to readers their own nonconscious assumptions that housework is the responsibility of the wife and a husband who helps her with this job is an admirable partner. The article included one of the earliest uses of the term "sexism." The Bems argued that the internalization of gender stereotypes is responsible for the maintenance of gender differences and inequalities. In doing so, the Bems challenged the ideas that sex differences are biological and that gender inequality is inevitable. These themes repeat throughout Bem's scholarship.

Androgyny

In her work, Sandra Bem sought to expose the detrimental effects of traditional gender roles. She is best known for her work on androgyny, which impacted the conceptualization of masculinity and femininity within US Psychology. Bem challenged the traditional position that masculinity and femininity were bipolar opposites and that being sex typed was mentally healthy (Bem 1975). At the time she was writing, the term "sex typed" referred to a person whose behavioral characteristics were consistent with their biological sex; a biological male was supposed to be masculine, and a biological female was supposed to be feminine. In her approach, masculinity and femininity were measured independently (Bem 1974). Taking a more context-dependent view of human behavior, Bem contended that masculine characteristics and feminine characteristics could coexist together in the individual. For example, a person could be a leader in one context and be a follower in another. A person could be self-reliant and still rely on the help of others in certain situations. Bem argued that individuals who possessed the skills and positive attributes associated with both men *and* women were more flexible and performed well across a variety of contexts. Individuals with positive masculine and feminine traits were classified as androgynous and had the skills – and the advantage – to perform well in a variety of situations. In Bem's theory, a combination of masculinity and femininity was considered ideal and an indicator of mental health. In contrast, sex-typed individuals who were previously viewed as mentally healthy were in Bem's theory viewed as rigid and restricted by gender rules and norms.

In order to research her theory of androgyny, Bem created the Bem Sex-Role Inventory (BSRI) and conducted research showing that conventional gender typing was not necessarily correlated with psychological adjustment or behavioral flexibility (Bem 1974; Bem 1975). The Bem Sex-Role Inventory (BSRI) was a self-report inventory that departed in important ways from preceding measures of masculinity and femininity. Previous M-F scales were based on the model of masculinity and femininity as bipolar opposites. They typically involved a series of forced choice items regarding preferences and activities that were selected for inclusion based on the (differentiated) responses of men and women or on the differentiated responses of homosexual and heterosexual men. The early M-F scales were developed in part to identify pathology in the form of cross sex typing in the respondents (i.e., people whose expressions of masculinity and femininity were at odds with their biological sex).

The BSRI was comprised of 60 pretested (and socially desirable) items on which people could rate themselves on a Likert scale. Twenty items were considered feminine (e.g., affectionate, sympathetic, gentle); 20 were considered masculine (e.g., independent, forceful, dominant); and 20 were considered neutral (e.g., conscientious, reliable, unpredictable). People taking the inventory receive a masculinity score and a separate femininity score; androgyny is measured by the ratio of masculine to feminine items. Scores close to zero represent a balance of masculine and feminine traits, and high negative or positive scores

represent conventional gender typing. More detailed considerations of how the BSRI was scored (in both its original and short forms) can be found in Bem (1977, 1979, 1981a). There are four possible outcomes for a person's BSRI score: high masculinity, high femininity, high in both (androgyny), and low in both (undifferentiated). The BSRI has been widely used in gender research, and the article in which it was first proposed has been cited thousands of times (Golden and McHugh 2016; Hoffman and Borders 2001).

Bem employed the BSRI to empirically examine both the flexibility of androgynous individuals and the rigidity of conventionally gender-typed men and women. She and her colleagues hypothesized that gender-typed individuals are likely to prefer gender-conforming activities (i.e., activities said to be consistent with their biological sex and associated gender role) and that cross-gender behavior would be motivationally problematic for them. Their studies demonstrated that gender-typed individuals actively avoid and resist gender nonconforming activities and are uncomfortable when performing cross-gender tasks (Bem and Lenney 1976; Bem et al. 1976).

There were serious criticisms of the BSRI as a measure (Hoffman and Borders 2001). For example, the BSRI was designed to measure positive aspects of femininity and masculinity, yet some of the items on the femininity scale such as *naïve* and *gullible* are not socially desirable or positive characteristics. Others questioned whether the scale measured characteristics of femininity at all! Bem herself eventually moved away from the use of the scale because she felt it reinforced the idea that there were essential and inherent characteristics of femininity and masculinity.

Bem's research on psychological androgyny has had tremendous impact in the USA and internationally. Attention has been strong notwithstanding serious criticisms of the BSRI as a measure and despite the fact that research did not generally confirm the androgyny model of mental health which Bem had proposed. For example, comprehensive reviews of the literature from the 1980s found that when psychological well-being was measured by scales of general adjustment, or self-esteem, or depression, it was masculinity that was correlated with well-being, not androgyny or femininity (Whitley 1984, 1988).

Gender Schema Theory

By the early 1980s, Sandra Bem had moved away from the study of androgyny. She realized that the focus on masculinity and femininity maintained rather than transcended gender roles and gender polarization. She focused her attention on gender schema theory – a social cognitive theory about how people become gendered and how gendered cognitive processing impacts our perceptions, decisions, judgements, and memories (Bem 1981b). Drawing from social, cognitive, and developmental psychologies, she proposed that *gender schemas* get incorporated (or not) into our conceptual frameworks, shaping how people see themselves and the world. She argued that some individuals are gender schematic, using gender schemas to process and regulate behavior, while others are gender aschematic. Such people do not process information primarily in terms of gender. This theoretical framework had significant implications for theories of gender development. Through her research on gender schemas and gender aschematic people, Bem attempted to shift the dominant paradigm within psychology. Her research emphasized the way in which social norms and gender polarization create and enforce the categories of gender. Bem attempted to explain to the professional and the lay person that masculinity and femininity are not biologically determined but rather are social constructions. Gender schema theory was one of the most important contributions of Sandra Bem; it is still cited extensively 34 years after she introduced it (Starr and Zurbriggen 2016).

Lenses of Gender

In her third important contribution, *The Lenses of Gender*, Bem (1993) outlined three cultural lenses through which people come to understand gender: androcentrism, gender polarization, and biological essentialism and demonstrated how they work

together to shape cultural discourses, social institutions, and the psyche itself. *The Lenses of Gender* argues that male dominance and power get reproduced *psychologically* as well as systemically. Whereas in her prior work (e.g., on androgyny) Bem challenged the assumed link between the sex of the body and a person's psychological attributes, in *The Lenses of Gender*, she extends this by challenging the link between the sex of the body and one's sexuality, thus showing how heterosexism and compulsory heterosexuality are reproduced.

Androcentrism refers to the privileging of males, male experience, and the male perspective and to a pervasive male centeredness that holds men to be the standard and the norm and women as the "other" (Bem 1993). Bem's work on androcentrism as a nonconscious ideology is an elaboration of her early work on training women to know their place. Gender polarization refers to the way that society is organized around the distinction between man and woman, with the assumption that they are bipolar opposites. She argues that gender is imposed on every aspect of the human experience such that men and women are expected to behave differently in terms of how they dress, work, play, express emotion, and have sex. Bem critiques pervasive gender expectations that are based on the view that women and men are in all ways bipolar opposites.

Biological essentialism refers to the belief that differences between men and women are the inevitable result of fundamental, biological sex differences. Bem claimed she was agnostic with regard to whether biological differences exist. However, she argued that our ideas about male-female difference have been transformed into disadvantage for women and further that the belief in intrinsic differences serves to legitimize the other two cultural lenses, androcentrism and gender polarization. Bem's elucidation of the lenses of gender remains an important conceptualization of how gender inequality is reproduced in contemporary society. Bem's analysis of how the lenses of gender insidiously infect our minds as well as cultural discourses shows how male dominance and power get reproduced *psychologically* as well as systemically. By offering an enculturated lens theory of development, Bem illustrated how the process of internalization works on children to the point where most become gender conformists. In *Lenses*, Bem extended the analysis to (hetero)sexuality as well, showing how heterosexism and compulsory heterosexuality serve to reproduce normative sexualities in women and men. *The Lenses of Gender* won a Distinguished Publication Award from the Association for Women in Psychology in 1994 in recognition of the way she explicitly addressed issues of power and inequality, arguing for their centrality in any serious psychology of women.

Conclusion

Throughout her career, Bem challenged the relation between sex and gender, gender roles, and psychological theories of gender. She attempted to make visible the gendered lenses through which we view the world, often without conscious knowledge of doing so. She wanted people to "look *at* the culture's gender lenses rather than *through* them" (Bem 1993, p. 2). Bem summarized her argument from *The Lenses of Gender* in an essay *Transforming the Debate on Sexual Inequality: From Biological Difference to Institutionalized Androcentrism* (Bem 1996). Her key insight was that these biases were not simply "out there" but inside our heads as well; according to Bem, gender inequality is not the result of a few powerful sexists who control the media but is implicit and engrained in most people's constructions of gender. Bem articulated some strategies for dismantling androcentrism and for envisioning a future unrestricted by rigid gender norms. Her work on gender continues to inform the work of scholars today (Keener and Mehta 2017a, b).

Cross-References

- ▶ Androgyny
- ▶ Bem Sex-Role Inventory
- ▶ Gender Roles
- ▶ Gender Schema Theory

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Beneficence

▶ Altruism

Benefit-Finding

▶ Posttraumatic Growth

Benevolence

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Synonyms

Altruism; Altruistic; Benevolent; Benign; Compassionate; Generous; Humane

Definition

Benevolence may be defined as having kindness, conjugal duty, having goodwill, and being well mannered. It is a trait closely related to the concept of compassion in Eastern philosophy. Within the Mahayana Buddhism tradition, for example, compassion is expressed by serving and caring for others. Such involves positive attitudes toward the self, others, and humanity (Kwan and Kuang 2009). It values helping others, voicing constructive suggestions, donating money, and volunteering (Grant and Mayer 2009). Moreover, such a trait reflects in part having an inward sense of importance toward promoting and protecting the well-being of others with whom one is in regular contact (Ariel et al. 2013), relating in part as to how people should treat each other within a relationship. De Raad and Van Oudenhoven (2008) expound on this denoting benevolence as valuing agreeableness to others, being accommodating, being good, being mild mannered, having charity, peacefulness, being good natured, having supportiveness, being humane, having mercifulness, unselfishness, being forgiving, and having tolerance. Morales-Vives et al. (2012) further speak of benevolence as being linked to spirituality and religion and embodying such traits as solidarity, a desire to make sacrifices for others, having hospitality, collaboration, generosity, peace, charity, care, pity, decency, and civic mindedness. As a further definition of this trait, Aavik and Allik (2002) add helpfulness, sincerity, and kindness, while Renner (2003) adds fairness, trust, and an interest in human rights.

Introduction

According to Livnat (2003), benevolence is not a form of justice. The latter is aimed at preventing objective unfairness, while the former is a reaction to someone's subjective hurt. It is to say that benevolence is very closely related to the concept of compassion. A benevolent *act*, for instance, according to Livnat (2003), consists of a sincere attempt to do good for another person, performed out of care for a person. A benevolent person considers, therefore, the good of the specific other, whom he or she attempts to help. Associated with this, Kwan and Kuang (2009) speak of self-compassion as an important indicator of benevolence. This may be measured using the *Self-Compassion Scale* (Neff 2003), which is a twenty-six-item scale that is used to help measure the degree of kindness toward oneself and others.

That people are encouraged to be kind and benevolent to others is a teaching found within such domains as the martial arts, while Judo, for example, values competition. Such also strives to cultivate people for the sake of society, where people are urged to learn how to demonstrate social sensitivity and a motivation to express care and concern for others. Learning benevolence may also enable a person to have an awareness of moral dilemmas (Mann 2012).

Conclusion

Benevolence is a trait thought to be among the most important attributes to have in most societies as such could play a critical role toward endorsing social harmony and predicting pro-social behaviors, which could enhance well-being (Bardi and Schwartz 2003). Livnat (2003) provides an example, indicating that a benevolent person attempts to ease the suffering of others out of care and concern for them no matter what the source of their suffering is. It is about a response of one person to the suffering of another, whatever the source of such suffering might be and whoever the other person is. To this end a person who has benevolence may find greater satisfaction working within such occupations as social work and other helping professions (Nosse and Sagiv 2005).

Overall, benevolence is a trait thought to be among the most important attributes to have in most societies. Such could potentially play a critical role toward endorsing social harmony and predicting pro-social behaviors. This in turn could enhance the well-being of individuals (Bardi and Schwartz 2003).

Cross-References

- ▶ Altruism
- ▶ Empathy
- ▶ Fairness
- ▶ Ideal Self
- ▶ Personality
- ▶ Self-Esteem Inventory (Coopersmith)
- ▶ Self-Monitoring Scale
- ▶ Self-Regulation
- ▶ Sympathy
- ▶ Virtue

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Benevolent

- ▶ Benevolence

Benign

- ▶ Benevolence

Benign Aggression (Fromm)

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Definition

Erich Fromm defines "aggression" broadly: acts damaging or destroying persons, animals, or inanimate objects. But to Fromm, much aggression is simply benign, biologically adaptive, and life-serving. For instance, humans, like animals, make defensive responses to threats. Such benign aggression can cause pain or damage, but it is reactive, not aggressive for its own sake, not rooted in malignant character formation (Fromm 1973, p. 212).

Introduction

Aggression is a major concern for Erich Fromm. A sociologist and practicing psychoanalyst, Fromm (1900–1980) was a key member of the left-leaning Frankfurt School during the 1930s, playing an important role in its study of the "authoritarian personality." When Hitler came to power in 1933, Fromm and the Frankfurt School moved to the United States, where Fromm became a public intellectual combining a Marxist analysis of social disorder with Freudian psychology, frequently writing on war, peace, and aggression. In his two books that

focus specifically on aggression (*The Heart of Man: Its genius for good and evil*, 1964, and its longer sequel, *The Anatomy of Human Destructiveness*, 1973), Fromm distinguishes between two kinds of aggression: malignant and benign. Having witnessed the rise of Nazism and completed case studies on the narcissism and sadism of Hitler and Himmler, he knew well that humans can have malignant aggression, sometimes even showing a "genius" for evil: "The history of civilization, from the destruction of Carthage and Jerusalem to the destruction [by the United States] of Dresden, Hiroshima, and the people, soil, and trees of Vietnam, is a tragic record of sadism and destructiveness" (Fromm 1973, p. 192). And yet, Fromm dialectically qualifies that picture of humanity with his analysis of *benign* aggression (by analogy: noncancerous aggression), basically healthy, properly adaptive aggression. Noticing that various thinkers see violence everywhere by uncritically interpreting benign aggression as malignant aggression, Fromm emphasizes the distinction between the two. Although aggressive actions cause pain and damage every hour, many of those actions are benign, not rooted in destructive narcissism or sadism.

Four Kinds of Benign Aggression

Fromm articulated four types of benign aggression: accidental, playful, assertive, and defensive. Fromm classifies *accidental aggression* as benign. For instance, gun accidents are quite common, but it is a "dogmatic oversimplification" to label them all as unconscious malice (Fromm 1973, p. 213). It is also easy to perceive a child's idle *playful aggression* of pulling wings off fireflies to see them jump as maliciousness, yet maybe no cruelty is found here, but simply fascination with the jumping. Additionally, aggression in sports, despite some excesses, is generally "biologically adaptive" and life-serving. Fromm notes that Zen Buddhist sword fighting and archery are similar to quiet Buddhist tea ceremonies. To Fromm, individuals who view such benign practices as malignantly aggressive may themselves unconsciously savor primitive practices of violence.

Self-assertive aggression in males, showing a tendency of what Fromm calls "pushing forward," is also too frequently labeled malignant. More self-assertiveness is not itself evidence of more destructiveness or cruelty, and mice given male hormones may move more quickly to a goal but do not become more hostile (1973, p. 218). Self-assertiveness is benign, "characterologically" life-affirming, and lack of that aggressiveness, timidity, can impede healthy living. (In *Anatomy,* Fromm also spends some 20 pages urging caution in interpreting primitive hunting, which some anthropologists have seen as evolving lawfully into modern violence, and he cautions researchers about overinterpreting our nature as carnivores. Even some cannibalism reflects life-affirming impulses; Fromm interprets the Catholic Eucharistic ritual as humanistic.)

Defensive aggression is acting aggressively in defense of freedom and life, and is assumed by Fromm and probably by most observers to be benign. Our legal system, for instance, assumes self-defense as an excusing or a mitigating condition. Although someone can be deceived into thinking some action is defensive when it is not, genuine defensive aggression does exist, occurs frequently, and is not rooted in destructive character.

Why is the category of benign aggression so important for Fromm? Part of the explanation lies in Fromm's *socially engaged* psychoanalysis (Braune 2017a). Although he scheduled appointments with patients daily, they occupied a relatively small portion of Fromm's day. He was a social theorist with a massive research agenda and was also a public figure – most clearly from the mid-1950s to the mid-1970s – remaining openly socialist and trying to bring about world peace. He was a founder in 1957 of SANE (The Committee for a Sane Nuclear Policy), an antiwar grouping partially named after Fromm's book *The Sane Society* (Braune 2017b, pp. 68–71). Consequently, his work on benign aggression had a political slant: Although discussion of malignant aggression is more attention-grabbing, Fromm considered it imperative for science to share

evidence that peace is possible and that humans are not fundamentally irrational, determined, or aggressive. Mankind's recurring visions of a "peaceable kingdom" and human freedom – called in the Jewish tradition he defends, "prophetic messianism" – would be folly were humans so structured that "war of all against all" was somehow a basic human drive and malignant aggression was mankind's fate (Braune and Braune 2014).

Frustration Theory and Neo-instinctivism

Fromm's concept of *benign aggression* runs counter to certain clichés and theories arising during World War II and the Cold War. The first 200 pages of *Anatomy* reviewed data from behaviorists and "environmentalists" [privileging "nurture"], neo-behaviorists, neurophysiologists, instinctivists, animal behavior experts, anthropologists, and some traditional Freudians – many seemingly agreeing that science was now showing mankind to have a programmed destructive, cruel dimension. For example, this was reflected in frustration-aggression theory which was prominent during World War II and the Cold War. It was assumed – and behavioral data seemed to confirm it – that aggression primarily arose from everyday frustration, "the interruption of an ongoing, goal-directed activity" (Fromm 1973, p. 91). Fromm found this simplistic and said that these behaviorists were not designing experiments to test their theories against other theories, and thus their studies too easily provided "evidence" for popular theories about the ubiquity of aggressiveness.

Fromm criticized frustration-aggression studies for not identifying the "meaning" of the frustration for the subject, and the meaning is greatly decided by character. A clinically narcissistic shopper might angrily try to get a clerk fired after not receiving the bargain price she wanted, while another similarly frustrated bargain-hunter with a different characterological orientation, might respond by shrugging. Both shoppers have had their shopping frustrated, but only one responded destructively. A frustrating new parental rule may have a different "meaning" to one child raised with loving and concerned parents than to another child whose parents control them excessively because of exaggerated suspicions about children (Fromm 1973, p. 92). If the latter child angrily smashes the cookie jar, it is not a sufficient explanation that the parental rule, thwarting the child's cookie-seeking activity, caused frustration that in turn caused aggressive smashing.

Fromm suspects that frustration-aggression theory's popularity and academic "success" was due to its simplistic explanation for the ubiquity of violence during World War II and the Cold War. (Frustration appears everywhere in life, even in writing essays promoting peace, so maybe avoiding violence is impossible.) Fromm's resistance to seeing humans as mechanistically aggressive because of ubiquitous frustrations was extended to another claim gaining traction at that time: humans are instinctively hostile and aggressive by virtue of their evolution as primates. In the Cold War, with nervousness about nuclear testing, Chinese "saber rattling," Cuban bases, and Vietnam, it seemed to make sense to the book-buying population that man was warlike and aggressive. Konrad Lorenz's book, *On Aggression* (1966), which Fromm (1973) says is "one of the most widely read books in the field of social psychology" (p. 38), fell in line with Robert Ardrey's *African Genesis* (1961) and *The Territorial Imperative* (1967), and Desmond Morris's *The Naked Ape* (1967) – all best sellers according to Fromm because they paradoxically comforted the population. Feeling individually impotent when faced with perceived "ever increasing danger," many found it comforting to read it is biologically determined (p. 100). Political efforts for peace require work, Fromm always insisted, and to examine concepts like "defensive posture," "patriotism," and "free world" requires effort and objectivity, willingness to struggle with complicated, controversial matters. However, Lorenz offered a simple picture which validated inaction: biological aggression (an innate, malignant, force to destroy) can be blocked temporarily, but inevitably will "explode" into fighting and war. Fromm's work

notes Lorenz's hydraulic (pressure chamber and pressure explosion) metaphor and notes its similarities to Freud's death instinct model, which also found acceptance in the period (pp. 40–41).

The link between inherited individual aggressiveness and the movement of whole nations to war is assumed but not explained well by Lorenz (or Freud), and Lorenz also misses the distinction between benign and malignant aggression. Defensive aggression does play a role in wars, but it is benign in itself, not sadistic by nature. (And even if strong malignant aggression is found in some soldiers, their malignant aggression does not cause the war.) Defensive aggression is a reaction to an external threat to one's freedom and dignity. True, it can be "mobilized" destructively, but Fromm says soldiers typically resist sadism. Interestingly, Fromm defends "revolutionary aggression" as benign, as defensive, and as "biologically rational and part of normal human functioning" (p. 226), although he reminds revolutionaries that sadistic tendencies can arise (p. 312).

"Evidence" from Milgram Experiment

Fromm also needed to counter less deterministic theories that do not insist violence and cruelty are innate and unstoppable but still assert that humans are so weak that they can be *quite easily* dehumanized and made prone to violence. Fromm says that the frequently cited Milgram experiment is discussed as "another proof" of this popular thesis. Counter to these interpretations, Fromm's analysis of the Milgram data illustrates the opposite. Subjects in the experiment did not easily comply when directed to use electrical technology to torture; rather, they kept wanting more assurance from the psychologists that what they were doing was right and benign. Some sweated profusely. Fromm (1973) quotes Milgram himself: During the experiment, 14 of the 40 male subjects when told to administer electric shocks to others

> . . .showed definite signs of nervous laughter. . .The laughter seemed entirely out of place, even bizarre. Fullblown, uncontrollable seizures were observed for 3 subjects. On one occasion we observed a seizure so violently convulsive that it was necessary to call a halt to the experiment. (p. 72)

For Fromm, it is significant that by the end of the experiment over a third had *disobeyed* the orders to keep lifting the torturous voltage higher. Far from it being easy to lose one's humanity, the experimental data greatly show otherwise. Milgram reports that after maximum shocks had been administered, many "heaved sighs of relief, mobbed their brows. . .nervously fumbled cigarettes" (p. 73). One initially calm and confident businessman told to administer the supposedly painful shocks began twitching and stuttering and said, "*Oh God, let's stop it*" (p. 73). Fromm attacked the usual assumptions about the Milgram experiment and emphasized its evidence for benign aggression.

The economic, technological, and psychological threats associated with World War II and the Cold War had skewed popular and academic perceptions. Consequently, Fromm needed to account for that overwhelming reality of war since 1940, but he also needed to show that war, although involving the lives of everyone, still did not express a general eagerness for malignant aggressive violence. He insisted that mounting "scientific evidence" that war and cruelty were rooted in our natures is skewed. In fact, war was "sold" to otherwise cautious and rational (skeptical) Americans by massive, hugely "glorified" institutions, including the military, other government agencies, the media, celebrity commentators, and occasional religious leaders. And the populations, repelled by malignant aggression, could only be convinced by being rallied to protect cherished humanist ideals like "freedom" and "nonaggression."

The Milgram results, Fromm noted, did not show humans as easily pliable toward violence. A powerful structure surrounded the experiment: It took place to advance *Science* – Fromm capitalizes and italicizes it – and it took place during the Cold War in a science laboratory supervised by scientists carefully handling technical electrical equipment, at one of America's most prestigious educational and research institutes, Yale. The beguiled participants were aggressive by Fromm's definition, intending to cause pain with

the shock, but the "meaning" was benign aggression, with the underlying reasoning that "science helps people." Although some percentage of the population has a sadistic character structure and some of the 40 participants possibly were motivated by malignant aggression, there is little data showing that. However, significant data concerning benign aggression emerged, showing its strength in reactions *against* cruel behavior (pp. 74–76).

Conclusion

Fromm's study in *Heart of Man* and *Anatomy of Human Destructiveness* sheds light on the need for a strong distinction between benign and malignant aggression. Although any human action, be it playful, defensive, etc., can go astray for many reasons, those actions arising from benign aggression should still be encouraged, whereas those arising from malignant aggression must be interrogated separately and countered where possible. Furthermore, perhaps Fromm's controversial and "suspicious" approach toward particularly behaviorist and "instinctivist" methodologies since World War II may remind psychologists to be ever conscious of the social milieu in which their research is done.

Cross-References

- ▶ Malignant Aggression (Fromm)
- ▶ Productive/Nonproductive Frame of Orientation (Fromm)

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Bereavement

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Synonyms

Grief

Definition

The timeframe of mourning after a loss, especially after the death of a loved one.

Introduction

Losing a loved one is one of the most painful occurrences in life and thus considered an adverse life event in the psychological literature. The common reaction to such a loss is called bereavement or grief, which is often accompanied by a considerable decrease in psychological and physical well-being. Although grief is experienced as adversity, in most cases it is a normal response to a difficult life situation. In case grief persists for a prolonged time beyond what is considered an appropriate response and causes significant disturbances and impairment in daily life, this is called *complex grief* (CG). Synonyms are

prolonged grief disorder and *persistent complex bereavement disorder*. Multiple factors determine whether a person is more likely to transition from a normal grief response to CG, such as personal characteristics and coping strategies, the type of relationship to the lost person, the consequences of the loss, and the reaction of the broader environment. It is not always easy to distinguish CG from major depression (MD) or post-traumatic stress disorder (PTSD), and various therapeutic and pharmaceutical interventions are available to help individuals affected by complex grief disorder.

Acute Grief: A Normal Reaction to Losing a Loved One

Losing a loved one is among the most stressful life events a person can experience (Holmes and Rahe 1967). This will often lead to a period of grief with psychological, physical, and social consequences. A bereaved person can experience higher levels of dysphoria, anxiety, sadness, and even anger, accompanied by thoughts and images of the deceased person; it is also common to disengage from usual daily activities (Shear 2015). Physical symptoms are often related to stress response and can encompass increased heart rate, blood pressure, and cortisol levels, along with sleep disturbances and weight loss (Stroebe et al. 2007). A goal of contemporary grief research is to elucidate the biological pathways involved in grief (e.g., neurological, inflammatory, immunological, and cardiovascular).

Reactions to loss are usually most intense in the beginning and can disrupt everyday life considerably; over time, normal functioning is restored while symptoms gradually decline. It is important to note that everybody grieves differently – for some it may be hardly noticeable, while others may react very strongly. And while some fundamental manifestations of grief appear to be universal across cultures, there are some differences across ethnic groups and religions, for instance, whether the display of overt grief, like crying, is considered appropriate (e.g., Rosenblatt and Wallace 2005).

Grief is recognized as a normal mourning process following loss, and not a psychological disorder; most people will adjust to the new life circumstances without requiring professional help (Bonanno et al. 2004). Some scholars have even argued that grief may be a universal adaptive response that leads to a cascade of homeostatic mechanisms, helping the bereaved to recoup with the life event and adapt to it (Zisook et al. 2014). Nonetheless, losing a loved one is an adverse life event and can lead to intense suffering (like other events such as losing a job or divorce). There is evidence that grief increases the risk for developing mental and physical problems, that bereaved individuals are more prone to falling sick, that they experience higher levels of physical pain, and that they are more likely to self-medicate (Stroebe et al. 2007; Shear 2015).

Many models of grief have been suggested. A simple model distinguishes between an initial period of *acute* grief that is bitter but transient and a period of *integrated* grief that is less burdensome (Zisook et al. 2014). While bereavement cannot be "cured," most people are able to move on with their lives at some point and look forward to the future again. If grief lasts longer than normal or if the symptoms are not proportional to the loss experience, the reaction can turn into a clinical problem that requires help. This can happen when maladaptive thoughts, feelings, or behaviors occur that derail the mourning process, i.e. when there is no transition from acute grief to integrated grief. In this case, the normal grief response (also called *ordinary* grief) can instead be considered *complicated* or *pathological*.

What is considered normal is difficult to define, and some scholars have observed a trend in the last decades toward pathologizing grief. The third version of the Diagnostic and Statistical Manual for Mental Disorders (DSM–III) introduced a so-called bereavement exclusion (BE) that conceptualized grief as a normal response to loss and not as a mental disorder. The DSM-IV narrowed down the BE substantially, and in the DSM-V, the BE was replaced by a mere footnote that "caution [s] clinicians to differentiate between normal grieving associated with a significant loss and a diagnosis of a mental disorder" (p. 161). A number of

clinicians and researchers have expressed their concern that the removal of the BE brings the dangers of misdiagnosing normal sadness as pathological depression and medicalizing a normal condition (The Lancet Editorial 2012).

Complicated Grief or Prolonged Grief Disorder: An Inability to Cope with the Loss

When no healing process occurs, and the person does not readjust to the new situation after a sufficient amount of time, this is referred to as *complicated grief* (CG). The prevalence of CG is difficult to estimate because of the varying definition of CG in the contemporary literature. Neither is there full agreement as to what criteria reliably distinguish ordinary grief from CG, such as specific symptoms or time course (e.g., Prigerson et al. 1999). However, important signs that can help clinicians distinguish the two are the intensity and the persistence of the symptoms that impair functioning in important domains of living. This means that CG is usually not considered something entirely different from grief but as a more severe and prolonged form at the upper end of the grief continuum. Some characteristic symptoms of CG include intense and prolonged yearning, emotional pain, frequent preoccupying thoughts and memories of the deceased person, a feeling of disbelief or an inability to accept the loss, and difficulty imagining a meaningful future without the deceased person (Shear 2015). What is considered pathological varies with social norms – for example, a longer grief response may be more normal in some societies than others.

The Multifactorial Etiology of Complicated Grief

In what cases is a normal grief response more likely to become prolonged and pathological grief? There are numerous personal and environmental variables that influence the etiology of CG, of which gender plays an important role. Women are more likely than men to develop CG, similar to other mental health conditions like depression. However, gender interacts with the type of relationship to the lost person to predict CG. When losing a child, mothers are disproportionally more affected than fathers, but after losing a spouse, widowers are more vulnerable than widows (Stroebe et al. 2007). A number of important factors need to be taken into account to explain a person's very individualized grief response.

Some extreme ways to cope with the loss also make it more likely to develop CG. For instance, avoiding to be reminded of the loss at all costs may not be helpful, but neither is to constantly reminisce about the deceased person, or go through his or her belongings over and over again (Shear 2015). People with current or previous mental disorders, especially anxiety and mood disorders as well as alcohol and drug abuse, also seem at a heightened risk to transition to CG (Stroebe et al. 2007). Likewise, multiple losses increase the risk to be unable to properly cope with a loss. There is some preliminary evidence that sudden deaths, for instance, due to suicide, homicide, or a car accident, may put the bereaved person at an increased risk to develop a complicated grief response compared to situations in which the death was anticipated, for example, due to cancer. It also seems more difficult to cope with losing a loved one in a situation of financial hardship or a drop in economic resources. Finally, the size of the social network and support moderates the probability to develop CG. For a comprehensive overview of the investigated risk factors associated with CG, we refer to Stroebe et al. (2007).

From the perspective of protective factors, one could summarize that supportive friends and family, sufficient financial resources, and mental health (including being optimistic about the future, a good self-esteem, and perceived control over daily activities) help coping with loss and transition from acute to integrated grief. Overall, experiencing a loss event will be different for each person, and the specific life situation along with a dynamic interplay of protective and vulnerability factors will lead to a very specific, individual process.

Differentiating Complicated Grief from PTSD and Major Depression

It is not only difficult for a clinician to distinguish acute grief from CG – many symptoms of CG are common among individuals suffering from MD and PTSD. Since the latter are more common, there is the possibility that patients with CG are mistakenly diagnosed with MD and/or PTSD (and vice versa). The question to which degree these disorders overlap is a topic of current research and not very clear at the moment. But comorbidity is substantial, and recent research found that for treatment-seeking individuals with CG, about 50% were diagnosed with MD or PTSD, and about 35% were diagnosed with both MD and PTSD (Stroebe et al. 2007).

Nonetheless, there are some guidelines that can help clinicians distinguish these related disorders. In CG, the predominant affect is likely pining and yearning, and individuals are preoccupied with the loss. While patients with CG can be sad, this comes and goes and is usually related to reminders about the deceased person. For depressed people, sadness and anhedonia are more severe and persistent, along with pronounced feelings of hopelessness or helplessness. Lastly, especially if the death of the loved person was sudden and brutal, like a car accident witnessed by the partner, the probability is somewhat higher for the bereaved to develop PTSD (instead of, or along with, CG). For PTSD, fear is the prime affect, and they are often concerned about potential threats. Shear (2015) provides an extensive overview that helps to distinguish CG from MD and PTSD. Of note, the question whether individuals after experiencing a loss event are more prone to developing anxiety disorders apart from PTSD – such as generalized anxiety disorder or panic disorder – is comparably understudied in the scientific literature and deserves more attention.

Prevention and Intervention

Since grief itself is not pathological, it is not surprising that there is little evidence for the efficacy of clinical interventions (or prevention) after a loss event. The two main indicators that such interventions may be beneficial are in case of a complicated loss event, and if individuals themselves actively seek help. In such cases, treatment can effectively diminish symptoms of CG (Stroebe et al. 2007).

Treatment of CG is focused on the restoration of future outlook and plans, as well as strengthening the person's ability to cope with the death. A number of randomized controlled trials have provided support for the efficacy of psychotherapy for CG, along with strategies for accepting the loss and for restoring a sense of the possibility of future happiness (Wittouck et al. 2011). Especially when individuals show a severe avoidance pattern of stimuli that are reminiscent of the deceased person, reducing the avoidance pattern and initiating activities that are reminders of the loss are effective strategies. Pharmacological therapy can be used in some cases to stabilize patients and may reduce the probability that people will discontinue psychotherapy (Bui et al. 2012).

Conclusion

Despite the fact that bereavement can be considered a very burdensome and painful experience, in the end most people will come to terms with their loss and regain their ability to engage in ongoing life. With sufficient social resources and support, resilient people will be able to redefine the sense of who they are in the period following their loss. However, for a vulnerable minority, the loss experience can mean the onset of complex grief, depressive feelings, or trauma. In this case professional interventions may be necessary.

Cross-References

- ▶ Post-Traumatic Stress Disorder
- ▶ Within-Person Variability of Personality and Individual Differences

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Dr. Besser has a strong social awareness and sense of commitment; he places great importance on improving the well-being of others. This sense of commitment to others is also incorporated into his research efforts and is reflected clearly by the topics he pursues. His research is focused in the area of personality and social psychology, specifically, vulnerability factors to depression across the lifespan, and interpersonal functioning and relationships. His research topics include vulnerability factors in postpartum depression; attachment and psychological adjustment in children, adolescents, and mothers; perfectionism; self-esteem; self-criticism/dependency; distress and depression; suicidality; narcissism; Machiavellianism; psychopathy; spitefulness; humor styles; and PTSD. The factors that distinguish Dr. Besser's work are his creative ability to identify important new research topics and the methodological and statistical sophistication that characterizes his research (SEM, APIM, HLM, nonlinear models, multiple informants, and community-ecological-validated and laboratory-manipulated studies). His studies are a good reminder for other researchers of the benefits of a rigorous approach and the need to use methods that go beyond self-report data.

Educational Background

Besser was born on January 26, 1967, in Israel's southern peripherals. Dr. Besser earned his BA in Psychology with honors in 1991, his MA in Psychology in 1995, and his PhD in psychology in 2000 – all from the Behavioral Science Department, Ben-Gurion University of the Negev, Israel. Dr. Besser worked under the mentorship of Dr. David Leiser for his MA and Dr. Beatriz Priel for his PhD. Dr. Besser is a Certified Specialist in Educational Psychology, on behalf of the Israel Psychological Association, and a Mental Health Officer in the IDF. He is an example of a practitioner researcher that strives for excellence driven by determination and perseverance.

Professional Career

After earning his PhD, Dr. Besser worked as a postdoctoral fellow from 2001 to 2002 at the Department of Psychology, York University, Toronto, ON, Canada, in collaboration with Dr. Gordon L. Flett, Dr. Myriam Mongrain, and others in the field of personality-vulnerability to depression. Since 2002, he has been a faculty member in the Department of Human Resource Management and in the School of Social Work at Sapir Academic College. He is a full professor, the Chairman of the Center for Research in Personality, Life Transitions, and Stressful Life Events and serves as the Vice President for Academic Affairs. He has edited a book on the psychology of narcissism and authored several book chapters as well as nearly 110 peer-reviewed journal articles in outlets such as *Journal of Personality*, *Personality and Individual Differences*, *Journal of Research in Personality*, *American Journal of Psychiatry*, *Personality and Social Psychology Bulletin*, *Journal of Social and Clinical Psychology*, *Psychoanalytic Psychology*, *Journal of Traumatic Stress*, *Psychiatry*: *Interpersonal and Biological Processes*, and more. He presently serves as an Associate Editor for *Self and Identity* and as Section Editor in BMC Psychology. Dr. Besser serves as ad hoc reviewer and on the editorial board of several journals. His level of productivity is outstanding, and he established himself as an exceptional researcher at the international level. In all, his work has been cited over 4,500 times. More importantly, it is evident that he is a person who believes strongly in the applications of psychology and "giving back" to the community.

Research Interests

Dr. Besser's primary research interests have a consistent theme of personality-vulnerability factors which connects most of his research. First, he has published on the links between personality vulnerability of self-criticism and dependency and the transition to motherhood and postpartum depression. He has asked new questions and introduced new research designs, which have reinvigorated a research area that was beginning to lose momentum. Second, Dr. Besser is actively researching links between personality-vulnerability factors in the context of exposure to terrorism. For example, he has examined the connections that exposure to terrorism has with phenomena such as PTSD, insecure attachment, pathological narcissism, humor styles, self-esteem, optimism, hope, happiness, and quality of life. Third, Dr. Besser's most recent research has focused on the relationship between "dark" personality features (e.g., the dark triad, spitefulness) which have various outcomes such as moral judgments. In all of his studies, Dr. Besser assumes that personality-vulnerability factors are relatively stable individual differences that can be used to predict and understand human behavior, psychopathology, motivations, and emotions in various laboratory and real-life situations.

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Better-than-Average Effect

► Positive Illusions

Between-Person Designs

► Cross-Sectional Research Designs

Bewilderment

► Surprise

BHS

► Beck Hopelessness Inventory

Bias

- ▶ Discrimination
- ▶ Prejudice
- ▶ Rationality

Biased Reasoning

- ▶ Conditional Reasoning

Biesanz, Jeremy

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Early Life and Educational Background

Jeremy Charles Biesanz was born on September 7, 1969, in San Francisco, CA, USA. He completed his Bachelor of Arts in 1991 at Cornell University with a dual degree in psychology and government. His Master of Arts degree was completed in 1997 at Arizona State University under the supervision of Stephen G. West. His M.A. thesis examined the stability and coherence of personality over short periods of time.His Ph.D. was completed in 1999 in social/personality psychology under the supervision of Stephen G. West at Arizona State University. For his Ph.D., he studied the relationship between the temporal coherence and stability of personality and consensus and self-other agreement and received the J. S. Tanaka Personality Dissertation Award in 2000 for methodological and substantive contributions to the field of personality psychology. From 1999–2001, he completed a NRSA Post-Doctoral Research Fellowship in Longitudinal Methodology at the Carolina Consortium on Human Development at the Center for Developmental Science, The University of North Carolina at Chapel Hill under the mentorship of Kenneth A. Bollen and Patrick J. Curran.

Professional Career

Jeremy C. Biesanz was an assistant professor at the University of Wisconsin–Madison, Madison, WI for 3 years. He was then hired as an assistant professor in the Quantitative Methods program at the University of British Columbia where he was tenured in 2012. In 2006, he received the Raymond B. Cattell Early Career Award from the Society of Multivariate Experimental Psychology for outstanding early-career contributions to multivariate experimental psychology. He has authored or coauthored over 55 peer-reviewed articles and seven book chapters. His publications have appeared in journals such as *Journal of Personality and Social Psychology, Journal of Personality, Psychological Methods, Psychological Science, Personality and Social Psychology Bulletin, and Multivariate Behavioural Research*. He is a former associate editor for *Personality and Social Psychology Bulletin*.

Research Interests

Jeremy C. Biesanz's research interests focus on personality, accuracy and person perception, and quantitative methods. He developed the social accuracy model of interpersonal perception to assess how accurately we perceive others and are perceived in return, examine individual differences in interpersonal accuracy, and understand the process through which accurate interpersonal perception occurs. His current quantitative research focuses on topics that require additional attention – in other words, building better quantitative tools for common problems faced by applied researchers. Recent examples include novel approaches to examining mediational models, sample size planning based on effect size estimates, and generating confidence intervals for standardized effect size estimates based on both fixed and random predictors.

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Big Five

▶ Functional Magnetic Resonance Imaging (fMRI)

▶ Life Outcome Assessment of Personality and Individual Differences

▶ Personality and Academic Performance

▶ Personality and Disease Susceptibility

▶ Personality and Dispositional Factors in Relation to Chronic Disease Management and Adherence to Treatment

▶ Personality and Mortality

Big Five (B5)

▶ Higher-Order Structures of Personality

Big Five Inventory

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The Big Five Inventory (BFI; John et al. 1991; see also John et al. 2008) was developed to assess the most global personality domains in the adult population, the so-called Big Five trait domains: extraversion, agreeableness, conscientiousness, neuroticism (vs. emotional stability), and openness to experiences. Its development was guided by the need to allow a brief and prototypical assessment of the Big Five dimensions of personality, focusing on the core traits common to the various five-factor studies in the literature. The BFI assesses the Big Five domains with 44 short phrases that the respondent answers on a five-point rating scale, ranging from 1 (disagree strongly) to 5 (agree strongly). It is available free of charge for the scientific community (John et al. 2008).

Development of the BFI

The BFI was originally developed for the Anglo-American language. The development was driven by three central research needs, namely, (1) for an instrument assessing the prototypical traits defining the Big Five across the different research studies and populations, (2) for items that are clear and easy to understand, and (3) for an efficient instrument allowing a reliable assessment of the Big Five with reasonable time resources. To identify the prototypical core of each Big Five, experts categorized the 300 adjectives of the Adjective Check List (ACL; Gough and Heilbrun 1983) with regard to the Big Five domains. Based on analyses of observer reports, the Big Five structure of the selected adjectives was confirmed and refined. Adjectives found to be highly prototypical for only one of the Big Five domains were selected. To develop items that would be unambiguous and easy to understand, the adjectives were "translated" into short phrases to form the 44 items of the BFI. For example, the single trait adjective "stable" became the short-phrase item "Is emotionally stable, not easily upset."

Psychometric Properties

The Big Five domain scales of the BFI consist of eight to ten items. Reliabilities of the scales in terms of Cronbach's alpha as well as for a three-month test-retest usually exceed 0.80 in US and Canadian samples (see John et al. 2008). Validity evidence includes structural validity: factor analyses of the 44 items have consistently yielded five replicable and relatively independent factors, and intercorrelations among the five scales in large samples tend to be low, averaging 0.20 and below (e.g., Benet-Martínez and John 1998). In addition, these scales have shown substantial convergent and divergent relations with other Big Five instruments as well as with independent ratings by peers and other knowledgeable informants (e.g., Soto and John 2009).

Another innovation of the BFI is that it provides an explicit, content-balanced index to measure and control the effect of acquiescent response style (Rammstedt and Farmer 2013; Soto and John 2009; Soto et al. 2008), which is especially important in younger samples, with children as young as age 10, and samples heterogeneous with regard to education (see, e.g., Rammstedt et al. 2010).

Assessing Big Five Facets

In recent years Big Five research has given more attention to investigating the more specific facets that define each of the global Big Five domains. Given the need for an efficient measure assessing these facets, Soto and John (2009) as well as

Rammstedt and Danner (2016) were able to demonstrate that the BFI can be used to measure not only the overall Big Five domain scores but also two more specific facets per domain. For example, the BFI measures extraversion in terms of the two facets of sociability and assertiveness. Similarly, conscientiousness is measured in terms of an order facet and a self-discipline facet.

Additional Versions and Adaptations

To provide an even more detailed and systematic hierarchical assessment of the Big Five, Soto and John (Soto and John 2016; for a German adaptation see Danner et al. 2016) completely revised the BFI and developed the 60-item BFI-2, which assesses three facets for each Big Five domain with four items each as well as the overall domain score. In initial studies the BFI-2 proved to possess a robust hierarchical structure and offers a reliable and valid assessment of the Big Five and their central facets. Even though the hierarchical structure and many items changed, the Big Five domain scales of the BFI-2 remain true to those on the original BFI, with convergence correlations of about 0.90 (Soto and John 2016).

Over the past 20 years, the concept of the Big Five personality dimensions has become more and more popular, also outside the core psychological research (see, e.g., the case made by Nobel Prize winner Heckman in Heckman et al. 2006). Given the need to assess the Big Five in large-scale survey studies, typically used in social science and economic research, even the relatively compact 44-item BFI proved to be too long for such extremely time-limited research settings. Therefore, Rammstedt and John (2005, 2007) developed two short-scale versions of the BFI, the BFI-K comprising 20 items and the BFI-10 consisting of ten items, two per Big Five domain. The BFI-10 has been used in numerous studies and has been adapted to many languages worldwide. Similarly, many language adaptations are available for the full BFI as well, such as Spanish (Benet-Martínez and John 1998), Italian (Fossati et al. 2015), French (Plaisant et al. 2010), Dutch (Denissen et al. 2008), and in many other languages (see Schmitt et al. 2007).

Usage

The BFI and its variants have been used in thousands of studies worldwide. The scope of these studies ranges from core psychological diagnostics to large-scale population representative national and cross-national surveys. It has been useful for investigating numerous research questions. For example, both the BFI and the BFI-10 contributed to understanding personality development and change over the life course (e.g., Srivastava et al. 2003; Specht et al. 2011). As the BFI can be used for populations down to age 10 (Soto et al. 2008), it has been used to demonstrate temporary losses in psychosocial maturity during adolescence, especially in the domains agreeableness and conscientiousness, and the emergence of gender differences in neuroticism after age 10 (Soto et al. 2011). The numerous language adaptations as well as the existence of short-form measures made the BFI and the BFI-10 attractive for cross-cultural research. This work has helped to shed light on cultural differences in personality (e.g., Schmitt et al. 2007) and on associations of personality with central life outcomes (e.g., Rammstedt et al. in press).

Cross-References

▶ Big Five

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Big Seven Model

► Seven-Factor Model of Personality

Big Two

► Two-Factor Model of Personality

Big Two (B5)

▶ Higher-Order Structures of Personality

Big Two, The

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Introduction

Across many areas of social and personality psychology, scholars have dichotomized the content of self and social perception into two fundamental dimensions (the "Big Two"), which underlie the way in which we perceive, process, and understand ourselves and others. These "Big Two" have been conceptualized and examined across and beyond psychology. Though the "Big Two" share many core similarities across domains, they are often uniquely labeled, being called: "toughness" and "tenderness" (James 1907), "agency" and "communality" (Eagly 1987), "competence" and "warmth" (Fiske et al. 2002), "masculinity" and "femininity" (Bem 1981), "instrumentality" and "expressiveness" (Parsons and Bales 1955), "competence" and "morality" (Wojciszke 2005), "plasticity" and "stability" (DeYoung et al. 2002), or simply "beta" and "alpha" (Digman 1997), among others (see Abele et al. 2008). Despite their different nomenclature, these "Big Two" dimensions share similar properties, where the former (agency, competence, toughness, plasticity) revolves around judgments of self-interest, goal-pursuit, and achievement; the latter (communality, warmth, tenderness, stability) revolves around other-focus, social-orientation, and desire for acceptance, connection, and community (Ybarra et al. 2008). These dimensions underlie many facets of the social world, including social cognition, self-perception, stereotyping, values, motives, and personality (Abele et al. 2016; Dieh et al. 2004; Koch et al. 2016), and have distinct substrates (Hehman et al. 2017).

These dimensions contain functional meaning and are core dimensions necessary for surviving in and navigating a social world. For example, in explaining individual behavior, it is argued that these dimensions represent two core challenges (and trade-offs) that underlie human survival: the need to be socially connected and the need to pursue goals (Abele et al. 2008; Ybarra et al. 2008). These elements are thought to be necessary to navigate and survive in a social world by answering two critical questions: What are someone's intentions towards me (i.e., morality, trustworthiness)? And do they have the capabilities and motivation to pursue their intentions (i.e., competence, efficacy)?

The Big Two as Gendered

We note an interesting trend in these labels. Though these labels are all-encompassing, spanning groups, individuals, and judgments across a variety of domains, initially these dimensions were explicitly tied to the two sexes and their accompanying qualities (masculinity/toughness, femininity/tenderness). This makes sense when seen through the lens of the necessity of gender (i.e., sex) to human survival. Indeed, the "Big Two" map onto historic gender roles (Martin and Slepian 2017a). Humans have survived across millennia through the interdependence of men and women, where their respective roles were necessary for procreation, protection, and provision (Eagly 1987, 1997). The first dimension aligns with the male social role, where men's greater size and strength made them better suited for behaviors involving action-orientation, goal-pursuit, and independence (such as hunting and defending); whereas, the second dimension aligns with the female social role, where women's child-bearing ability made them better suited for behaviors involving nurturing, relationality, and expressivity (such as child-rearing and gathering; Eagly 1987; Wood and Eagly 2012). Though these roles are no longer necessarily required for human

survival, these stereotypes and categorizations of men and women persist, being pervasive, persistent, and resistant to change (Heilman 2001). As such, "gender" (i.e., masculine vs. feminine which is just one of pairing of labels for the "Big Two") is argued to be the primary schema through which individuals perceive, process, organize, and understand information about their world (Bem 1981). That is, society's ubiquitous insistence on the functional importance of gender renders the gender schema more cognitively accessible and available – in both salient and remote contexts – than many other schemas (Bem 1981, 1993).

Indeed, as the "Big Two" modes of human perception, these gendered associations are transposed onto all facets of human experience. In fact, no other dichotomy has as many entities assimilated to it as the distinction between male and female (Bem 1981). Thus, gender is a common thread across the many theories, conceptualizations, and operationalizations of the "Big Two." Regardless of its label, we argue that one dimension clearly better represents the stereotypical male role, while the other better represents the stereotypical female role.

Consequences of Gendering the "Big Two"

The qualities associated with the first dimension are aligned with *individual* ideals, highly rewarded by society (Broverman et al. 1972), and required for power, status, and self-actualization (Bandura 2001; Eagly and Karau 2002). Although these qualities are "valued" in human beings overall (see Broverman et al. 1972), they are aligned with the traditional male role. As such, men are rewarded for enacting this dimension while women tend to be penalized, often keeping women from achieving power and success, and maintaining inequality. Similarly, the qualities we associate with the second dimension are aligned with *social* ideals, being required for cooperation, equality, and community. Though these qualities are socially desirable (Abele and Wojcske 2013), they are aligned with the traditional female role. Thereby, these qualities are expected of women and stigmatized for men, proscribing men from engaging in these behaviors and similarly preventing equality.

Since sex has evolved to be a basic category for perception, "gender" is accessible in contexts devoid of human connection (Bem 1981, 1993; Martin and Slepian 2017b). That is, gender extends beyond humans and can be applied to almost any entity due to the myriad attributes that are encompassed within the "Big Two." For example, people are perfectly capable of categorizing numbers (Wilkie and Bodenhausen 2012), species (e.g., eagle, butterfly; Bem 1981), and sounds (Slepian and Galinsky 2016) by gender, despite the fact that these concepts have no clear gendered content. We argue (Martin and Slepian 2017a) that "gender" (as opposed to sex), which is the bifurcation of masculine from feminine, is just one set of labels in the "Big Two," but clearly a highly prominent one that everyday lay people use (unlike "agency" and "communion"). The very fact that gender can be ascribed to many gender-irrelevant entities gives credence to the notion that this is a primary dimension for understanding the world, as it extends beyond men and women themselves; or in other words, people apply the "Big Two" labels far and wide.

Conclusion

The "Big Two," which diverge in subtle distinctions but converge on their content, are fundamental dimensions of social perception. However, as we have argued, regardless of nomenclature, these share a fundamental gender core, where one dimension maps onto the traditional male role and the other maps onto the traditional female role. In line with past theorizing, we propose that the "Big Two" have clustered into these dimensions due to their functionality for human survival, both psychologically (balancing needs; understanding others) and sociologically (role interdependence). Necessity for human survival, both biological necessity (procreation) and gender role functionality (division of labor), we suggest, leads the "Big Two" to become a primary schema through which we understand the world.

Cross-References

- ▶ Agency
- ▶ Communion
- ▶ Femininity
- ▶ Masculinity

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Big-Five Model

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Synonyms

B5M; FFM; Five-factor model; OCEAN

Definition

The Big-Five Model (B5M) is a representation of the universe of personality traits in terms of five broad personality dimensions: Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Intellect or Imagination. These five dimensions emerged reliably over decades of research factor-analyzing the way people describe each other with ordinary language traits such as *aggressive*, *introverted*, and *sociable*. The B5M is nearly identical to the Five-Factor Model (FFM), which emerged from research based on personality questionnaires. Although both the B5M and FFM have common roots in the research of Raymond Cattell and although the terms B5M and FFM are often used interchangeably today, the two models have distinctive histories, are based on different methods and theoretical assumptions, and hold slightly different conceptions of the factors, especially the fifth factor, labeled Openness to Experience in the FFM. The FFM also uses the opposite of Emotional Stability, Neuroticism, to label the fourth factor, and some individuals reorder the factors to spell the acronym OCEAN.

Introduction

This encyclopedia entry reviews the history of the B5M and FFM and discusses issues with the models that are being addressed by current research. This research includes studies that address (1) the best way to conceptualize the factors, (2) optimal ways of operationalizing the factors, (3) optimal division of each of the factors into subfactors of personality, and (4) whether the factors might be combined into superfactors.

History of the Big-Five Model

In their overview of the five major personality factors, McCrae and John (1992) observed that the Big-Five Model and Five-Factor Model emerged from two distinct historical pathways. The first, and older, historical origin of the B5M can be found in analyses of personality-descriptive words from ordinary language. Because these words were identified from a dictionary (lexicon), this line of research is often called the *lexical research program* or lexical tradition. The second historical path to the five major personality factors is found in questionnaires designed by professional psychologists to represent theoretical constructs or for practical applications such as psychiatric diagnosis or personnel selection. This second historical line of research is therefore called the questionnaire research program or tradition.

The Lexical Research Program

John et al. (1988) have provided a detailed account of the history of the lexical research program. The lexical research program has been based on what has been called "the fundamental lexical hypothesis – namely that the most important individual differences in human transactions will come to be encoded as single terms in some or all of the world's languages" (Goldberg 1990, p. 1216). Various researchers from England, Germany, and the United States were guided by the fundamental lexical hypothesis, the most influential being Gordon W. Allport.

Gordon W. Allport. Harvard psychologist Gordon W. Allport and Dartmouth psychologist Henry S. Odbert undertook a project to exhaustively catalog every word in the English language that is "descriptive of personality or personal behavior (save those that are obsolete) included in Webster's New International Dictionary" (Allport and Odbert 1936, p. 24). After identifying 17,953 personality-descriptive words, Allport and Odbert sorted these traits into several categories. Most of the words fell into categories that they considered to be ill-suited for a scientific description of personality. The inappropriate words included 4541 terms that described temporary states or activities (e.g., *satisfied, scared*), 5226 terms that described social evaluations (e.g., *fascinating*, *insignificant*), and 3682 miscellaneous terms that described physical characteristics commonly associated with psychological traits (e.g., *lean*, *redheaded*), capacities and talents

(e.g., *gifted*) or were metaphorical or obscure (e.g., *hard*, *piggish*).

The only category they considered to be appropriate for personality description contained 4504 terms that referred to stable traits that objectively describe people (e.g., *aggressive, introverted, sociable*.). This subset of 4504 terms, which trait researchers have called *prime trait terms*, became the starting point of future efforts to derive a set of basic personality traits.

Raymond B. Cattell. The next step toward the Big-Five Model was undertaken by Raymond B. Cattell. Cattell was responsible for advancing both the lexical and questionnaire research tracks that initially went in different directions until they were reunited in the 1970s. Cattell recognized that a list of 4504 personality trait terms was still impractically long for research studies and undertook a procedure for reducing this list. Cattell's descriptions of his procedure were sometimes imprecise and inconsistent across publications. The summary of that procedure below reconstructs as accurately as possible what Cattell did.

Cattell first added to Allport and Odbert's (1936) list of 4504 prime trait terms 100 terms from their list of temporary states or moods. Next, he and a student of literature sorted the terms into roughly 160 clusters of terms they judged to be synonyms or nearly identical in meaning (e.g., *effusive, gabby, loquacious, talkative*). Most of these clusters were bipolar, which means he paired each trait word with an opposite (e.g., *talkative* vs. *silent*). He wanted each cluster to have roughly the same number of terms, so he selected about 13 terms from each cluster to represent the cluster and discarded the remaining terms. Not satisfied with limiting his study to words from ordinary language, Cattell supplemented his clusters by adding new clusters based on technical terms from psychological research, especially terms dealing with neurosis and psychosis. He also added a cluster representing general intelligence, 9 special abilities, and 11 clusters describing interests. In some reports the total number of clusters he reports is as high as 181 or 182, but most of his publications concern research on 171 clusters (John et al. 1988).

Next, Cattell had knowledgeable acquaintances of 100 adults rate how characteristic or uncharacteristic each of the 171 clusters was in describing the target person's personality, and then Cattell computed Pearson correlation coefficients among all 171 variables. Pearson correlation coefficients represent how strongly any two ratings are related. For example, when acquaintances rated the "talkative" cluster to be characteristic of a target person, they also considered the "enthusiastic" cluster (which included the terms *enthusiastic*, *exuberant*, *high spirited*, and *lively*) to be characteristic of the same person, so ratings for these two trait clusters were highly correlated. Mathematically, Pearson correlation coefficients can range from −1.00 to 1.00.

This phase of his research was prior to the advent of computers, so the Pearson correlations had to be computed by hand using mechanical adding machines. The amount of human error in these calculations is unknown, but some clerical errors have been documented (Goldberg 1993). The result of these computations was a 14-square foot table of correlations that was so large that it had to be spread out on the floor of a gymnasium for examination. Cattell's research team literally crawled around the floor, inspecting the correlations to find the largest values. When they found correlations greater than 0.83, Cattell considered the clusters identical (measuring the same thing). Correlations between 0.45 and 0.83 were considered to indicate clusters that were similar enough to belong together. Any three clusters that belonged together he called a triad; four clusters, a tetrad, and five clusters, a pentad. By grouping the 171 clusters into triads, tetrads, and pentads, Cattell reduced the number of clusters from 171 to 67 (Cattell 1943) or 69 (Cattell 1946). Cattell later reported that he retained only 58 clusters that were replicated in further analyses. Over a period of time, by simply looking at and thinking about the content of the clusters, he dropped many of them, added others, and eventually reduced the number of clusters to 35, 36, or 42 (John et al. 1988).

Finally, using the University of Illinois' first computer, ILLIAC I, Cattell submitted ratings on the 35 broad clusters to a statistical procedure

called factor analysis. Numerous variants of factor analysis exist, but they are all designed to reduce data by identifying sets of measurements that are related to each other, yet relatively unrelated to other sets of measurements. Each set of related measurements is called a factor. Cattell employed a variant of factor analysis that included what is called *oblique rotation*, which allows the factors to overlap somewhat. This is rarely done today, as researchers prefer *orthogonal rotation*, which produces factors that are completely distinct and independent of one another. Factor analyses with oblique rotation tend to produce more factors than analyses with orthogonal rotation. Cattell's factor analysis produced 12 lexical factors.

Not satisfied with this number, Cattell added four personality constructs that he felt were necessary for covering all essential personality traits. He created a self-report questionnaire, still in use today, called the 16PF, to measure the 16 personality factors. Cattell therefore contributed to both the lexical research program by reducing Allport's list of prime trait terms to 35 clusters or 12 factors and to the questionnaire research program by constructing a questionnaire based on the lexical factors. The precise way in which the 16PF led to the Five-Factor Model in questionnaire research will be explained in the later section on this history of the questionnaire research program. The next question for the lexical research program is how Cattell's 12 lexical factors eventually became five factors.

Ernest Tupes and Raymond E. Christal. Ernest C. Tupes and Raymond E. Christal were two relatively unknown research psychologists working at Lackland Air Force Base in Texas during the 1950s and 1960s. The project that eventually gave them recognition as fathers of the Big-Five Model was an attempt to use peer ratings of personality to select pilots. Their peer rating study was motivated by a concern that self-reports could be too easily faked. Ironically, their peer rating system was never used for pilot selection out of concern that peers might provide biased ratings in order to improve their own chances of being selected.

Tupes and Christal took interest in an article by Donald Fiske (1949), who conducted a factor analysis of simplified descriptions of 22 of Cattell's clusters and reported five factors instead of 12. Fiske forwarded several possible reasons for finding five rather than 12 factors, one of which was his decision to use a rotation that resulted in relatively independent rather than overlapping factors. Tupes and Christal (1961/1992) followed up on this suggestion by reanalyzing the staff ratings and teammate ratings from Fiske's sample and the ratings from two of Cattell's samples, using orthogonal rather than oblique rotation. They similarly analyzed ratings of Cattell's 35 personality clusters with data from four new samples: three large samples of Air Force Officer Candidate School graduates and a large sample of students from the Air Force Command and Staff School Class. In all eight data sets, they found clear evidence of the same five factors, which they labeled *Surgency*, *Agreeableness*, *Dependability*, *Emotional Stability*, and *Culture*.

Scholars today agree that the discovery of the five major personality factors by Tupes and Christal might have languished in obscurity because their results were reported in an Air Force technical report, except that Warren Norman, a professor at the University of Michigan, read their report and attempted a replication with students at his university.

Warren Norman. Rather than use all 35 of Cattell's personality clusters, Norman (1963) chose four clusters that he thought best represented each of the five factors identified by Tupes and Christal. He then had members of four groups of students (ROTC seniors, two fraternity samples, and dormitory residence hall men) nominate one-third of the other members of his group who best represented one pole of a personality cluster (e.g., *talkative*) and the one-third who best represented the other pole (e.g., *silent*). The summed ratings were subjected to factor analysis with orthogonal rotation. Norman (1963) reports a clear replication of Tupes and Christal (1961/1992), although he chose slightly different names for some of the five factors.

The factor names and summary labels for the personality cluster scales used by Norman are as follows: (I) *Extroversion or Surgency* (talkative-silent; frank, open-secretive; adventurous-cautious;

sociable-reclusive), (II) *Agreeableness* (good-natured-irritable; not jealous-jealous; mild, gentle-headstrong; cooperative-negativistic), (III) *Conscientiousness* (fussy, tidy-careless; responsible-undependable; scrupulous-unscrupulous; persevering-quitting, fickle), (IV) *Emotional Stability* (poised-nervous, tense; calm-anxious; composed-excitable; not hypochondrical-hypochondriacal), and (V) *Culture* (artistically sensitive-artistically insensitive; intellectual-unreflective, narrow; polished, refined-crude, boorish; imaginative-simple, direct). This ordering of the five factors, complete with Roman numerals, became a standard in subsequent lexical research (e.g., Hofstee et al. 1992).

Norman ended his article by quoting and commenting on the following concluding remarks in Tupes and Christal's technical report, "It is unlikely that the five factors identified are the *only* fundamental personality factors. There are quite likely other fundamental concepts involved among the Allport-Odbert adjectives on which the variables used in the present study were based [p. 12]" (Norman 1963, p. 582). Norman (1963) suggested that the next step in the lexical research program should be "to return to the total pool of trait names in the natural language – there to search for additional personality indicators not easily subsumed under one or another of these five recurrent factors" (p. 582).

Returning to the total pool of trait names is exactly what Norman (1967) did in subsequent research. He repeated what Allport and Odbert (1936) had done with the 1925 unabridged edition of *Webster's New International Dictionary*, using the more recent third edition of *Webster's New International Dictionary*. Although he reported finding about 9046 additional trait words, he said that most of the "new" terms were previously identified words with added prefixes or suffixes. Only 171 truly new words were added to the Allport and Odbert list. From this complete list, Norman selected what he considered to be 2800 prime trait terms. He reduced this set of terms to 1431 by eliminating terms that University of Michigan students had trouble understanding. He then organized these 1431 terms into 75 categories based on his understanding of their similarities in meaning. However, he did not subject his set of trait terms to factor analysis. That task was undertaken by Lewis R. Goldberg.

Lewis R. Goldberg and John M. (Jack) Digman. Despite the apparent potential of the five recurring personality factors for providing a basic taxonomy for personality research, that potential was not realized until decades later. Critiques of personality assessment during the late 1960s and throughout the 1970s virtually stopped the publication of personality measurement research in what was sometimes called "the decade of doubt" (Digman 1996). Robert Hogan, today one of the most important personality psychologists in the history of the Big-Five Model, reported (Hogan and Foster 2016) "In the late 1960s and early 1970s, there was a wall of resistance against personality assessment in academic psychology. The first 13 papers R. Hogan submitted for publication came back without being reviewed. Editors said things like 'Everyone knows personality assessment doesn't work, so we're not going to review this paper'" (p. 40).

Lewis R. Goldberg of the University of Oregon and the Oregon Research Institute helped to make personality measurement research acceptable again by extending the work of Warren Norman. Goldberg administered Norman's 1431 trait terms, along with some additional terms, to a sample of university students. This methodology differs considerably from prior lexical research in that research participants rated themselves on hundreds of individual trait words rather than being rated by others on clusters of personality traits. When he summed the 1431 ratings according to Norman's 75 categories and submitted the scores to factor analysis, they produced the familiar five-factor structure. The Zeitgeist was still negative for personality measurement research, however. Instead of publishing his results in peer-reviewed journals, Goldberg presented them in a symposium organized by Jack Digman for the annual meeting of the Western Psychological Association (Goldberg 1980) and described them in two invited book chapters (Goldberg 1981, 1982). In his 1981 chapter, he coined the term "big five" (in lower case and in quotation marks). The 1980s saw an improvement in the

climate for publishing personality measurement research. By the end of the decade, Goldberg (1990) was able to publish his extensive factor analyses of Norman's trait terms.

There was another reason that Goldberg did not advocate for the Big-Five Model until 1990. In an historical review of the Big-Five Model, Goldberg (1993) said that initially he and Norman were both skeptics about the Big-Five structure. Norman's skepticism is what led him to repeat the Allport and Odbert (1936) lexical search and to develop his own 75 clusters of personality trait terms. While acknowledging throughout the 1980s that the Five-Factor Model was compelling, Goldberg (1993) wrote that he actually preferred an alternative three-factor model (general evaluation, assertiveness, and impulse expression) proposed by colleague Dean Peabody (Peabody and Goldberg 1989). Another close colleague, Jack Digman, was at first equally skeptical about the Five-Factor Model, believing that as many as ten factors were necessary to account for teachers' ratings of their students' personalities.

However, when Digman examined Cattell's studies carefully, he found clerical errors in two of Cattell's matrices (Goldberg 1993). On reanalysis of six data sets, including Cattell's data, Digman and Takemoto-Chock (1981) found a striking convergence toward the Five-Factor Model. "Regardless of whether teachers rate children, officer candidates rate one another, college students rate one another, or clinical staff members rate graduate trainees, the results are pretty much the same" (Digman and Takemoto-Chock 1981, pp. 164–65).

Digman's conclusions were echoed by Goldberg (1981). Upon analyzing Norman's 75 clusters, he wrote "it hardly matters what number of factors are extracted, since the loadings on the first five factors are always nearly the same. . . Clearly, there is something *to* this structure. It is not simply a matter of extracting a particular number of factors or using a particular type of rotational algorithm. These are data speaking for themselves" (Goldberg 1981, p. 160).

Convinced that the Five-Factor Model was the most robust, replicable model of personality trait words, Goldberg (1992) turned to the development of marker scales for the five factors. His 1992 article presents both a set of 100 individual trait words and a set of 35 bipolar rating scales anchored pair of trait words for measuring the five major personality factors. He continued to collaborate with other researchers on lexical research (e.g., Hofstee et al. 1992; Saucier and Goldberg 1998). But by the end of the 1990s, he turned his focus from individual trait words to short phrases indicative of personality (Goldberg 1999), creating a public domain website for his International Personality Item Pool (IPIP; Goldberg et al. 2006). The IPIP (http://ipip.ori.org) contains a number of different public domain inventories for measuring the Big Five with short phrases.

Digman also played a crucial role in promoting the Big-Five Model. In addition to his own publications supporting the B5M, he authored an article for the *Annual Review of Psychology* summarizing research in support of the model (Digman 1990). Digman and Goldberg both discussed at length alternative labels for the five factors. Digman preferred the label *Will to Achieve* for the Conscientiousness factor (Digman and Takemoto-Chock 1981); however, that label never became mainstream. Goldberg, on the other hand, successfully substituted the label *Intellect* for Norman's fifth factor, Culture. Goldberg (1993) noted that the culture label was an artifact of Cattell's removing intellect-related personality words in favor of an actual intelligence test. Both Digman and Goldberg also introduced a more subtle change in the labeling of the first factor, using the spelling *Extraversion* rather than Norman's *Extroversion*. *Extraversion* was the spelling preferred by the originator of the term, Carl Jung (Kaufman 2015).

During the 1980s, Goldberg and Digman's lexical research also had an enormous impact on the direction of personality questionnaire research. During this decade, major personality inventories were authored or revised to align with the Big-Five Model, and other major personality inventories began to be reinterpreted in terms of the five factors. The details of how this happened are described in the next section.

The Personality Questionnaire Research Program

A defining feature of the lexical research program is that it has been descriptive and atheoretical. The only "theory" underlying this research program is the lexical hypothesis – the assumption that, over millennia, human beings noticed important individual differences in each other and coined words for them. The job of academic psychologists in the lexical tradition has been simply to measure how people use these words to describe one another and to use statistical methods to model the basic dimensions within personality description through ordinary language.

In contrast to the descriptive, atheoretical nature of lexical research, much personality questionnaire research has involved measurement of purportedly scientific, theoretical constructs (McCrae and John 1992). Many psychologists, including Cattell, believed that personality words from ordinary language were not sufficient for a truly scientific description of personality (McCrae 1990; McCrae et al. 1993). They designed self-report questionnaires, not to measure ordinary traits such as *shyness*, but to measure constructs proposed by theorists such as Henry Murray's *need for affiliation* or *need for harm avoidance*. Cattell refused to use ordinary English words for the constructs on his questionnaire, opting for terms he made up such as *Parmia* and *Harria*.

A sampling of well-known personality questionnaires indicates a diversity of theoretical constructs. Gordon Allport's Harvard colleague, Henry Murray, devised a theory of 20 "manifest needs" that he considered to be important determinants of human behavior. This list served as the basis for two widely used personality inventories, Alan Edwards' Edwards Personal Preference Schedule and Douglas Jackson's Personality Research Form. The Allport-Vernon-Lindzey Study of Values was designed to assess adherence to the six major types of values proposed by Eduard Spranger and thought to be important in vocational choice. Jung's theory of psychological types was the basis for the Myers-Briggs Type Indicator (MBTI). Hans Eysenck developed a behavioristic-genetic-physiological theory of traits that distinguish normal people from criminals and the mentally ill and created the Eysenck Personality Inventory and Eysenck Personality Questionnaire to assess these traits. J. P. Guilford and Wayne Zimmerman's Guilford-Zimmerman Temperament Survey (GZTS) was created by factor-analyzing existing inventories of theoretical constructs. Harrison Gough constructed the California Psychological Inventory to assess *folk concepts* – the concepts used by ordinary people in everyday life to describe human behavior.

The above are but a few examples of questionnaires developed between 1900 and 1970 (see Goldberg 1971, for a more thorough review). Three noteworthy points about these inventories are as follows: (1) many bear the name of the persons who developed them; (2) each developed a loyal following devoted to the theory behind the inventory; and (3) researchers devoted to a particular inventory tended to work in isolation of research based on other inventories. As a consequence, it was difficult to see if these inventories were really measuring different concepts or whether they measured something in common. Order within the cacophony of questionnaire research did not emerge until the construction of new personality inventories by Robert Hogan and by Paul T. Costa, Jr. and Robert R. McCrae.

Robert Hogan. Robert Hogan was a student of Harrison G. Gough, author of the California Personality Inventory (CPI). After conducting research with the CPI for several years at Johns Hopkins University, Hogan decided it would be more convenient to create his own personality inventory for research and consulting. Well aware of the Norman (1963) study, Hogan chose to construct his inventory around the five factors described by Norman. As a first step toward constructing such an inventory, he worked with graduate student John A. Johnson to see if the CPI could be scored to yield scores on Norman's factors (Johnson 1997). Hogan then placed Johnson in charge of constructing the initial item pool and developing the preliminary scales for a new inventory, the Hopkins Personality Inventory. After Johnson and Hogan left Hopkins, Hogan revised and renamed the inventory, publishing it as the Hogan Personality Inventory (HPI; Hogan

1986; Hogan and Hogan 1992). Hogan Assessment Systems has used the HPI successfully in hundreds of studies of personnel selection and organizational behavior.

Paul T. Costa, Jr. and Robert R. McCrae. As indicated in the earlier section on Raymond Cattell, Cattell's 16PF questionnaire contained 16 different scales. Paul T. Costa, Jr. and Robert R. McCrae had included the 16PF in a major longitudinal study, but they believed that the scales of the 16PF were too redundant, with overlapping meanings. They therefore conducted a cluster analysis on the items in the 16PF (Costa and McCrae 1976). Two item clusters revealed by the analysis were Neuroticism and Extraversion, familiar dimensions in the history of personality questionnaires, especially due to the research of Eysenck (Goldberg 1971). The third cluster, Openness to Experience, was rarely discussed in the literature. Believing that they could write better items to measure these three domains more validly, McCrae and Costa (1983) authored their own inventory, which they called the NEO Inventory. It contained three "domain scales" to measure the factors N, E, and O, but each of the domain scales contained six "facet scales" that measured narrower aspects of each domain. For example, Neuroticism contained facet scales for anxiety, angry hostility, depression, self-consciousness, impulsiveness, and vulnerability.

In 1978 Costa and McCrae moved from Boston to accept new positions with the National Institute of Aging in Baltimore, where they joined the Baltimore Longitudinal Study of Aging (BLSA). Shortly after their arrival in Baltimore, Hogan invited them to Johns Hopkins where he and his graduate students presented a seminar on the HPI project. Hogan tried to convince Costa and McCrae that their NEO measured only three of the important five factors identified by Norman. Costa and McCrae left the seminar in disagreement with Hogan. Costa argued (much as Allport might have) that Agreeableness and Conscientiousness were merely "social evaluations" rather than substantial personality traits. Agreeableness reflects our personal like or dislike of people, and Conscientiousness reflects whether they share our moral values, he said. According to Costa, these dimensions say more about observers' personal values than about the objective personalities of the people they are judging.

However, soon after the meeting at Hopkins, Costa and McCrae became aware of the work presented by Digman and Goldberg at the WPA symposium in Hawaii. They invited Lewis Goldberg to present his research at the NIA Gerontology Center in Baltimore in 1983. Digman's and Goldberg's data convinced Costa and McCrae that Agreeableness and Conscientiousness were important domains, so they created two scales for their inventory and renamed the NEO Inventory the NEO Personality Inventory (NEO PI; Costa and McCrae 1985). Perhaps because they were aware of the imminent publication of the HPI (Hogan 1986), Costa and McCrae's NEO PI was rushed to press without the development of facet scales for Agreeableness and Conscientiousness. These facet scales were developed later and were included in a revised version of the NEO PI (NEO PI-R; Costa and McCrae 1992).

Once the NEO PI was published, Costa and McCrae's research program became the most influential force promoting a Five-Factor view of personality questionnaires. Costa and McCrae had at their disposal one of the largest longitudinal databases in the world. Participants in the BLSA had already completed a large number of personality measures and had also provided personality ratings from informants who knew them well. Whenever Costa and McCrae wanted to test a new measure, they could administer it to the BLSA participants. To demonstrate the power of the Five-Factor Model, Costa and McCrae methodically compared scores on their NEO PI and NEO PI-R to scores on all of the major personality inventories. From their results they argued that all major inventories measured at least some of the five factors, and none produced important information beyond the five factors. The B5M/FFM became a kind of standard against which any other measure could be compared, and the NEO PI-R became the most widely used personality questionnaire in FFM research.

Although the lexical research program and questionnaire research program became integrated when Costa and McCrae incorporated

Agreeableness and Conscientiousness into the NEO PI-R, certain unresolved issues remained. Debates about the best way to conceptualize the factors continued, especially about the fifth factor, usually labeled Intellect in the B5M and Openness to Experience in the FFM. Further research was necessary to see whether the rating scales employing trait adjectives or questionnaires employing full-sentence items were preferable. Finally, researchers continued to investigate ways of dividing the five broad factors into narrower components and ways of combining the five factors into higher-level superfactors. These topics are addressed in the next major section of this entry.

Current Issues in Big-Five Model Research

Conceptualizing the Big Five Factors

Discerning the meaning of factors produced by any factor analysis always involves subjective judgment on the part of the researcher. These judgments are informed by the magnitudes of *factor loadings* for the factor. A factor loading can be thought of as the correlation between an item and a factor. Factor meanings are derived by locating the items with the highest loadings on the factor and intuiting a common theme running through the items. For example, the following items in Norman's (1963) rating study showed high loadings on Factor I in sample C: talkative-silent (0.90), frank, open-secretive (0.78), adventurous-cautious (0.79), and sociable-reclusive (0.86). (These items also showed similarly high loadings in the other samples.) Norman decided that the common theme running through these items is the same theme identified by Tupes and Christal (1961/1992) in their analyses of these items, alternatively called *Extroversion* or *Surgency*.

Norman (1963) also chose labels that were the same or similar to the labels used by Tupes and Christal (1961/1992) for the remaining factors. Both labeled Factor II *Agreeableness*. Tupes and Christal labeled Factor III *Dependability* and Norman labeled this factor *Conscientiousness*. Both used *Emotional Stability* to label Factor IV and *Culture* to label Factor V.

But judging the similarity of factors in different studies requires more than simply comparing the labels used in each study. What matters is whether the same items show similarly high loadings across studies. In this case, the four items with the highest loadings on Factor III in the Norman (1963) study also showed high loadings in the Tupes and Christal (1961/1992) study. This implies factor similarity across the studies despite the different labels. Assuming that the labels *Dependability* and *Conscientiousness* indicated different interpretations of the factor would have been an example of what Jack Block (1995) called the *jangle fallacy*. The jangle fallacy refers to mistakenly assuming that different labels for two psychological measures imply two different psychological concepts.

Determining whether factors are the same across studies becomes more complex when the same items are not used in each study because one cannot compare item factor loadings. Although Costa and McCrae's (1992) NEO PI-R had its origin in a cluster analysis of Cattell's 16PF, which itself was derived from ratings that led to the lexical Big Five, the fifth factor in the NEO PI-R questionnaire is labeled *Openness to Experience* rather than *Intellect*. Although the content of items in the Openness to Experience scale seems similar to trait terms that define the Intellect factor in lexical studies, McCrae (1990) has claimed that the technical, scientific concept *Openness to Experience* is not well represented in ordinary language. He admitted that a number of trait words from one lexical measure of Intellect (*artistic*, *clever*, *imaginative*, *ingenious*, *insightful*, *inventive*, *original*, *sharp-witted*, and *witty*) do partially describe Openness to Experience, but he pointed out that other trait words from this Intellect scale showed higher loadings on one of the other four factors. He concluded that "the fifth factor identified in lexical studies is best interpreted as a variant of the more psychologically fundamental dimension of *Openness to Experience*" (McCrae 1990, p. 123) and asserted that the facets of the NEO PI-R Openness to Experience scale cover the domain of the fifth factor more completely than any lexical scale.

McCrae's assertions did not, however, close the debate on the best interpretation of the fifth factor. In 1994, an entire special issue of the *European Journal of Personality* was devoted to articles on interpretations of the fifth factor (de Raad and Van Heck 1994). McCrae maintained his position in his contribution to the special issue. As indicated earlier in the section on the history of personality questionnaires, questionnaire authors tend to remain committed to the conceptual basis of their questionnaires. In contrast to McCrae, several other contributors to the special issue independently suggested that the core of the fifth questionnaire factor is better represented by the Openness to Aesthetics and Openness to Ideas facets of the NEO PI-R Openness scale than the other four Openness facets. They concluded that the conceptual core of Factor V, revealed by both questionnaire research and lexical studies, is best represented by the label *Creative Intellect* or *Imagination*.

Interpretation of the other four factors has been much less contentious, although there have been disagreements about where particular traits belong in the Big-Five Model. Johnson and Ostendorf (1993) reviewed these disagreements before proposing a way to resolve them. They noted that some researchers believe that positive emotions are an aspect of Extraversion, while others locate positive emotions in Agreeableness. Some researchers conceptualize Conscientiousness as a proactive tendency to methodically strive toward the achievement of goals. This interpretation locates *ambition* as part of Factor III and aligns with Digman and Takemoto-Chock's (1981) view of this factor as *Will to Achieve*. Other researchers regard Conscientiousness as a restraining force, a denial of antisocial impulses leading to conformity to social expectations and norms. For them, ambition is energetic social engagement reflected in the term *Surgency*, an alternative label for Extraversion. Researchers who favor the proactive view of Conscientiousness see conformity as an aspect of Agreeableness and nonconformity as an aspect of Openness to Experience.

Johnson and Ostendorf (1993) further observed that *Impulsivity* has been a particularly slippery concept in psychology. Eysenck initially saw impulsivity as part of Extraversion until he relocated the concept to his Psychoticism dimension, often interpreted as low Agreeableness and low Conscientiousness in the B5M (McCrae and John 1992). In Costa and McCrae's (1992) NEO PI-R, impulsivity is a facet subscale within their factor IV domain scale, Neuroticism. Finally, Johnson and Ostendorf (1993) noted that the location of terms related to intelligence such as *intelligent*, *intellectual*, and *perceptive* has depended upon how a researcher conceptualized Factor V. Those favoring the lexical view of the fifth factor as Intellect have located intelligence-related terms within this factor, while those favoring an Openness view of the fifth factor have located such terms within Factor III.

Johnson and Ostendorf's (1993) resolution to these disagreements (see also Johnson 1994a) drew upon an extension of the five-factor lexical model called the Abridged Big Five-Dimensional Circumplex (AB5C; Hofstee et al. 1992). The impetus for the AB5C model was the observation that the very best efforts to identify a set of personality trait words that show high loadings on one and only one factor (e.g., Goldberg 1992) have not been totally successful. Hofstee et al. (1992) decided that this is because very few – if any – personality trait words reflect only one factor. More often, trait words show appreciable factor loadings on two or more factors. If one were to completely specify a particular trait word in terms of the orthogonal Big-Five factors, one would have to include its loadings on all five factors. Geometrically, each trait word would be represented by a point in five-dimensional hyperspace, with the five loadings corresponding to the coordinates on the five axes.

Fortunately, Hofstee et al. (1992) argue, a five-dimensional model is not necessary because most personality terms show only one appreciable secondary factor loading in addition to the main loading. Personality terms can therefore be located in one of the ten two-dimensional planes defined by a pair of Big-Five factors, hence the expression "Abridged Big Five-Dimensional Circumplex" (AB5C). For example, the terms *alert*, *ambitious*, *firm*, and *purposeful* showed a

primary positive loading on Conscientiousness with a secondary positive loading on Extraversion (Hofstee et al. 1992). In AB5C terms, they would be classified as III+ I+ traits. In contrast, the terms *careful*, *cautious*, *punctual*, *formal*, *thrifty*, *principled*, and *circumspect* show a primary positive loading on Conscientiousness but a secondary negative loading on Extraversion (denoting a tendency toward introversion). These terms would therefore be designated III+ I−. Such differences in secondary loadings, Johnson and Ostendorf (1993) argue, could explain differences in the way researchers conceptualize and measure the five factors and locate trait terms within the factors. A researcher who conceptualizes Factor III as organized purposefulness is likely to use a measure of that dimension that contains many III+ I+ items. A second researcher who conceptualizes Factor III as inhibitory impulse control is more likely to use a measure of that dimension that contains many III+ I− items. The fact that term such as *ambitious* shows appreciable loadings on both Conscientiousness and Extraversion could explain why some researchers locate the term on Factor III and some on Factor I.

Geometrically, all of the III+ I+ and III+ I− terms listed above (as well as I+ III+, I+ III−, I−III+, I−III−, III−I+, and III−I− terms) can be graphed in a plane where Extraversion forms the vertical axis and Conscientiousness the horizontal axis (Hofstee et al. 1992). Their exact distance and direction from the origin (0,0) can be defined by coordinates representing the magnitudes of loadings on the two factors. Hofstee et al. (1992) suggested a further simplification, ignoring the distance from the origin and projecting all Conscientiousness-Extraversion-related terms onto a circle (circumplex) with its center at the origin. The terms would then be described simply by their degree location within the 360° circle. Within the Factor I x Factor III circumplex, some terms with their two highest loadings on these factors will have secondary loadings that are so relatively small that they will appear within 15 degrees of either the Factor I or Factor III axes. These I+ I+ or I−I− and III+ III+ or III−III− terms Hofstee et al. (1992) called *factor pure*. Other terms lie between the axes but closer to one than the other. For example, *ambitious* lies closer to III+ than I+ and is therefore designated as III+ I+, an extraverted form of conscientiousness. A I+ III+ term such as *competitive* lies closer to Extraversion than Conscientiousness and is therefore seen as a conscientious form of extraversion.

By taking into account the secondary loadings of personality trait terms, the AB5C lexical model can account for variations and commonalities in the measurement and interpretation of the five factors. For example, Factor V scales originating in the work of Norman (1963) and Goldberg (1992), who interpreted the factor as *Culture* or *Intellect*, respectively, were found to have a V+ III+ (*controlled intellect*; see Peabody and Goldberg 1989) character. In contrast, the Factor V scale based on adjectives chosen by McCrae and Costa (1985), who interpret Factor V as *Openness to Experience*, had a V+ I+ (*expressive intellect*; see Peabody and Goldberg 1989) character. Hogan and Johnson (1981) authored two different sets of Factor V adjective scales. The first they initially called *Intellectance*, later renamed *Mentality* (Johnson 1997), which was designed to reflect an Intellect version of the factor, and a second scale they initially called *Ego Control* and, later, *Novelty* (Johnson 1997) which is similar to Openness to Experience. The *Intellectance/Mentality* scale was found to have a V+ III+ character, while the *Ego Control/Novelty* scale had a V+ I+ character.

According to Johnson and Ostendorf's (1993) analyses, researchers who measured the Big Five with trait adjectives chose adjectives whose secondary loadings supported their preferred variant of each factor (e.g., Factor V as Intellect vs. Openness to Experience; Factor III as organized purposefulness vs. inhibitory impulse control). Johnson (1994a, b) found that personality questionnaire scales from different research programs also showed different secondary factor loadings when mapped onto the AB5C model.

Although the AB5C model can explain different interpretations of the five factors, it cannot say which interpretations are more absolutely correct or fundamental. There are no grounds for saying that organized purposefulness (III+ I+) or

inhibitory impulse control (III+ I−) is a better way to conceptualize or measure Conscientiousness. Furthermore, there is no absolutely correct rotation of a pair of factors in defining any of the ten circumplexes in the AB5C model. Prior to the AB5C model, McCrae and Costa (1989) observed that the Wiggins Interpersonal Circumplex, defined by a vertical axis of status (dominant vs. submissive) and a horizontal axis of love (warm vs. coldhearted) was a 30–45° rotation of a circumplex defined by their Extraversion and Agreeableness factors. To McCrae and Costa, Wiggins' *dominance* is a disagreeable form of their own Extraversion, while Wiggins' *warmth* is an agreeable form of Extraversion. But from Wiggin's perspective, Extraversion could be called a warm form of dominance and Agreeableness a submissive form of warmth.

Johnson and Ostendorf (1993) and Johnson (1994a), although affirming that the five factors cannot be absolutely, objectively defined, offered a method of resolving differences across lexical and questionnaire research programs. They suggested aggregating data from theoretically diverse measures of the five factors and then applying Hofstee et al.'s AB5C algorithm. Items mapped as "factor pure" (e.g., I+ I+, I−I−, II+ II+, etc.) from the aggregated data would represent a core of agreement across diverse research programs. In their analyses they found the following consensual cores for each factor: Factor I, social communicativeness (*extraverted*, *frank/open*, *fun-loving*, *sociable*, *talkative*, *straightforward*); Factor II, softness (*acquiescent*, *mild/gentle*, *soft hearted*); Factor III, constraint (*careful*, *fussy/tidy*, *hard-working*, *neat*, *punctual*, *scrupulous*, *thrifty*, *well organized*); Factor IV, freedom from negative affect (*calm*); and Factor V, creativity (*artistic*, *creative*, *imaginative*).

Preferred Formats for Assessing the Big-Five Factors

Despite the fact that the B5M/FFM originated in analyses of individual trait adjectives, trait-adjective scales such as those proposed by Goldberg (1992) have been used in research and practice far less often than questionnaire measures of the five factors. Goldberg (1999) provides three reasons why individual trait words are not ideal for personality assessment. First, the finite number of trait words in any language limits researchers' ability to assess complex nuances of personality. Second, trait adjectives and type nouns are relatively abstract. This abstractness can be associated with ambiguity about the meanings of these words without behavioral or contextual specification. Third, one-to-one translations of single words often cannot be found across languages, limiting international, collaborative research. Also, researchers such as Block (1995) and McCrae (1990; McCrae et al. 1993) have questioned whether words from ordinary language can be sufficient for a scientific analysis of personality, because a mature science (e.g., physics) uses concepts that transcend the appearances found in ordinary experience and expressed in everyday language. Astronomy tells us that the earth orbits the sun rather than vice versa, biology tells us that whales and bats are mammals like us, not fish or birds, and physics tells us that time is relative rather than absolute.

Consequently, Hofstee et al. (1992) and Goldberg (1999) recommended assessing personality with short phrases rather than individual trait words from ordinary language. This is the format of items in the International Personality Item Pool (IPIP; Goldberg et al. 2006), which contains several inventories for assessing the five factors, and the items in the widely used Big-Five Inventory (Soto and John 2016). Very short, adjective-based measures such as the Ten-Item Personality Inventory (TIPI; Gosling et al. 2003) continue to be used in projects with serious time constraints, but questionnaires employing short phrases or sentences are used more often, particularly when researchers want to assess subdomains of the Big-Five factors (e.g., Johnson 2014). The NEO PI-R remains a widely used personality questionnaire for measuring the five factors and is sometimes called the "gold standard" for Five-Factor measurement (Muck et al. 2007).

Big-Five Subfactors and Superfactors

Cattell. The Big-Five Model has almost always been seen as *hierarchical*, which is to say that each of the five broad traits in the model has

been defined by a cluster or interrelated, narrower traits or subfactors. Each of Cattell's (1943) basic, lexical rating scales was not a single trait adjective, but, rather, the labeling of a set of adjectives judged by Cattell to have a common underlying meaning. For example, he listed his first rating variable (Cattell 1943, p. 490) as follows:

Alert	*Absent-minded*
Observant, vigilant, omnipercipient	Dreamy, indefinite, depersonalized

Therefore, even each basic rating scale in Cattell's original study was hierarchical, representing a broader meaning perceived by Cattell in a set of individual trait words. Cattell then clustered his 171 ratings even further by identifying ratings that correlated empirically. His resulting 60 clusters therefore represented yet another hierarchical level – clusters of adjective clusters.

In subsequent rating studies (e.g., Cattell 1947), Cattell augmented the 35 rating scale clusters he retained for factor analyses by adding descriptions of each pole of the rating scales. Raters were no longer given rating scales anchored only by sets of trait words. Instead, the rating scales contained Cattell's summary interpretations of each pole. For example, instead of a scale anchored by *Cooperative*. . . *Obstructive* (with a few trait adjectives listed under each term; Cattell 1943), Cattell (1947, p. 201) used the following rating scale:

1. *Readiness to cooperate*	2. *Obstructiveness*
Generally tends to say yes when invited to cooperate. Outgoing. Ready to meet people at least halfway. Finds ways of cooperating despite difficulties	Inclined to raise objections to a project, cynical, or realistic. "Cannot be done." Uninterested or unfavorable attitude to joining in. Inclined to be "difficult"

These written descriptions encompassed a range of behaviors, perhaps introducing yet another level of hierarchical abstraction. Cattell's description-enhanced rating scales were the rating scales used by Tupes and Christal (1961/1992) and by Norman (1963). Therefore, when the Big Five were identified by these researchers as five very general, abstract dispositions, Cattell had already created, through his own personal judgment, several layers of hierarchical organization beneath the Big Five.

Norman and Goldberg. Subsequent lexical studies by Norman (1967) and Goldberg (1990) returned to the level of individual trait adjectives, but, again, trait words that were judged to be similar in meaning were grouped together to form synonym clusters. Goldberg (1990) demonstrated that factor-analyzing Norman's 75 clusters yielded the Big Five, but he questioned whether it was necessary to include all 1431 of the adjectives chosen by Norman and whether one might group the adjectives differently, using more objective techniques. Goldberg (1990) therefore selected 479 terms from Norman's list and regrouped them into 133 synonym clusters with the help of lexicographers using dictionaries and synonym finders. After collecting new ratings on the 479 terms, Goldberg (1990) further reduced the terms to 339 trait adjectives organized into 100 clusters. Goldberg (1990, p. 1223) described the factors that emerged from a factor analysis of the 100 clusters as "nearly perfect examples of the Big-Five." The 100 clusters (25 for Extraversion, 32 for Agreeableness, 23 for Conscientiousness, 9 for Emotional Stability, 11 for Intellect) remain as one standard intermediate level between individual trait adjectives and the broad lexical Big Five.

Hogan. Before items were written for the earliest version of the Hogan Personality Inventory, Robert Hogan (1986) had his graduate students think of as many different ways a person could present himself or herself to create an impression on the Big Five. For example, Hogan's students thought of six ways people present themselves as agreeable or likeable: being easy to live with, being even tempered, caring about others, trusting others, liking people, and taking others' opinions into consideration. These six Factor II categories became targets for writing items. After data for these provisional items were collected, item analyses confirmed which items were answered similarly within each category of each Big Five dimension. These item clusters, generally varying in length between three and eight items, were called *homogeneous item composites* or HICs. Further analyses after additional data collection

led to reassignment of some items to other HICs and even some HICs to other Big-Five factors (Hogan and Hogan 1992). Some of the HIC reassignments contradicted typical ways of thinking about lower levels for the Big Five. For example, the *Not Depressed* HIC was reassigned from Adjustment (Hogan's label for Emotional Stability) to Ambition (One of two HPI Extraversion scales) because Hogan observed that ambitious people are rarely depressed.

Costa and McCrae. In the questionnaire tradition, Costa and McCrae's (1995) facet subscales remain the most widely used scheme of organizing the Big Five into narrower traits. Costa and McCrae (1995) arrived at their facets by compiling a list of traits that have been widely discussed in the literature on trait measurement and choosing six traits that they thought best represented each of the Big Five domains. For example, they decided that Neuroticism (the opposite end of Emotional Stability) was best represented by Anxiety, Angry Hostility, Depression, Self-Consciousness, Impulsiveness, and Vulnerability. They confirmed their rational assignment of items to these facet subcategories and facets to the five domains by statistical analyses.

Intermediates between facets and domains. DeYoung et al. (2007) demonstrated that it is possible to assess personality at an intermediate level between Costa and McCrae's facets and the broad Big-Five domains. By factor-analyzing facet scores from the NEO PI-R and an IPIP version of AB5C facet scales within each of the five domains, DeYoung et al. (2007) found two factors within each domain that were broader than facets but narrower than the Big Five. Ten-item IPIP scales were developed to assess each of the ten intermediate aspects of the Big Five and were placed in the public domain at http://ipip.ori.org/BFASKeys.htm.

Superfactors. Others have proposed that the Big Five traits themselves are interrelated, forming even broader superfactors. Five orthogonally rotated factors from any factor analysis are statistical abstractions that are forced to be independent of one another. But the actual rating scales or questionnaire scales from different Big-Five domains do in fact correlate with one another and should therefore be considered to point to higher-level factors.

Typically, when oblique rather than orthogonal rotation is used, researchers have found that Agreeableness, Conscientiousness, and Emotional Stability form one higher-order factor, while Extraversion and Intellect (or Openness to Experience) form a second higher-order factor (Digman 1997). Digman labeled the first superfactor α and the second superfactor β. Digman discussed the α and β superfactors from a number of different theoretical perspectives and concluded that α represents the dispositions that encourage normative moral development, accommodating one's self to the expectations of society. Indeed, the three Big Five traits under α are the traits that tend to increase over the life course. In contrast, Digman interpreted superfactor β as a tendency toward self-enhancement, personal growth, and the achievement of status and power. The typical developmental path for the two Big Five traits under β is curvilinear: an increase during the first part of the life course and a decrease toward the end. DeYoung et al. (2002) provided an additional interpretation of α and β, which they call *Stability* and *Plasticity*, in terms of the serotonergic and dopaminergic neurotransmitter systems. They suggested that Stability encourages conformity, while Plasticity discourages conformity.

Finally, Musek (2007) has suggested that if the α/Stability and β/Plasticity second-order factors are allowed to correlate through oblique rotation, one can also posit a third-order general superfactor, similar to the *g* factor in intelligence research. Musek (2007) discusses possible interpretations of the General Personality Factor or GPF. Noting that the GPF represents a blend of all aspects of personality that are positively valued, he dismissed the idea that the GPF is just an artifact of biased responding. Instead, he suggested that the GPF represents a profile of positive emotionality, motivation, well-being, and self-esteem.

Conclusion

Despite the uncertain, nebulous path provided by Cattell's initial reduction of Allport's 4504 prime trait terms into 12 or 16 personality factors, the Big-Five Model eventually emerged from

Cattell's work as a clear, widely accepted framework for conceptualizing the universe of personality traits at a broad level. As with any scientific model, the BFM has not been without critics (e.g., Block 1995; McAdams 1992). Furthermore, a number of issues about the BFM have not been fully resolved. These include the best way to conceptualize and measure each of the Big-Five domains, the replicability of the Big-Five across cultures and languages, whether significant factors beyond the Big Five exist, the optimal way of dividing the Big Five into subfactors, and whether the Big Five should be combined into superfactors.

Nonetheless, progress on these issues has been achieved, and research on the Big Five has given a clear picture of their genetic origin, development over the life span, and ability to predict significant life outcomes. Initially a purely descriptive endeavor involving ordinary language, Big-Five theorizing has grown to include concepts ranging from neurotransmitters to dyadic interactions to human evolution (Wiggins 1996). The documented success of the Big-Five Model for organizing and generating personality research has led to a wide acceptance of the model today.

Cross-References

- ▶ Agreeableness
- ▶ Allport, Gordon
- ▶ Conscientiousness
- ▶ Extraversion
- ▶ Hogan, Robert
- ▶ Lexical Approach
- ▶ Neuroticism
- ▶ Openness

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Bigotry

▶ Prejudice

Binge Drinking

▶ Personality and Alcohol Abuse

Binge-Eating Disorder

▶ Personality and Eating Disorders

Biofeedback

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Synonyms

Brain-computer interface; Neurofeedback; Operant conditioning of physiological activity; Psychophysiological intervention

Definition and Introduction

Biofeedback is an interventional method that enables a person to develop or to increase voluntary control over his/her physiological activity for the purposes of improving health or performance. It is based on the measurement and feedback of physiological body signals (biosignals), using technological equipment. Biosignals are assessed in real-time and in a noninvasive manner via sensors that are attached to a patient's body. Corresponding software processes and transforms the acquired data into a feedback, which is presented to the patient (visual, auditory, or tactile).

Basically, biofeedback is founded on the assumption that dysfunctional bodily sensations (e.g., pain) or psychological states (e.g., distress, concentration) co-occur with specific patterns of physiological activity. Biofeedback shall enable patients to modify this physiological activity via implicit or explicit learning. The resulting

changes in physiological activity are supposed to alleviate undesired symptoms or to modify related mental states. In repeated training sessions and transfer practices, the patient learns how to induce and maintain changes, even without the technological equipment. Given its high versatility and acceptance, biofeedback is currently used in various applications for the improvement of physical and mental health.

Principles of Biofeedback

The development of biofeedback was fueled by experimental findings from the 1950s and 1960s. The findings indicated the possibility to modify bodily reactions (e.g., activity of the autonomic nervous system [ANS]) via learning principles. Research then detected the potential for voluntary self-regulation of physiological activity that might be exploitable for therapeutic applications, given a premise of existing mind-body interactions in human health (Schwartz and Andrasik 2017).

Examples of physiological factors being associated with bodily or mental symptoms are increased muscle tension in tension-type headache or back pain, excess theta waves (4–7 Hz) and decreased power of the sensorimotor rhythm (12–15 Hz) in the electroencephalogram (EEG) of children with attention deficit hyperactivity disorder (ADHD) or reduced heart rate variability (HRV) in individuals with depression. Thus, physiological parameters targeted in biofeedback vary according to the respective problem or diagnosis.

Some prominent examples include muscle activity assessed with electromyographic (EMG) measures (for bruxism, tension-type headache, back pain, incontinence); skin conductance and skin temperature; cardiovascular parameters, such as heart rate and HRV (for stress management and general regulation of ANS activity); blood pulse amplitude (migraines) or blood pressure (hypertension); and brain activity (e.g., in ADHD, substance use disorders, or epilepsy). The latter is also referred to as *neurofeedback* (or EEG biofeedback).

Besides this foundation, individual diagnostic assessments prior to the treatment aid to identify the physiological parameters that mark an individual's reactivity. These parameters may then serve as targets for biofeedback in a tailored-treatment approach. Due to the assumed reciprocal relationship, restoring a functional range of such physiological parameters should in turn influence symptoms in a positive way. Thus, learning to regulate one's own physiological activity shall ameliorate negative and undesired sensations and psychological states.

The most prominent principle of biofeedback is *operant conditioning*, based on the feedback mechanisms of the method. In line with this basic learning principle, biofeedback provides rewarding feedback whenever the trained physiological activity is in the desired direction or range (e.g., via green bar diagrams, fluent presentations of videos, animations, or acoustic material), increasing the probability of this activity. On the other hand, inhibitive feedback can be provided whenever the trained physiological activity surpasses desired ranges (e.g., via red bar diagrams or acoustic signals), which shall reduce the occurrence of such events.

Through repeated training sessions with feedback and a gradual *shaping* of the desired physiological "behavior," physiological activity can be modulated. The feedback can also help the subject to identify individual strategies that lead to physiological activity in the desired ranges (e.g., relaxation techniques, imagery, posture changes). These strategies may then be performed outside of the therapeutic context to transfer effects into everyday life. However, explicit cognitive efforts may not be necessary due to implicit learning processes.

Another relevant learning principle in biofeedback treatments is *classical conditioning*. Repeated coupling of specific cues (e.g., images used in the sessions) with physiological and mental states (e.g., enhanced sensorimotor rhythm in the EEG and increased attention) during training sessions may lead to new stimulus-response relations based on associative conditioning. In turn, the use of respective image cues (e.g., in the form of small trigger cards) in the classroom may automatically improve a pupil's physiological and mental level of attention and concentration. Here, beneficial effects

of the biofeedback can even occur without any conscious efforts or strategies.

Besides these learning processes on physiological pathways, psychological changes in perceived *self-control* and *self-efficacy* play an important role in biofeedback. Repeated experiences of successful control over bodily processes can enhance an individual's experienced control and perceived agency regarding the symptoms. This will in turn enhance self-efficacy so that an individual would show adaptive coping behavior. Further, the experience of self-efficacy may provide pathways to reduce hopelessness, as often being associated with chronic conditions (Wickramasekera 1999).

Finally, the improvements of *interoception* (i.e., the awareness of and ability to perceive internal bodily states) may constitute a mechanism of action in biofeedback treatments. The continuous confrontation with and concentration on bodily responses can increase an individual's sensitivity to changes in physiological activity. In consequence, patients should be enabled to detect and alter undesired physiological changes at an early stage and may likely prevent the occurrence of manifest undesired symptoms or states.

Applications of Biofeedback

Classical applications of biofeedback encompass treatments in the field of behavioral medicine; for example, medical conditions associated with pain (headaches, back pain, fibromyalgia, pelvic pain) manifest cardiovascular conditions (hypertension), respiratory conditions (chronic obstructive pulmonary disease), sleep disorders (insomnia), or muscular and visceral dysfunction (urinal and fecal incontinence). Besides, biofeedback is employed in rehabilitation, for example as a training method to reduce palsy or improve gait and posture in patients who experienced accidents or strokes.

Further, biofeedback supplements psychological treatment of mental disorders. One prominent example is the application of neurofeedback to improve concentration in children with ADHD. Other targets are mental disorders associated with dysfunctional ANS reactivity (e.g., anxiety, panic disorder, depression) and general or posttraumatic stress management. Lastly, biofeedback can serve as a means to demonstrate psychophysiological relationships to a patient as a tool in cognitive therapy. Visualizing the interactions of mind and body can alter dysfunctional illness perceptions.

Within the last years, there have been additional attempts to apply biofeedback for general enhancement of performance or modifications of undesired psychological states in nonclinical groups. Among others, targets of these trainings were enhancements of general well-being and creativity or of professional, musical, or sports performances (Gruzelier 2014). There are also current approaches that combine mindfulness and relaxation techniques with biofeedback or integrate biofeedback into coaching settings. Moreover, undesired behaviors with detrimental effects on health (e.g., overeating, smoking, drinking) have gathered attention as potential applications of biofeedback (Schmidt et al. 2017).

Structure of Biofeedback Sessions

In general, biofeedback consists of multiple training sessions (usually 5–30, depending on the purpose) in regular intervals. Training sessions are usually guided by a therapist. She or he attaches the sensors, initially explains the interactive effects of mind and body to the patient/client, and demonstrates the objectively assessed physiological activity using the equipment. This supports the internalization of a biopsychosocial view on the perceived states and symptoms. The therapist then instructs the patient/client throughout the sessions, assures adequate signal quality of the acquired biosignals, is responsible to determine and adjust the difficulty (thresholds) for the regulation of physiological activity, and accompanies the treatment with explanatory and educational support.

Psychophysiological measurements usually start with an adaptation phase (approx. 3–5 min), followed by a baseline phase. The patient then trains the regulation of the respective physiological activity, monitored by the therapist. With progression of the training course, transfer exercises are included into the sessions (e.g., regulation without visible feedback, homework), to improve

self-control while reducing dependence on the technological equipment. Experiences and session outcomes are regularly discussed between the therapist and the patient. Progress can additionally be monitored and demonstrated via joint discussion on objective physiological changes over the course of the treatment.

Evidence for Biofeedback as a Therapeutic Method

Several meta-analytic studies have highlighted the evidence for the application of biofeedback in various medical and psychological conditions. In general, there is broad support for generally positive and enduring effects regarding symptom reduction, psychological improvements, and high acceptance of biofeedback, either as a single or supplementary treatment method (e.g., in addition to medication or other behavior change methods). The credibility achieved by objective measurements and the low rate of side effects are definite advantages of biofeedback applications. However, there is less evidence for specific efficacy or even superiority to other active treatment methods (Yucha and Montgomery 2008).

According to task force guidelines of the AAPB, a 2008 report on the comparative empirical evidence in therapeutic applications classified biofeedback as *(probably) efficacious* (Level 3/4) in the treatment of: alcoholism and substance abuse, chronic pain disorders, anxiety, arthritis, ADHD, epilepsy, fecal disorders in children, constipation, headache, hypertension, insomnia, motion sickness, Raynaud's disease, and temporomandibular disorder. *Specific efficacy* (Level 5) can be attested to urinary incontinence in females and tension-type headaches (Nestoriuc et al. 2008; Yucha and Montgomery 2008).

By now, additional meta-analyses have updated the empirical basis, showing efficacy of biofeedback, e.g., in the treatment of fibromyalgia and chronic back pain (Glombiewski et al. 2013; Sielski et al. 2017). Further, the positive effects of HRV biofeedback on anxiety have been suggested by a meta-analytic review (Goessl et al. 2017). Altogether, there is relatively broad empirical evidence for the positive outcome of biofeedback in various medical and psychological conditions.

New Developments and Challenges in Biofeedback

The rapid technological progress provides new tools and types of biofeedback interventions. For example, biofeedback hard- and software becomes more affordable and mobile, with currently available applications for tablets and smartphones. This modality could allow for home training in everyday settings, which can accompany therapist-guided sessions for increased external validity. For example, patients with conditions marked by acute episodes (e.g., migraines) could be enabled to train in these distinct conditions, using home devices.

Further developments can be seen in the implementation of biofeedback methods in health-oriented wearables, using motion sensors (accelerometers) and/or light-based pulse tracking (e.g., HRV biofeedback for stress reduction). Devices assessing biosignals even without the necessity of additional wired sensors may allow an easier integration of short biofeedback training sessions (e.g., for stress reduction) in everyday life. First evaluative studies show promising effects of these delivery methods. However, the new methods require further scientific foundation prior to inclusion in clinical practice.

Lastly, despite of broad empirical evidence for the benefits of biofeedback in various fields, there is still a lack of rigorous research on the crucial mechanisms in biofeedback, their neuronal underpinnings, and possible moderators for the efficacy of biofeedback interventions. Future research should aim at determining the specific efficacy of biofeedback, using randomized controlled trials with active control groups to rule out placebo or general therapeutic effects.

Conclusion

Biofeedback, as a technology-based method to increase the regulation of dysfunctional physiological activity and associated symptoms, is a beneficial and well-accepted treatment method.

It works through the basic learning mechanisms of conditioning but also exerts positive effects on patient's self-efficacy and control beliefs. There is evidence for its application in various fields, ranging from manifest medical conditions and mental disorders, to individual performance, general well-being, and health behaviors.

The rapid technological progress leads to new interesting developments for biofeedback applications in ultraportable devices. However, there is still a need for research in new applications fields. Rigorous and systematic empirical analyses of biofeedback mechanisms are recommended and should constitute a major goal of future biofeedback research.

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Biography

▶ Arriaga, Ximena B.

Biological Anomaly

▶ Mutation

Biological Innovation

▶ Mutation

Biovular Twins

▶ Dizygotic Twins

Bipolar Mood Disorder

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Synonyms

Manic-depressive disorders

Definition

Bipolar mood disorders are defined by highs and lows of mood, energy, and behavior.

Introduction

Bipolar spectrum disorders (BSDs) are a group of psychiatric disorders ranked as the sixth leading cause of disability in the world among people

between 15 and 44 years old (World Health Organization 2006). They are associated with serious personal, social, and economic costs. According to the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-5; American Psychiatric Association 2013), BSDs include three diagnoses on a continuum of severity: bipolar I disorder, bipolar II disorder, and cyclothymic disorder, with bipolar I disorder being the most severe and cyclothymic disorder the least severe. All three diagnoses cause functional impairment or significant distress and involve recurrent unusual shifts in mood, energy, and activity. Bipolar I disorder is diagnosed when there is a history of at least one manic episode. A manic episode is a period of abnormal and persistent elevated or irritable mood or increased energy that lasts for most of the day, nearly every day, for at least 1 week (or less if the mania results in hospitalization). During this period, individuals may experience inflated self-esteem or grandiosity, decreased need for sleep, pressured speech or talkativeness, racing thoughts, distractibility, increased goal-directed activity, or excessive involvement in risky behaviors that have a high likelihood of negative consequences.

Bipolar II disorder is diagnosed as the presence of at least one hypomanic episode and one major depressive episode. Notably, this diagnosis cannot be made if an individual has ever experienced a manic episode, in which case the correct diagnosis would be bipolar I disorder. A hypomanic episode has a similar symptom presentation as a manic episode, although the symptoms do not cause functional impairment and the duration required is shorter (at least 4 days). A major depressive episode is a period of depressed mood or anhedonia that persists most of the day, nearly every day, for at least 2 weeks. During this period, individuals may experience significant weight or appetite change, insomnia or hypersomnia, psychomotor agitation or retardation, fatigue or loss of energy, feelings of worthlessness or inappropriate guilt, difficulty concentrating or making decisions, and recurrent thoughts of death, suicidal ideation, or a suicide attempt.

Cyclothymic disorder is diagnosed as the presence of numerous periods with hypomanic symptoms and depressive symptoms that do not meet criteria for either a hypomanic/manic episode or major depressive episode. These periods are present at least half the time for a minimum of 2 years in adults, or 1 year in children and adolescents, and are not absent for more than two consecutive months. Unspecified bipolar and related disorder is diagnosed for individuals displaying bipolar symptomatology that does not meet criteria for any of the above three bipolar diagnoses. A more severe bipolar diagnosis is associated with a worse illness course. Epidemiological data based on *DSM* criteria report lifetime prevalence estimates of 1.0% for bipolar I disorder, 1.1% for bipolar II disorder, 2.4% for subthreshold bipolar disorder, and 4.4% overall (Merikangas et al. 2007).

There is growing evidence for conceptualizing bipolar disorders as a spectrum from milder states of affective dysregulation to the most severe bipolar I disorder. The spectrum concept is supported by research that showed that 11–42% of individuals with milder bipolar diagnoses develop a more severe form of bipolar illness over follow-up (Alloy et al. 2012).

The Reward Hypersensitivity Model: Theory and Evidence

The reward hypersensitivity model, or the behavioral approach system (BAS) model (Alloy et al. 2015), has offered one of the few theoretical accounts for the onset and course of BSDs. The reward system, or the BAS, is a biobehavioral system that governs approach motivation and goal-directed behavior to obtain rewards. It has been associated with a dopaminergic fronto-striatal neural circuit sensitive to reward-relevant stimuli and is activated by internal (e.g., expectancy of getting a promotion) or external (e.g., getting a promotion) reward- or goal-relevant cues (Alloy et al. 2015). According to the model, an overly sensitive reward system, as reflected by hyperreactivity to approach motivation-relevant cues, confers vulnerability to both hypomania/mania and depression. Specifically, the model posits that when people with high reward sensitivity experience life events that activate the BAS, such as goal striving, goal attainment, and anger-

provoking situations, they are more likely to develop excessive approach motivation activation states, which can lead to hypomania or mania. However, when they experience life events that deactivate the BAS, such as goal thwarting, or irreconcilable failures or losses, they are more likely to experience excessive approach motivation deactivation states, which can lead to depression.

The theory has received considerable support in the literature (Alloy et al. 2015). Reward sensitivity has been found to be elevated in people with BSDs according to self-report, behavioral, psychophysiological, and neural measures (Alloy et al. 2015). Life event data suggest that people with BSDs and people who are at risk for BSDs due to high reward sensitivity are more likely to experience BAS-activating or BAS-deactivating life events relative to healthy controls (Alloy et al. 2015). And these BAS-activating and BAS-deactivating life events have been shown to trigger hypomanic/manic and depressive episodes, respectively (Alloy et al. 2015). Longitudinal studies have shown that reward hypersensitivity predicts intensification of mania over time, conversion from milder forms of BSD to bipolar I or II disorder, and first onset of BSD (Alloy et al. 2015).

The Social/Circadian Rhythm Disruption Model: Theory and Evidence

Circadian rhythms, which are biological processes (e.g., sleep/wake cycles, body temperature, cortisol, melatonin) that repeat approximately every 24 h without external cues, have long been implicated in BSDs (Alloy et al. 2015). In humans, these rhythms are governed both internally by the brain's suprachiasmatic nucleus (SCN) and externally by external cues, such as light, exercise, and social activities (Alloy et al. 2015). Disturbances in circadian rhythms have been proposed as a core feature of BSDs (Alloy et al. 2015). Numerous studies have demonstrated that people with BSDs exhibit abnormalities in sleep/wake cycles, rest-activity cycles, and melatonin levels, even in the euthymic period (Ng et al. 2015). Some studies have shown that people at risk for bipolar disorder also exhibit circadian rhythm abnormalities (Ng et al. 2015).

Over the past two decades, the social/circadian rhythm disruption model or social zeitgeber theory (Alloy et al. 2015), an innovative biopsychosocial model for understanding mood disorders, has received considerable attention from researchers. It posits that disruption in social rhythms or daily routines, often incurred by life events (e.g., loss of a spouse or winning a major award), leads to disruption in circadian rhythms, which eventually trigger the onset of mood symptoms or episodes. Indeed, people with BSD showed higher social rhythm irregularity than matched controls, and social rhythm irregularity predicted shorter time to onset of both hypomanic/manic and major depressive episodes over follow-up (Alloy et al. 2015). Social rhythm irregularity was correlated with both more severe depressive symptoms and more variable mood symptoms and sleep duration in a 6-week diary study (Alloy et al. 2015). In addition, people with BSDs experience more social rhythm-disrupting life events before onsets of manic and depressive episodes (Alloy et al. 2015). In other words, social rhythm-disrupting life events appear to precede and trigger the onset of manic and depressive episodes in people with bipolar disorder.

Reward/Circadian Rhythm Model of Bipolar Illness

The reward sensitivity model and social/circadian rhythm model of BSDs have been integrated into a single etiological model by Alloy et al. (2015). The integrated reward/circadian rhythm dysregulation model of BSDs describes a bidirectional process between reward sensitivity and circadian dysregulation that increases risk for BSDs. Identical to the reward sensitivity model of BSDs, this model posits that for individuals hypersensitive to reward, events that are related to either successful or unsuccessful goal attainment can induce states of excessive reward activation or deactivation, respectively. Reward activation states are related to symptoms of mania, whereas deactivation states are related to symptoms of depression. During these states, individuals either have an increase or decrease in approach and goal-

striving behaviors. These behavioral changes are associated with changes in social activity patterns, which result in changes to circadian rhythms as well, which further increase risk for the development of mood symptoms.

Preliminary evidence for the integrated reward/circadian rhythm model of BSDs has been published by Boland et al. (2016). Boland and colleagues found that individuals with high reward sensitivity experienced more social rhythm disruption in response to reward-relevant life events and that social rhythm disruption accounted for part of the relationship between these life events and increases in hypomanic/manic and depressive symptoms. High reward-sensitive participants also experienced more reward-relevant events, which were associated with more social rhythm disruption, which predicted high levels of mood symptomatology. Although much more research is necessary, this study provides strong early support for this integrative model.

Genetics and Heritability of Bipolar Disorders

A large body of literature supports the heritability and genetic underpinning of bipolar disorders. Twin studies have estimated the heritability for bipolar disorders to range between 59–87% (Smoller and Finn 2003). Interestingly, the heritability of the disorder seems to increase with the severity of the syndrome along the bipolar spectrum (Edvardsen et al. 2008). Additionally, whereas the prevalence rates of bipolar disorder I and II are both estimated at just 1% (Merikangas et al. 2007), 5–10% of individuals with a first-degree relative with bipolar I or bipolar II develop a BSD themselves (Craddock and Sklar 2013).

Much of the biology of mood disorders is understood as imbalances in the production and regulation of neurotransmitters; thus, the majority of current candidate genes for bipolar disorders are believed to be implicated in the serotonergic, noradrenergic, dopaminergic, GABAergic, and glutamatergic systems. Also, genes that are associated with circadian rhythms, also known as "clock genes," are thought to be involved in the genetics of bipolar disorders. Unfortunately, most published candidate gene analyses were insufficiently powered to detect the relatively small effect sizes expected for individual genes in contributing to bipolar disorders, so the majority of candidate gene studies have not found significant results (Craddock and Sklar 2013). Hopefully, as more is learned about the underlying biology of BSDs, more promising candidate genes will be identified for future research. Genome-wide association studies have had more success in highlighting genes that might be implicated in the development of bipolar disorders. Several studies have identified genes implicated in the encoding of calcium channels, namely, CACNA1C (Craddock and Sklar 2013). These studies also have found genome-wide significance for ODZ4 and NCAN.

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Birth Defects

► Mutation

Birth Order

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Synonyms

Birth rank; Family constellation

Definition

Birth order refers to the order individuals are born in relative to their siblings. Alfred Adler argued that birth order plays a significant role in the development of the individual.

Introduction

Alfred Adler argued that an important part of understanding a person is understanding how they grew up and their position in the "family constellation" (Adler 1928, p. 149). In this constellation, the father and mother are like the sun and moon, and the children surround them like stars that are of various sizes and can be of lesser or greater brilliance. This constellation appears different depending on the point of view of each of the stars, and their perspective influences how the character of a child develops (Way 1956). Adler treated the birth order position in the family constellation to be one the major methods of diagnosis (Ansbacher and Ansbacher 1964). He considered individual psychology to open up a major field of research into the influence of birth order on development (Adler 1932).

Theory and Research on Birth Order

Adler's Theory on Birth Order

Adler placed a particular emphasis on the youngest child as being a peculiar type, who occupies a position markedly different to everybody else in the family. The youngest child, being the most helpless, would receive greater care and warmth from parents than the other siblings. As a result, the youngest child would have an increased competitiveness and striving for power and often outperforms their other family members (Adler 1928). Adler argued that the youngest child has the most favorable birth rank, since they can "never be dethroned" (Adler 1929, p. 194). However, in other cases, the youngest will lack the capacity to excel, despite their desire to do so. In these instances, they will turn out cowardly and indolent and be plagued with a feeling of inferiority. Adler argued that this laziness was due to the youngest child's ambition to excel and allay their feelings of inferiority coupled with feeling discouraged. The youngest child also tends to prefer to work in a different field to the rest of their family, due to their lack of courage to compete in the same field. Adler argued that, after firstborns, youngest children are the second most likely to be problem children (Adler 1928, 1932).

On the other hand, Adler acknowledged the favorable treatment received by the oldest child (Adler 1928). These firstborn children receive more attention and spoiling, as well as experiencing a sense of uniqueness until their sibling arrives (Adler 1932). Being ousted from this position by their new rival can lead to such a sense of deprivation that can be found in "problem children, neurotics, criminals, drunkards and perverts" (Adler 1932, p. 144). Furthermore, the oldest

child occupies a position of power until they lose it when their younger sibling is born. This leads to their belief that those who occupy positions of power should remain there (Adler 1929). The tradition of primogeniture and the general tendency for parents to privilege their oldest child leads them to value power and have a conservative respect for authority (Adler 1928). In adulthood, these firstborn children seek authority, have an exaggerated respect for rules, and suspiciously fear dethronement from their position. Adler stated that in more favorable instances, the oldest child develops the tendency to be protective, responsible, and organized. However, he believed that oldest children were most likely to be problem children (Adler 1932).

Adler argued that second-born children are motivated to strive for power and superiority because there is always their older sibling just ahead of them, and the second-born threatens the security of the firstborn (Adler 1928; Ansbacher and Ansbacher 1964). The second-born (and the youngest-born or firstborns who were not dethroned by younger siblings) is also more likely to develop a leader complex, which is the desire to always occupy the head position and being unhappy with any other position (Ansbacher and Ansbacher 1964). The second-born is said to be motivated by feeling envy and being neglected. Adler argues that the second child "behaves as though he were in a race, as if some one were a step or two in front and he had to hurry to get ahead of him" (Adler 1932, p. 148). The second-born was described as being a "revolutionary – not so much in politics, but in social life and his attitudes towards his fellows" (Adler 1929, p. 193). Furthermore, Adler notes that later-borns can feel the loss of their position with the arrival of a new sibling, but not the same way that a firstborn does with the arrival of the second-born (Adler 1932).

Lastly, Adler described the only child as being pampered and dependent, and unaccustomed to difficulties (Adler, 1928). Their experience of being the center of their parents' attention leads them to strong sense of feeling valuable. However, the cautiousness with which their parents treat them leads only children to be fearful and lacking in independence, whose "life approaches that of a parasite who does nothing, but enjoys life while the rest of the world cares for his wants" (Adler 1928, p. 155). Adler also argued that older children feel in competition with their father and feared the arrival of a sibling (Adler 1932).

Complicating Factors

Adler acknowledged that understanding how birth rank influenced personality was complicated by factors such as the gender of siblings, and that even the same family situation can lead to different outcomes. For instance, a boy among several girls might feel dominated and excluded by his sisters. This might lead him either to feel insecure and intimidated or to strive for great achievements. Fierce competition can arise when the first child is a boy and the second a girl, since girls develop faster than boys (Adler 1929, 1932). This can lead the boy to feeling inferior and to escape through art or even lead to "neurotic, criminal, or insane" (Adler 1929, p. 198). Adler was very clear on the misfortune of being the only boy among sisters: "The type of an only boy among girls is one which no one likes very much" (Adler 1932, p. 153). This upbringing could either lead him to become feminine or otherwise feel the need to assert his masculinity. Adler argued that a girl raised among only brothers would similarly develop either very feminine or masculine qualities, although he mentioned this only in passing (Adler 1932).

Adler also acknowledged that age gaps can matter; whereby, greater age differences in siblings can influence outcomes. For example, after a long birth interval, a youngest child with much older siblings can/might experience a similar situation to a first child and show more of those characteristics. Similarly, large spaces between births can also cause children to have the features of an only child (Adler 1929, 1932).

Subsequent Work on Birth Order

The idea that birth rank influences personality was adopted by other psychologists, such as Stanley Schachter and Walter Toman (Ansbacher and Ansbacher 1964), and a great deal of research on the topic followed. Subsequently, Ernst and Angst

(1983) conducted a large-scale survey of birth order research between the years 1946 and 1980. They concluded that birth order studies often suffered from methodological limitations, with only very weak support coming from some of the better-designed studies.

More recently, Frank Sulloway used evolutionary theory to argue why birth order might influence personality in his book *Born to Rebel* (Sulloway 1996). Sulloway argued that competition among siblings for parental resources leads offspring to employ various behavioral strategies in order to maximize parental investment. Selection drives differential parental investment in offspring, with firstborns receiving greater parental care due to having greater chances of survival in comparison to later-borns. Since firstborns receive greater parental investment, they should be more motivated to please their parents and be more likely to identify with their parents, as well as with convention and authority more generally. Due to the fact that firstborns experience a period of time when they do not have to share resources with siblings, Sulloway argued that firstborns are therefore more likely to be jealous of siblings and more anxious about their status. Firstborns also usually have the advantage over their younger siblings in terms of size, strength, and intelligence, and so can benefit from dominating their younger siblings. Thus later-borns are confronted with domination from older siblings and may respond by being more cooperative and agreeable. Their lesser identification with parents compared to firstborns should result in later-borns being more rebellious and unconventional, while their experience of domination by older siblings might promote their developing more egalitarian attitudes. Sulloway supported his theory with meta-analytic findings from studies using the Big Five, which showed that on average, firstborns are higher on conscientiousness, neuroticism, and extraversion and later-borns are higher on openness to experience and agreeableness.

Since the publication of Sulloway's book, numerous studies have presented evidence for birth order effects, although results have been somewhat mixed (Salmon 2012). However, a more recent study using a large sample found no birth order effects on the Big Five personality traits (Rohrer et al. 2015). A recent review has also critiqued much of the methodology of previous birth order research and concluded that birth order effects on personality either do not exist or are extremely small (Damian and Roberts 2015).

Conclusion

While Adler considered birth order to have a profound impact on personality development and to be a useful diagnostic tool, current research suggests that any effect of birth order on personality is modest at best.

Cross-References

- ▶ Individual Psychology (Adler)
- ▶ Parental Influence on Personality Development (Adler)

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Birth Rank

▶ Birth Order

BIS/BAS Systems

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Synonyms

Appetitive/aversive motivation; Approach/avoidance systems; Anxiety and impulsivity dimension; Behavioral engagement and facilitation system; Impulsivity/anxiety system; Punishment/reward sensitivity system

Definition

Behavioral activation system (Fowles 1980; Cloninger 1987), behavioral approach system (Gray 1981), behavioral engagement system or behavioral facilitation system (Depue and Collins 1999) together with behavioral inhibition system (Cloninger 1987; Gray 1981) or withdrawal system (Davidson 1998) represents two separate conceptual nervous and motivational systems. Each system activates in response to different sets of stimuli and has different neural substrates.

Following Gray's reinforcement sensitivity theory (Gray 1981), behavioral approach or activation system (BAS) reacts to cues of reward, that is, conditioned positive stimuli, but also non-punishment, and escape from punishment. It serves to initiate approach and incentive-motivated and goal-directed behavior. In original RST, it was postulated that BAS was related to positive affect and trait impulsivity, but later studies showed that it is also correlate of anger and aggression (e.g., Carver and Harmon-Jones 2009; Smits and Kuppens 2005).

Behavioral inhibition system would be activated when faced with conditioned aversive stimuli denoting punishment, but also new stimuli, innate fear stimuli (e.g. snake, blood), high-intensity stimuli, and omission or termination of reward resulting in aversive motivation and inhibition of behavior. Originally the purpose of BIS was to restrain action that my lead to negative consequences (Gray 1994; Fowles 2000), although without engaging the deliberate process of inhibitory control. It was to be correlated with negative affect and anxiety. However in revised theory Gray and McNaughton (2000) offered a new conceptualization of BIS proposing that its aim is to resolve conflicts between contradicting behavioral tendencies, such as fight (approach) or flight (avoid) by drawing attention to the potential dangers of particular behavior choice.

There are individual differences in activation strength of both systems translating to sensitivity to approach or avoidance and resulting in differential regulation of behavior, emotion, motivation, and cognitions (see, e.g., Carver 2006 or Strauman and Wilson 2010 for review).

Introduction

Gray's (1981/1982) reinforcement sensitivity theory which allows to distinguish between two motivational systems of aversive (BIS) and appetitive (BAS) motivation has stood the test of time and with its refinements and revisions (Gray and McNaughton 2000; Corr and McNaughton 2008) is one of the most widely recognized physiological theories of personality leading to predictions concerning affect and behavior. Gray's theory emerged as a consequence of extensive animal research, e.g., behavioral, pharmacological, lesions, and electrical stimulation studies (Gray 1982), and was not a theory of personality or traits but a theory of specific biological systems, only later translated to personality constructs. Thus, RST refers to state description of neural systems which influence transitory affects and behaviors leading to more stable dispositions. In classic

RST, Gray proposed two dimensions of personality: anxiety (anxiety proneness) and impulsivity, which represent individual differences in sensitivity of two neurological systems in their response to particular environmental cues. The first system regulates aversive (BIS) and the second appetitive (BAS) motivation. Originally Gray also distinguished a third system, a fight-flight system, which was not discussed in detail until the revision of RST theory. The third system is responsible for organizing behavior in response to unconditioned stimuli of punishment and nonreward (e.g., innate painful stimuli). Activation in this system leads to extremely negative emotions, such as rage and panic. Each of the two motivational systems was originally presumed to be related to one broad affective quality, the BAS to positive affectivity and BIS to negative affect and to be unrelated to alternative affect. Also both systems were postulated to be orthogonal, unrelated to each other what should result in people with different combinations of high and low BIS and BAS sensitivity. This assumption has particular importance for models of psychopathology that will be discussed later.

The revised version of RST (Gray and McNaughton 2000) clarifies the original assumptions but also substantially changes some aspects of the original theory. It postulates three systems: fight-flight-freeze system (FFFS), BAS, and BIS. The most pronounced changes regard explication of FFFS and different roles of BIS comparing to the original model. The FFFS mediates reactions to aversive stimuli of all kinds, conditioned or unconditioned. It is responsible for emotion of fear, not anxiety. Personality factor related to this system is fear proneness and avoidance translating to psychopathology such as phobia and panic. The BIS system is, in contrast to original concept, not sensitive to conditioned aversive stimuli but to conflicting goals. It resolves conflicts between approach and avoidance motivation but also between two competing appetitive goals as well as two relevant avoidance goals. The emotion of anxiety is dominant for this system. Anxiety leads to inhibition of conflicting behaviors and turns on risk assessment processes and scanning of memory and environment for additional cues which could be useful in conflict resolution. Activation of BIS is experienced as worries and rumination and maps on worry and rumination proneness but also generalized anxiety and obsessive-compulsive disorder. However low levels of BIS should be associated with risk proneness and psychopathy. The third system, BAS, largely unchanged in the new conceptualization of RST, is engaged in reactions to both conditioned and unconditioned appetitive stimuli. It encodes the "incentive salience" and produces "wanting" rather than "liking." Activation of BAS is followed by hope and anticipation of pleasure. It relates to optimism, reward orientation, and impulsiveness but also psychopathological conditions of mania, addictive behaviors or high-risk behaviors.

In the classic RST, each system was described by its sensitivity to a particular stimuli. Individual differences thus emerged in the reactivity to cues of reward and punishment which were thought to follow a normal distribution and were not related to each other. This assumption was undermined later (Corr 2002). The joint subsystem hypothesis was a challenge against the separable system hypothesis. The new proposition was that although the systems might be independent, the effects of activation of the systems on behavior were not. For example, behavior controlled by reward might be under the influence of both sensitivities, BIS and BAS. In other words, the functional outcomes of each system are controlled by various systems, although the impact of relevant system is strongest. Thus, assuming that trait sensitivity measures reflect functional outcomes, it might be acceptable for BIS and BAS traits to correlate. For more detailed discussion of RST, its reformulation and relation to personality, see Corr (2002).

Relation to Other Personality Constructs and Traits

Gray's reinforcement sensitivity theory is often contrasted with Eysenck's two dimensions of personality, that is, extraversion and neuroticism; however, these two theories are rather

complementary to each other since both approach the problem from different angles. Gray's theory is a bottom-up approach building statistical factors upon previously recognized brain nervous systems, while Eysenck's adopted a top-down method in order to clarify the causal basis of observed factor structure (Pickering and Corr 2008). Eysenck's (Eysenck and Eysenck 1985) argued that introversion-extraversion dimension represents sensitivity of cortical arousal system and in particular the differences in respond threshold of ascending reticular activation system (ARAS). Extraverts have high and introverts have low thresholds and consequently lower and higher cortical arousal and are less and more arousable due to environmental conditions. The second Eysenck's dimension, neuroticism-stability, was related to activation of limbic system and emotional instability vs. stability. Gray proposed changes to Eysenck's factorial space and neuropsychological basis of the factors. Specifically, BIS and BAS according to Gray reflect 45–30° rotation of neuroticism and extraversion. High BIS sensitivity (punishment sensitivity or anxiety) falls in halfway between neuroticism and introversion or in case of 30° rotation in neuroticism and introversion quartile of the graph but closer to neuroticism than to introversion. High BAS (reward sensitivity or impulsivity) is positioned halfway between neuroticism and extraversion or closer to extraversion than to neuroticism when 30° rotation is applied. However Eysenck's dimension does not perfectly resemble BIS and BAS as they incorporate facets that BIS/BAS lacks, such as sociability in extraversion. From RST perspective, neuroticism and extraversion are seen as a second-order factors which are based on reward and punishment sensitivities (1981).

The other theory closely related to RST is Cloninger's model of personality (1987). He distinguished three dimensions: harm avoidance, novelty seeking, and reward dependence. Cloninger argued that behavioral inhibition system underlies harm avoidance and behavioral activation system forms the basis of novelty seeking. Harm avoidance is described as the sensitivity to and avoidance of punishing stimuli, while novelty seeking concerns a tendency toward excitement in response to cues of potential reward, relief of punishment resulting in exploration in pursuit of rewards. The third dimension, reward dependence, only partially corresponds to BAS, as it encompasses a tendency toward unconditioned signals of reward and maintaining the behavior previously related with reward.

BIS and BAS were also related in the original RST to traits of anxiety and impulsivity, respectively. Further conceptualization allowed for distinction between fear and anxiety, but impulsivity was not fully addressed in the revised RST. However further revisions and amendments allowed for better understanding of BAS and impulsivity relation (Pickering and Corr 2008). Firstly, BAS is more complex than BIS, especially among humans. It must encompass drive tendencies – moving individual toward the goal – but also interest and excitement while reaching the goal. Also different processes must be engaged to gain the final goal, such as identification of a reinforcer, planning behavior, and executing the plan. Planning and restraining oppose capturing the reward immediately, which impose impulsive, not planned and not restrained reaction. Thus, the effective approach behavior is not equal to impulsive actions (Pickering and Corr 2008), although BAS and impulsivity were seen as synonymous in classic RST.

It should be also noted that RST theory represents the biobehavioral level of analysis of individual differences in approach and avoidance as it proposes that brain-behavior systems underlie the approach and avoidance tendencies. Nevertheless, another perspective can also be recognized, namely, socio-cognitive. This approach stresses the importance of knowledge structures that interact with environmental inputs to determine goal pursuit (for review, see Strauman and Willson 2009). For example, Higgins (1997) proposed regulatory focus theory (RFT) which assumes that people might be more inclined to maximize positive outcomes (promotion) or minimize the negative outcomes (prevention). The individual differences in regulatory focus predict avoidance-approach goal accessibility. It was proposed that the biobehavioral systems are activated

by the evolutionarily determined set of external stimuli, whereas the socio-cognitive systems are activated by a heightened accessibility of a personal goal representation, and thus the biobehavioral and socio-cognitive mechanisms that underlie goal-directed behavior are probably distinct in terms of developmental origins, functions, and brain correlates but may influence each other. Also, RST originated from animal studies and were not originally constructed to incorporate higher-order cognitive processes, such as meaning making and self-evaluation associated with goal pursuit; thus, it cannot provide a sufficient explanation of for many of the more complex, socially mediated behaviors (Strauman and Willson 2009).

Biological Basis of BIS/BAS

Theoretical distinctions between BIS and BAS in humans have been addressed to some extent by the neurophysiological substrates proposed to underlie each process.

BIS, according to theory (Gray 1982; Gray and McNaughton 2000), should relate to neural circuit organized by monoamine neurotransmitter systems, including noradrenergic and serotonergic networks and their associated neural structures. BIS should also be associated with neural mechanisms associated with conflict monitoring. Anterior cingulate cortex (ACC) is believed to serve such function. Consistent with this interpretation, ACC activity has been associated with sensitivity to expectancy violations, competing behavioral tendencies, and belief-discrepant behavior (for review, see Botvinick et al. 2004). However, the revised RST treats defensive systems of fear and anxiety separately. In animal studies (Blanchard and Blanchard 1990), fear was a reaction to the actual presence of a predator and was influenced by panicolytic, but not anxiolytic, drugs. Anxiety on the other hand was a reaction to the potential presence of a predator and was sensitive to anxiolytic drugs. Along with this idea, the FFFS translates to fear and defensive avoidance, while BIS maps onto anxiety and defensive approach. Fear and anxiety form dimension of defensive direction. There was also another dimension of defense distinguished, the distance (McNaughton and Corr 2004) which equates with real distance to danger. When the danger is perceived as high, the defensive behavior (e.g., avoidance) is engaged at a longer distance. Referring brain structures to BIS and FFFS more precisely, defensive avoidance (FFFS) maps on different regions depending on defensive distance. Extreme fear, such as panic, maps on the periaqueductal gray, strong fear represented by phobia leading to escape maps on medial hypothalamus, arousal and avoidance related to phobia map on amygdala, and obsessive-compulsive behaviors are accompanied by anterior-cingulate and prefrontal-ventral stream regions activation. Defensive approach related to anxiety maps on prefrontal dorsal stream, posterior cingulate cortex, septo-hippocampal system, and amygdala along with the growing defense distance.

Theory (Gray and McNaughton 1996) relates BAS to basal ganglia (the dorsal and ventral striatum, and dorsal and ventral pallidum), the dopaminergic fibers that ascend from the mesencephalon to innervate the basal ganglia, the thalamic nuclei closely linked to the basal ganglia, and the neocortical areas (motor, sensorimotor, and prefrontal cortex) closely linked to the basal ganglia. The BAS is thought to be modulated by the dopaminergic system (Depue and Collins 1999. Firing of the dopaminergic neurons was observed in primates when unexpected reward occurred, and decreasing activation was found when expected reward did not occur (Schultz 1998). Dopamine agonists have been shown to enhance sexual motivation and exploratory behavior (Le Moal and Simon 1991). Also, ventral/medial prefrontal cortex (PFC) and the nucleus accumbens have influence on motor output, and activation of this pathway (consisting of cortical-striatal-thalamic-cortical loops) results in either activation (go) or inhibition (no go) of behaviors associated with specific incentives (Chambers et al. 2003). The ventral tegmental area provides the primary dopaminergic input to the nucleus accumbens, translating motivational drives to action (Panksepp 1998)). So far, many studies (e.g., Harmon-Jones and Allen 1998)

confirmed the role of frontal cortical asymmetry in distinction between approach (go signals) and avoidance (no-go signals). In particular, greater left-sided asymmetry has been related with approach (go) and right-sided with avoidance (no go). It should be noted however that PFC asymmetry was not directly related to BIS, and thus it is possible that while PFC is engaged mainly in BAS activity, ACC regulatory mechanisms are linked to BIS (Amodio et al. 2008).

However not only neuropsychological but also genetic studies inform the biological grounds of BIS and BAS. Behavioral genetics research showed that about 60% of individual differences in BIS/BAS are heritable (e.g., Bouchard 1994). Another way of exploring the biological basis of BIS and BAS is molecular genetics and testing for single-nucleotide polymorphisms in particular genes involved in regulation of monoaminergic and dopaminergic systems, which were shown to be related to variability in BIS/BAS sensitivity. This body of research is still small, but studies allow to relate the dopamine D2 receptor polymorphism (DRD2) and catechol-O-methyltransferase polymorphism (COMT) interaction to BAS (Reuter et al. 2006). On the other hand, a functional polymorphism in the regulatory region of the serotonin transporter gene (5-HTT) has been reported to be associated with anxiety-related personality traits, also BIS. Individuals with a short allele in the 5-HTT gene-linked polymorphic region (5-HTTLPR) scored higher on neuroticism, anxiety, and harm avoidance than those who were homozygous for the long allele (Lesch et al. 1996), but more studies are needed as the results are not consistent across other studies.

Assessment

Different strategies have been used to measure BIS and BAS sensitivities. Earliest attempts applied scales created for measurement of related constructs, such as Eysenck's extraversion and neuroticism measures (Eysenck's Personality Questionnaire; Eysenck and Eysenck 1975). This approach was criticized. Although both extraversion and neuroticism are related to BIS and BAS, these scales encompass facets which are not included in RST, and BIS and BAS exceed beyond Eysenck's traits. Another, similar approach was to measure anxiety and impulsivity traits using scales which were derived from different theories (e.g., State-Trait Anxiety Inventory by Spielberger et al. 1970). This approach, as Carver and White (1994) showed, was better suited for BIS than for BAS. As impulsivity is not well described by BAS, attempts to measure BAS with impulsivity scales were not successful. Further efforts were directed to application of a scale or scales directly based on other than Gray's model but sharing common theoretical ground, such as Cloninger model. Cloninger's Tridimensional Personality Questionnaire (TPQ) turned out to be useful and quite well referred to BIS and BAS, although still TPQ incorporated some facets which RST did not postulate. Finally scales based directly on RST were constructed. In the first phase, Torrubia and Tobena (Torrubia and Tobena 1984) presented the anxiety scale, which measured susceptibility to punishment and later sensitivity to reward (Torrubia et al. 2001). A new questionnaire with two scales (Sensitivity to Punishment and Sensitivity to Reward Questionnaire, SPSRQ) showed good psychometric quality. Also Ball and Zuckerman (1990) constructed a questionnaire which measured general reward and punishment expectancies (GRAPES), but the measure did not prove to suite the theory well. Also problematic measure which was not widely accepted because of multiple problems was MacAndrew and Steel's (1991) measure of BIS sensitivity. There is also the appetitive motivation scale (AM) by Jackson and Smillie 2004.

Finally the questionnaire which acquired much attention and is the most widely used in studies on BIS/BAS sensitivity is Carver and White's (1994) BIS/BAS scale. The measure includes one scale measuring BIS (reaction to anticipation of punishment) and three scales which make up the BAS scale: drive (persistent pursuit of desired goals), fun seeking (desire for reward and tendency to approach a potentially rewarding event), and reward responsiveness (positive responses to reward). The three scales were the effect of factor analysis which failed to produce just one factor.

However, as authors noted, all three factors might be a part of one BAS second-order factor. Internal reliability of the scales was good (over 0.70) with the exception of BAS fan seeking which was less consistent compared to other scales of 0.66. The validity of the scales tested in experimental studies was also good. Although the scale is still in use, it represents the original RST and does not allow for distinction between BIS in new conceptualization and FFFS (Smillie et al. 2006). Researchers dealt with this problem by dividing BIS into BIS-revised (BIS-anxiety) and FFFS (FFFS-fear) scale (Heym et al. 2008). Although the first scale included four and the second only three items, their internal consistency was over 0.70. Nevertheless, there was still a need for a questionnaire which would tap the BIS/BAS sensitivities from revised RST. The new proposition is Corr and Cooper's (Corr 2016) Reinforcement Sensitivity Theory Personality Questionnaire (RST-PQ). This new measure includes FFFS and BIS scales and BAS scale which is divided into four subscales: reward interest, goal drive persistence, reward reactivity, and impulsivity. Above these, the questionnaire includes two additional scales: panic and defensive fight. The psychometric proprieties of this new measure need to be validated in the future.

Concomitants of BIS/BAS Sensitivity

Having in their disposition psychometrically valid assessment methods, researchers have become interested in how individual differences in BIS/BAS sensitivity are manifested in emotions, behavior, and psychological dysfunction.

Behavioral and emotional consequences of BIS/BAS sensitivity might be seen on a scale from adaptive to maladaptive and pathological reactions to aversive or appetitive stimuli of different intensity. While anxiety is a normal and adaptive reaction to exam, panic might also be seen as a typical behavior when an individual faces a life-threatening situation, such as physical assault or car accident. Same for appetitive stimuli, the food craving and excitement about consumption is adaptive in situation of hunger. However the maladaptive intensity of craving, excitement, but also anxiety or even panic might be a result of excessive sensitivity to particular stimuli (e.g., sweets or dogs) and lead to pathological reactions of overeating or phobic avoiding. In addition pathologically excessive BIS anxiety could generate FFFS panic and the other way around – frequently experienced FFFS panic could lead to BIS anxiety (Corr and Pickering 2008).

In reference to affect, originally Gray (1981, 1990) held that BIS was reactive to cues of punishment or nonreward, thus should always be related to negative affect, whereas BAS activation should evoke positive affect since BAS was sensitive to reward or escape from punishment. Carver and Scheier (1998) however argued that certain negative affects, such as sadness, frustration, and anger, may also arise from approach process, when the goal cannot be achieved. Confirming this prediction, Carver (2004) showed that only BAS predicted feeling of frustration and sadness when participants failed at gaining bonus points and anger after Word Trade Center attacks, while BIS was related to anxiety after this threatening event. Many other research also showed results convergent with Carver's outcomes, but also Harmon-Jones (2003) postulate that blockage of a goal attainment induces more anger among the most BAS-sensitive individuals. Nevertheless with exception of emotions resulting from unsuccessful approach behavior, such as anger, BAS was related to positive affect and BIS to negative affect, as predicted by RST (Carver and White 1994; Müller and Wytykowska 2005. For example, high BAS individuals experienced more pleasure after inclusion in the ball-throwing game, while high BIS participants felt more pain after exclusion from that game (Yanagisawa et al. 2011). Developing the problem of affect further, research on aggressive behavior and BIS/BAS sensitivity shows that mainly BAS-drive is related to heightened levels of aggressive behavior, either measured by self-report questionnaires (e.g., Harmon-Jones and Sigelman 2001)) or experimental laboratory-based procedures (Wingrove and Bond 1998; Rajchert and Winiewski 2016). In the same studies, BIS was either unrelated or negatively related to aggressive tendencies and

behaviors. Beside aggressive behavior, BIS/BAS individual differences were related also to lifestyle of individuals. For example, in Schneider and Graham's (2009) study of adolescents, higher BAS sensitivity was related to more and BIS was related to less cardiovascular fitness, body mass fat, enjoyment of exercise, tolerance of and persistence in high-intensity exercise, and affective response to an acute exercise bout. Studies also show that BAS sensitivity is positively and BIS negatively related with participation in high-risk sports (e.g., Thomson and Carlson 2014) but also with risky health behaviors, such as smoking, overeating, and alcohol and drug consumption (e.g., Braddock et al. 2011; O'Connor et al. 2009). However there is also some evidence that smoking, alcohol drinking, and gambling might be an effect of anxiety and thus be also a correlate of BIS (Audrain et al. 1998).

Links also were established between BIS and BAS sensitivity and psychiatric disorders. In a large community study by Johnson et al. (2003), BIS and BAS correlation with lifetime diagnoses of depression, anxiety, drug abuse and dependence, alcohol abuse and dependence, attention deficit hyperactivity disorder, and conduct disorder were tested. In this study, BIS was a vulnerability factor for depression and anxiety and BAS for alcohol dependence. In other studies, the relation of BIS to depression was also confirmed (e.g., Meyer et al. 2001); however, also BAS plays its role in this disorder with lower BAS relating to higher severity of depression among depressed individuals (Kasch et al. 2002). BAS is also associated with higher intensity of mania in bipolar disorder (Meyer et al. 2001). It was also showed by Iaboni et al. (1997) that hyperactive children have underreactive BIS and overreactive BAS. Both BIS and BAS were also connected to psychopathy. While underresponsive BIS and normal BAS were more typical for primary psychopathy (failures to socialization not due to social disadvantage, low intelligence, neurotic anxiety, or other psychopathologies but as an effect of intrinsic deficit that hampers self-regulation), highly responsive BAS was more frequent among individuals with secondary psychopathy (Newman et al. 2005).

Conclusions

The BIS/BAS sensitivity construct gained much attention in various domains of research using different methodologies beginning with animal research, through pharmacological, neurological, genetic, and physiological research to developmental, psychopathology, socio-cognitive, and individual difference studies. Approach and avoidance systems, although central to different theories such as Higgins' RFT (1997) or Cloninger's personality dimensions (1987), are the most widely explained by Gray's RST (Gray 1981), one of the most influential theories in personality and neuroscience along with Eysenck's theory of three superconstructs. Gray's theory was indeed the turning point for psychology of personality as it fueled the shift toward neuroscience of personality and thus changed the discipline (Corr 2004). The theory itself also went through substantial changes and clarifications (Gray and McNaughton 2000). In its present form, it allows for the distinction of three systems, BIS, BAS, and FFFS, consisting of smaller subsystems, which map on specific brain regions and neurotransmitter's systems. Construction of psychometrically valuable ways of measurement of individual differences in susceptibility to reward and punishment tapping the BIS/BAS system and especially the appearance of Carver and White's (1994) BIS/BAS scale led to multiple studies which tested the RST assumptions. As cumulating experimental evidence show, the systems have joined effects on affect, behavior tendencies, and actual behavior as well as psychopathology. However, the diversity of findings reported indicates that our knowledge about approach and avoidance systems is not full and there are still gaps which should be filled to understand the personality dynamics and its relation affect and action. The engagement of new methods of research and analysis, e.g., more sophisticated statistical and psychometric methods, neuroimaging or molecular genetics, the inhibition and activation systems, and the theory behind them, should allow for better explanation of personality and its correlates.

Cross-References

- Amygdala
- Anterior Cingulate Cortex
- Approach: Approach Competition
- Approach-Avoidance Conflict
- Arousability
- Cerebral Asymmetries
- Corr, Philip
- Dopamine
- Extraversion-Introversion (Eysenck's Theory)
- Eysenck Personality Profiler
- Eysenck, Hans
- Fight-Flight-Freeze System
- Impulsivity
- Neuroscience of Personality and Individual Differences
- Novelty Seeking
- Personality Neuroscience: Why It Is of Importance to Consider Primary Emotional Systems!
- Personality Structure
- Reinforcement
- Reinforcement Sensitivity Theory
- Sensation Seeking
- Temperament

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Bistrategic Controller

▶ Resource Control Theory

Black-and-White Thinking

▶ Splitting (Defense Mechanism)

Black-or-White Thinking

▶ Dichotomous Thinking

Blais, Mark A.

Mark Blais
Department of Psychiatry, Harvard Medical School, Boston, MA, USA

Mark A. Blais is a senior psychologist at Massachusetts General Hospital and faculty member of Harvard Medical School in Boston, Massachusetts. He is a clinical psychologist who provides psychological assessment services while also conducting research into (1) normal and abnormal personality, (2) personality assessment, and (3) the interplay of psychological and neurocognitive factors in effective life functioning.

Early Life and Educational Background

Mark Blais was born on November 24, 1956, in Barre, Vermont. He earned his B.S. in psychology from Cortland State College (SUNY Cortland) in 1979 and his M.A. in clinical psychology from Towson State University in 1981. He earned his Psy.D. in clinical psychology from Nova Southeastern University of Florida in 1990 where he studied with Bady Quintar, PhD., a Menninger-trained ego psychologist.

Professional Career

Blais completed his clinical training at Massachusetts General Hospital (MGH) and Harvard Medical School (HMS) from 1988 to 1990. Since 1990, he has been a member of the MGH and HMS Department of Psychiatry. He has authored more than 110 research publications, 35 book chapters, and coedited 2 books. His research has appeared in the *Journal of Personality Disorders*, *Journal of Personality Assessment*, *Assessment*, and *Psychological Assessment*. He has served as an associate editor for the *Journal of Personality Assessment*.

Research Interests

Blais' research career reflects the dual influences of his active involvement in clinical psychological assessment and long-standing interest in personality theory. In particular his research has focused on the structure of normal and abnormal personality and how these structures are reflected in psychological assessment instruments. He has also conducted extensive research into non-test correlates of common psychological instruments, development of new assessment tools, and models for understanding clinical assessment. These interrelated substantive areas converge and

combine within daily operation of his hospital clinic (the Psychological Evaluation and Research Laboratory or *PEaRL*) to inform his core professional activity conducting and teaching clinical psychological assessment.

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Blame

► Responsibility

Blank Slate

► Standard Social Science Model (SSSM) of Personality

Bleidorn, Wiebke

Wiebke Bleidorn
Department of Psychology, University of California, Davis, Davis, CA, USA

Early Life and Educational Background

Wiebke Bleidorn was born on May 12, 1982, in Minden, Germany. She completed her Masters of Science degree in psychology under the supervision of Alois Angleitner, PhD and Fritz Ostendorf, PhD at Bielefeld University. She completed her PhD under Rainer Riemann, PhD at Bielefeld University where she studied individual differences, behavioral genetics, and personality assessment with an emphasis on the lifespan development of personality characteristics. Her dissertation focused on the patterns and sources of stability and change in personality traits and goals.

Professional Career

Wiebke Bleidorn is an Associate Professor in the social/personality program at the University of California, Davis. She spent her first few years of professorship at Tilburg University, the Netherlands. She was then hired as an Assistant Professor at the University of California, Davis where she was tenured and promoted to Associate Professor in 2016. She has authored numerous chapters and peer-reviewed papers, many of which appeared in high-ranked journals such the Journal of Personality and Social Psychology, PNAS, and Psychological Science. She has served as an Associate Editor for Social Psychological and Personality Science, the Journal of Personality and Social Psychology, the British Journal of Psychology, and Collabra. She is a Member-at-Large on the board of the Association for Research in Personality.

Research Interests

Wiebke Bleidorn examines the conditions, mechanisms, and consequences of personality change. Personality change is an emerging subfield that straddles the areas of personality, developmental, and social psychology; and her work sits at this intersection. She focuses on the social conditions under which people change, the genetic and environmental mechanisms that account for change, and the consequences of these changes for psychological functioning and important life outcomes. She pursues these interests by focusing on a wide array of individual difference variables including broad personality traits, goals, self-esteem, and virtues.

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Blend

► Automaton Conformity

Blickle, Gerhard

Gerhard Blickle
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Gerhard Blickle is a faculty member and full professor at the University of Bonn in Germany. He is a work and organizational psychologist who conducts research concerning (1) job performance, (2) interpersonal influence and social skill in vocational life, and (3) personality features at work.

Early Life and Educational Background

Blickle was born on February 3, 1959, in Rosenfeld, Württemberg, Germany. He earned his B.A. and M.A. in Psychology from the University of Heidelberg, Germany, in 1987. Then he worked in research projects, practiced in Human Resource Management, and worked for the *Frankfurter Allgemeine Zeitung*, still a leading national newspaper in Germany. He earned his Ph.D. in Psychology from the University of Heidelberg in 1993 under the direction of Norbert Groeben.

Professional Career

Blickle taught at the University of Koblenz-Landau from 1993 to 2001 as assistant professor. From 2001 to 2003, Blickle has been in the Department of Psychology at the University of Mainz as associate professor. Since 2003, Blickle has been in the Department of Psychology at the University of Bonn as full professor. He has authored more than 250 publications during his career which have appeared in outlets such as the *Journal of Management*, *Journal of Organizational Behavior*, *Journal of Vocational Behavior*, *The Leadership Quarterly*, *European Journal of Personality*, *Applied Psychology*: *An International Review*, *Personality and Individual Differences*, *European Journal of Psychological Assessment*, *Journal of Personality Assessment*, *Journal of Language and Social Psychology*, *Group and Organization Management*, *and International Journal of Selection and Assessment*. He has served as an associate editor for the *Psychologische Rundschau* (*German psychologist*) and the *German Journal of Work and Organizational Psychology* and as an executive member of the *Psychology Board of the German Research Foundation* (Deutsche Forschungsgemeinschaft – DFG).

Research Interests

Blickle's primary research interests are in three interrelated areas: (1) job performance, (2) interpersonal influence and social skill (e.g., networking, impression management, emotion recognition ability), and (3) personality features at work. Though divergent at times, these substantive areas often overlap in his research so that much of his work reflects an integration of these topics. In his research concerning job performance, he has focused primarily on social skill as antecedents and moderators of job performance. His research concerning interpersonal influence and social skill is focused on political skill and emotional intelligence at work (emotion recognition ability and emotional understanding). Finally, in the area of personality traits at work, he examines how personality traits predict educational success, job performance, counterproductive work behavior, and white-collar crime.

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Block, Jack

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Kevin Lanning is a Professor of Psychology at the Wilkes Honors College of Florida Atlantic University. He is a social scientist trained in personality psychology.

It has been said about William James that there is little reason to distinguish between the man and his writing, for each was largely reflected in the other. An analogous claim could be made about **Jack Block**, one of the most prominent personality psychologists of the second half of the twentieth century. Block lived a life that, like his science and his writing, was broad and deep, passionate and reasoned, compassionate and challenging, exacting and formidable.

Overview of Major Contributions

Block was born in Brooklyn in 1924 and died 85 years later at his hillside home just outside Berkeley. Four broad classes of his contributions to psychology may be articulated. The first was his **longitudinal studies**, which encompass both the reanalyses of the Oakland Growth and Berkeley Guidance Studies that appeared in the classic *Lives Through Time*, and, with his wife Jeanne Humphrey Block, a series of assessments that extended for over twenty years ("The Block Project"). The second was his **clearheaded approach to measurement and methods**, including his advocacy for ipsative measures, his development of the California Q-set as a proposed language for personality description (see the entry on Q-sorts elsewhere in the encyclopedia), his sophisticated understanding of the limits of stylistic interpretations of responses to standardized personality tests, and his early recognition of the potential role of computers in the analysis of social science data. Block's third class of contribution is his **incisive criticism** of facile dismissals of the importance of personality and the role of early experience (his 1968 *Psychological Bulletin* piece "Some Reasons for the Apparent Inconsistency of Personality" is, at less than three pages long, a masterwork of parsimonious prose that provides some counterbalance for what he saw as the bloated "litter-ature" of our discipline). Last but not least was Block's **contributions to psychological theory**.

Theoretical Model: Parameters of Ego Control and Ego Resiliency

Following a halting start as an undergraduate at Brooklyn College, a flowering in Stanford's doctoral program (where he would meet Jeanne), and additional seasoning at the Langley Porter Clinic, Block moved to Berkeley. There, together with Ravenna Helson and Harrison Gough, Block was one of a triumvirate of talented psychologists who echoed the founders of personality psychology at Harvard a generation or more previously. Helson, like Henry Murray, resonated to complexity, to Jung, and to the deeper strata of consciousness. Gough, like Gordon Allport, was a responsible citizen, leader, trait psychologist, and radical individualist.

Block, for his part, embraced and arguably identified with the brilliant Kurt Lewin, whose topological psychology constituted the formal language for Block's two fundamental dimensions of ego-control and ego-resiliency. For Lewin, boundaries differed in their "passability" or permeability. In Block's (1950) dissertation, the topological notion of permeability was translated to the psychological parameter of Ego Control: An overcontroller is characterized by rigid, impermeable boundaries; an undercontroller by permeable boundaries. In Block's system, a second-order property of boundaries is equally if not more important: Ego Resilience is understood as the ability to modulate one's typical or modal level of permeability. There are events or situations which call for flexibility and openness and the relaxation of boundaries, and others which call for mobilization and restraint and the focusing of

attention. The ability to modulate in this way, both in response to momentary affordances and life's massive challenges, is the central parameter in Block's conception of psychological well-being.

The topological interpretation of Ego Control and Ego Resilience is only one manifestation of the influence of Lewin on Block's psychology. Like Lewin, Block typically interpreted behavior in terms of contemporary rather than historical forces; Block's studies of impulse control in children, using such tricks as games of "Simon says," echo Lewin's work in their charm, elegance, and the insight that they give us into the dynamics of human behavior. At Berkeley in the early 1980s, Block supervised a graduate seminar out of his home in which he expressly sought to echo the "Quasselstrippe" of Lewin's Berlin and Iowa. And Block's work attests, as perhaps that of no other contemporary psychologist, to the truth of Lewin's maxim that "there is nothing so practical as a good theory."

Block's career coincided with a time when personality psychology was under siege, and the field had no more forceful defender against the excesses and superficiality of experimental social psychology. But there is a certain irony, little appreciated, that despite his battles with social psychology, Block was closely linked with the modern founder of social psychology. (And, at a personal level, with his extraversion, his political engagement, Block was himself the most social of psychologists.)

Representative Empirical Contributions

Block's contribution to psychological research includes some half-dozen books and measures, as well as over one-hundred articles, and it is difficult to choose the most implicative of these. His most cited works include a critical paper on the five-factor model of personality, a monograph on the Q-sort technique, and an explication of relations between IQ and ego resilience; here, I consider only a few of the papers which have emerged from the Block Project, a series of studies which Block was engaged in beginning in the early 1970s, and which has given us insights into such social issues as adolescent drug use, child rearing practices, creativity, depression, and divorce.

For example, it has long been recognized that "children of divorce," particularly boys in their adolescence, are more likely to manifest externalizing behavior problems than are boys who live with both biological parents. Block showed that the most obvious answer, that divorce is pathogenic, is too simplistic. Rather, by reexamining the personality and family characteristics of the boys whose parents will subsequently divorce, it can be shown that there are already manifestations of an undercontrolled and externalizing personality style years before the divorce occurs. The family stresses associated with adolescent behavior problems are long-brewing; divorce is merely a step in the chain, and not necessarily a pathogenic one.

In a series of investigations of substance use in adolescence, Block has shown that the seeming continuum from abstinence through abuse is illusory, i.e., that abstainers and too-frequent users share common aspects of their development and suffer similar social stresses. Both groups can be distinguished from those who experiment or use moderately. These patterns of adolescent drug use can be predicted, to some degree, by measures of parental style and child personality taken at ages 5 and 7.

In these lines of work, the effect of Block's research has been to turn us away from the tendency to focus on proximal symptoms and has pointed us towards more distal and difficult social antecedents. His work on illuminating gender differences in adolescent depression is similar in this respect. Preschool girls who will later become depressed are characterized by high IQs; among boys, low preschool IQs are associated with later depression. In late childhood and early adolescence, the girls who later become depressed show a heightened moral sense: It is, in other words, the thoughtful girl who is at particular risk for adolescent depression. Still more disturbing is the picture of contemporary correlates: Depressed adolescent girls appear ruminative and withdrawn, unlike the antagonistic, aggressive style which typifies the depressed

adolescent male (Gjerde et al. 1988). Such an internalizing style is, of course, likely to be overlooked in the overcrowded and fearful classrooms of the modern high school.

Finally, Block's research into the developmental antecedents of political conservative bears mention: Children who are brittle and thin-skinned at age 3 are more likely to be politically conservative, while those who are more resilient as toddlers are more likely to become liberals. Though the work was seen with skepticism when first published others have since replicated the work (Block & Block, 2006).

Concluding Comments

Measures of scholarly impact typically focus on contributions to research such as publication or citation counts; rarely do they take into account more indirect measures, such as the accomplishments of students. Block supervised theses by a generation of influential personality psychologists including David Funder, Dan Ozer, and Per Gjerde. Block also supervised both my undergraduate honors (1979) and doctoral theses (1986). Though Block was a fellow of the AAAS and received many honors, one bears special mention in this Encyclopedia: In 2000, he received the inaugural award for outstanding researcher in personality psychology, an award which continues to be named in his honor.

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B-Love

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Synonyms

Being love; Growth motivation; Relationships as an end; Unselfish love

Definition

B-love, also known as *being love*, is the process of loving and caring in an unselfish way about other (especially a partner) just for his/her being or essence. It is a rare type of love which is manifested in and by *self-actualized* people (i.e., last stage of Maslow's needs where the basic necessities have been sated and the motivation occurs for personal growth). It is an end experience rather than a means experience, i.e., the other is not a vehicle to obtain love but the purpose of the experience itself.

Introduction

When Maslow created his theory of motivation, moving away from rewards and unconscious desires, by explaining how people have the urgency to satiate certain needs, he never pictured himself talking about love (as he mentioned in his book *Motivation and Personality* in 1954). But he came across with certain behaviors in self-actualized individuals (i.e., individuals who have already fulfilled their basic needs; for more reference please refer to the Chapter *Hierarchy of Needs*) which led him to analyze two types of love: *B-love* and *D-love*. The following entry focuses on B-love, its origin, characteristics, and implications for the individual.

Being Love

Origin

Abraham Maslow considered that individuals are motivated beyond rewards and unconscious desires. In his attempt to move away from what were the mainstreams on that time, he developed his famous hierarchy of needs. In summary, individuals have to satisfy their *basic needs* (i.e., physiological, safety, and social) in order to get to a *higher level*, where the self-fulfillment, personal growth, and realizing personal potential become the main end. These latter needs, also known as *growth needs*, are part of what is known as *self-actualization* (Maslow 1954).

For Maslow self-actualized individuals are psychologically healthy people who are rare to find, since being in this state implies having all your needs satiated and doing a full use of capabilities and talents while being not too individualistic (Maslow 1959).

His interest on these individuals stemmed not only from their rarity to be found but also from the possible contributions their study would bring to psychology. According to Maslow (1970; Rowan 1999), psychology tends to focus on pathological individuals, leaving behind the healthy ones from who is possible to learn.

Components, Characteristics, and Implications of B-love

Maslow's studies (1954, 1959, 1970) on self-actualized individuals led to three important components, *B-cognition, B-motivation,* and *B-values.* These three are the base of Maslow's psychology of being (this is the reason for the short names aforementioned), where the individual becomes temporary, non-striving, purposeless, end experienced, and self-validating.

The cognition of being (*B-cognition*) allows the individual to perceive with ease to his/her surroundings, including the others. Maslow (1959) mentioned that during peak experiences (experiences of extreme joy and happiness), individuals with B-cognition are able to perceive the other (i.e., object or person) as an independent, autonomous, and equal being, detaching themselves from exercising power over that other being. Different from any other regular cognition, B-cognition also is non-comparing or nonevaluating, which allows the individual to introduce him/herself without defenses or barriers.

Values of being (*B-values*) allow individuals to perceive the values of the whole instead of projecting their own. Some of these B-values are wholeness, completeness, inevitability, good functioning, spontaneity, richness, complexity, beauty, rightness, expressiveness, effortless, and playfulness. These values allow individuals not to judge, condemn, or evaluate (Maslow 1954, 1959).

Finally, Maslow emphasized that abundance motivation (*B-motivation; growth motivation*) was only achieved if all the basic needs were satiated. This kind of motivation allows the individual to go beyond letting him/her live peak experiences and at the same time keep on going with his/her growth, developing their full potential. This kind of motivation keeps these individuals detached – in a certain way – of the world and others, and at the same time, it lets them attach (Rowan 1999).

It is possible to see that these three components of the being give the individual certain abilities and skills above the average person; this is why Maslow defines the being lover (*B-lover*) as an individual with the power to love (cause they already satisfied their basic needs and they move through B-motivation) and the ability to be loved (it is easier to love someone who is not over-attached and lets you grow as well) (McAdams 1980).

Due to the values, cognition, and motivation described before, it is possible to say that B-love welcomes the other as an equal and autonomous person and allows the individual to surrender any desire of controlling the other. In other words, it is a mature, unselfish love (Rhodes 1990). This is consistent with McAdams (1980) findings where

individuals high in intimacy motivation resembled B-lovers by being more sensitive and receptive than active procurers.

Different from the average relationship, B-love continues to grow in intimacy and honesty with time. Maslow (1959) attributed this phenomenon to the capacity of the individual to make the perception richer through repetition. The more something loved and beautiful is perceived, the more it is treasured. However, Maslow (1954) mentioned that this phenomenon is indirectly proportional when the other is not considered honest, spontaneous, and/or defenseless. The increasing familiarity with a *bad partner* (or at least what is considered undesirable for self-actualized individuals) will cause more antagonism and disgust.

An important feature Maslow (1970) discovered on the B-lovers is that they are selective. They can clearly discriminate between who they love and who they just like or befriend. It is because of this selectiveness that they make a really careful use of the word *love,* which gives more significance to it.

For Maslow, this is a clear exemplification of a healthy relationship that can only exist when there is a healthy acceptance of the self and the other, and it is this healthy acceptance of both that also allows them to tolerate more. Maslow (1954) used sexuality as an example of this tolerance. Self-actualized individuals tolerate the possibility of their partners being attracted to someone else (i.e., physical attraction), understanding that it does not imply infidelity. Therefore, it is also less probable that they engage in affairs.

Moreover, because of this tolerance and B-cognition members of a B-love, couple usually do not assign themselves sex roles. Both of them engage in any activity if needed, no matter if it is considered an activity for males or females (e.g., girls in these couples tend not to be passive during sex, and males are not always active). In summary, B-love is characterized for been unselfish but most important; it is a spontaneous admiration for the other that is the end experience. It is the attraction for the other that matters not the need of finding love (Maslow 1959).

Conclusion

Maslow's *B-love* (1954, 1959, 1970) is a contribution to the study of relationships, especially healthy social interactions and love. It is important to consider that when he created his arguments of love, not too much research existed in this area.

However, there are some deficiencies that should be considered and addressed. First, his theory suffers from operational definitions and empirical evidence which not only affects the validity of his conclusions but also became a reason why researchers left it behind (Saeedria 2011). Second, he is only considering that self-actualized individuals can experience B-love which represents two major problems: (a) that relatedness is usually a response of deficiencies and (b) that individuals can only experience either deficiency or growth motives at a time (Hanley and Abel 2002; Rowan 1999). In other words, it might be possible to find both deficiency and growth motives in each level, meaning that average people can experience B-love and self-actualized individuals can experience deficiency motives, even in their B-love. Finally, this view is not considering other factors (e.g., gender/sex differences, personality) that might be reflecting the search for relatedness although being a self-actualized individual, a B-lover.

Cross-References

- ▶ Being-in-the-World
- ▶ D-love
- ▶ Love and Belongingness Needs
- ▶ Maslow's Hierarchy of Needs
- ▶ Self-Actualization
- ▶ Self-Actualization Needs

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Boag, Simon

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Simon Boag is an Associate Professor of personality psychology at Macquarie University, in Sydney, Australia. His research addresses a number of areas including psychodynamic theory of defensive processes and repression, as well as examining theories of unconscious processes and dreams. His research has also contributed to the critical evaluation of both general personality theory and personality assessment.

Early Life and Educational Background

Boag was born on February 20, 1969 in Sydney, Australia. He received his BA in Psychology in 1997 and then his PhD in 2004, both from the University of Sydney. His thesis examined the Freudian theory of repression and was conducted under the supervision of Joel Michell and Agnes Petocz.

Professional Career

Boag initially held an Associate Lecturer position at the University in Sydney in 2004 before taking a position as Lecturer in personality psychology at Macquarie University in 2006, where he is currently an Associate Professor. He has published several monographs on psychoanalytic theory and several edited collections, the latter ranging from collections of Australian personality psychology to psychoanalysis and the philosophy of science, as well as the philosophy of mind and unconscious mental processes. His research papers have appeared in outlets such as *Frontiers in Psychology*, *Review of General Psychology*, *Behavioral and Brain Sciences*, *Personality and Individual Differences*, and *Theory & Psychology*, among other journals.

Boag has received several awards including the *H. Tasman Lovell Memorial Medallion* for his PhD thesis. H. Tasman Lovell was the first Professor of Psychology in Australia (and, incidentally, a pioneer of Australian academic psychoanalysis), and the medal is awarded for the best PhD thesis in Psychology. Boag presently sits on the Editorial Boards of *Review of General Psychology* and *Frontiers in Psychoanalysis and Neuropsychoanalysis*. Boag has also received a Fellowship from the Alexander von Humboldt Foundation to examine the history and theory of trauma and dissociation.

Research Interests

Boag's primary areas of research interest address psychodynamic theory specifically and personality research generally. Boag is best known for his work on the theory of repression and his novel approach to providing a logically coherent account of the repressive process. The logical difficulty with explaining repression is essentially a paradox of self-deception: how does repression occur as a selective, dynamic process without the ego also knowing the repressed? Freud and others after him propose some type of censoring agency (or even agencies) standing in-between the ego and the repressed, but this account simply does

not hold up to critical scrutiny. Nevertheless, based on the work of John Maze and Joel Michell, it is possible to explain repression as a selective process in terms of both neural inhibition and repression preventing acknowledging that the repressed is known. Such an account is necessary for explaining objectless anxiety, resistance, and "blindness of the seeing eye" (both knowing and yet not knowing some event simultaneously) and opens up theoretical possibilities for understanding a range of other apparently paradoxical phenomena.

Boag's research naturally assumes an account of conscious and unconscious processes, and Boag here has extended the relational account of mind and unconscious mentality. On this relational view, the mental act of knowing is a relation between a knowing subject and the situation known. As a relation, any mental act is itself not automatically known, and so, as Freud recognized, mental acts are in the first instance unconscious. Becoming conscious of mental processes, on the other hand, requires a second mental act of reflection. If this second act is prevented from occurring, then a mental act could occur unconsciously, without ever becoming conscious. This view of unconscious mentality has been extended to making sense of subliminal perception (sometimes described as "perception without perception"), as well as blindsight, where subjects with visual cortex lesions report being unaware of objects in their blind visual field yet nevertheless appear to be able to see. In such cases, disruption to "higher" cortical processes might prevent conscious reflection from ever occurring. Nevertheless, and despite supporting empirical evidence of unconscious mentality, the possibility of an unconscious mental act is still disputed, and Boag's research has provided an extensive response to critics.

Boag has further contributed to conceptually clarifying Freudian dream theory. Freudian dream theory proposes that dreams express the fulfillment of wishes, and the reason why some dreams are distorted and apparently anything but wish-fulfilling is due to psychological conflict and "censorship" (referred to above). However, Freud theory of censorship, occurring as the activity of a teleological homunculus, is logically and empirically indefensible. Be this as it may, Freud also treats censorship more generally as the product of conflicting motives, and Boag's theory of repression provides an account of how repression may be involved in the formation of both anxiety and distortion in dreams. Boag has also addressed critics of Freudian dream theory, and he has demonstrated that the neuroscientific evidence concerning the role of dopamine in dreaming is not inconsistent with Freud's wish-fulfilling thesis.

More generally, Boag's research has defended psychodynamic theory as constituting a sophisticated and coherent account of personality, even if certain areas of psychoanalytic theory require either reconceptualization or outright rejection. In this respect, another avenue of Boag's research examines the concepts and theories of personality generally and whether theories of personality are coherently formulated or not. In particular, Boag has been critical of the latent trait approach to personality where traits are taken as causes of manifest behavior. If traits are conceptualized as "tendencies," then traits are dispositional summary terms. Such terms are not necessarily problematic, but when a summary of what someone is likely to do is then further used to explain those same behaviors, we have then both the conceptual problems of reification and circular explanation occurring. On the other hand, having a coherent conceptualization of personality is also essential for valid assessment and measurement. If measurement involves attributes possessing both order and additivity, then it is partly an empirical question as to whether or not a variable can be quantified and measured in the strict sense. Of course, before even bothering to empirically test such a proposition, the attribute needs to be clearly and carefully conceptualized first. Additionally, the widespread use of Likert scales in personality research is potentially problematic since we have, at best, ordinal data (and possibly even nominal data). While ordinal data are not necessarily problematic, parametric tests assume at least interval scale data, and so the validity of our statistical procedures may be called into question in personality research.

In addition to the above research, Boag has published in the area of evolutionary theory and psychology, personal relationships, schema theory, and personality and mindfulness. He sees his research extending into the dynamic systems thinking found in within-subject personality approaches.

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Bobo Doll Experiment

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Definition

The original Bobo doll experiment was conducted by Bandura et al. (1961) using a 5-ft inflatable clown (the Bobo doll) to demonstrate that children can learn aggressive behavior in the absence of any rewards and solely by observing the behavior of an adult model.

Introduction

At the time the original Bobo doll experiment was conducted, learning was understood through behaviorism as conceptualized by Skinner (1953). Individuals were believed to learn through rewards and punishments. Rewards such as money, praise, or other desirable tangible and intangible reinforcements were believed to increase the likelihood that someone would behave in a particular way, whereas punishments were believed to decrease the likelihood that someone would behave in a particular way. For example, a boy who pushed a classmate off a swing and was rewarded by being allowed to swing right away would be more likely in the future to push a classmate off the swing when he wanted a turn. However, if the boy was punished by being sent inside from recess, he would be less likely in the future to push a classmate off the swing. Behaviorism can explain how a number of behaviors are learned, but behaviorism cannot explain how individuals learn to behave in a particular way when they have received no previous rewards or punishments for that behavior. Miller and Dollard (1941) introduced the idea that learning can occur through imitation when individuals witness someone else being rewarded for a particular behavior and are then given the opportunity to engage in the same behavior and receive the same rewards. The Bobo doll experiment made an important advance in demonstrating that behavior can be learned through observation and imitation, even in the absence of any rewards or punishments.

Description of the Classic Bobo Doll Experiment

The original Bobo doll experiment was conducted by Bandura and his colleagues (1961), who recruited a sample of 72 children ranging from 37 to 69 months in age from the Stanford University preschool. Teachers and an experimenter rated children's aggressive behavior in the preschool classroom. On the basis of these aggression ratings and their gender, children were then matched into triads. Each member of the triad was randomly assigned to one of three groups: an experimental group exposed to an aggressive model, an experimental group exposed to a nonaggressive model, and a control group that was not exposed to any model.

In the two experimental groups, each child was individually brought into the corner of a playroom and provided with materials to design pictures with potato prints and stickers. An adult model was then brought into the opposite corner of the playroom, which held a 5-ft inflated Bobo doll, a mallet, and tinker toys. The experimenter then left the room. In the aggressive model condition, the adult model played with the tinker toys for 1 min and then aggressed against the Bobo doll for the remaining time using both physically and verbally aggressive behaviors. The physically aggressive behaviors included putting the Bobo doll on its side, sitting on it, and punching it repeatedly in the nose, throwing the Bobo doll into the air and kicking it, and hitting the Bobo doll on the head

with the mallet. The verbally aggressive behaviors included saying, "Sock him in the nose. . .," "Hit him down. . .," "Throw him in the air. . .," "Kick him. . .," and "Pow!" Pilot testing revealed that children did not behave in these ways with the Bobo doll on their own, so these behaviors were deemed to be behaviors children did not engage in without imitation (as simply punching the Bobo doll might have been). The model also made two nonaggressive statements, "He keeps coming back for more" and "He sure is a tough fella." In the nonaggressive model condition, the adult model played quietly with the tinker toys for the entire time and ignored the Bobo doll.

Ten minutes later, the experimenter entered the playroom to get the child to go to a new playroom in a different building. In the new playroom, the child was allowed to play with a fire engine, a train, a fighter plane, a cable car, a spinning top, and a doll set for 2 min. As a mild aggression arousal procedure, the experimenter then told the child that these were the best toys and would need to be saved for other children but that he or she could play with any of the toys in the next room instead. The experimenter brought the child into the next room, which was provisioned with toys that elicited aggressive play (e.g., dart guns) and nonaggressive play (e.g., plastic farm animals). The room also was equipped with a Bobo doll and mallet. Trained observers watched through a one-way mirror and coded the child's behavior for 20 min as he or she played alone in the room.

For each 5-s interval, observers coded whether the child's behavior involved imitative aggression (if the child engaged in one of the specific aggressive acts demonstrated by the model), nonimitative aggression (if the child engaged in aggressive play that had not previously been demonstrated by the model, such as shooting the Bobo doll with the dart gun), and imitative nonaggression (if the child repeated the model's nonaggressive verbal responses such as "He sure is a tough fella."). The analyses suggested three primary conclusions. First, children in the aggressive model experimental group were significantly more likely to engage in the specific aggressive acts that the models demonstrated than were the children in the control group or the nonaggressive model experimental group, suggesting children learned imitative aggression. Second, the children in the aggressive model experimental group engaged in more nonimitative aggression than did the children in the control group or who had been exposed to the nonaggressive model. Third, boys were more likely to imitate the model's physical aggression than were girls, but boys and girls were equally likely to imitate the model's verbal aggression. In addition, boys and girls were more likely to engage in aggressive behavior when they had been exposed to an adult model of the same gender as themselves.

Impact of the Bobo Doll Experiment

The original Bobo doll experiment was modified in follow-up studies examining how a variety of contexts and conditions affect children's learning of aggressive behavior. For instance, Bandura et al. (1963) conducted a study in which children watched a film of an adult model aggressing against a Bobo doll or a film of an adult dressed as a cat with cartoon features aggressing against a Bobo doll. Children who had watched the films of aggressive behavior toward the Bobo doll were as likely to imitate the aggressive behaviors as were children who had viewed the live model acting aggressively; all three experimental groups engaged in more aggressive behavior than the control group that had not witnessed an aggressive model.

The Bobo doll experiments resulted in a paradigm shift in understanding how learning occurs. Demonstrating that aggressive behaviors could be learned solely through imitation, with no rewards or punishments for either the adult model or the child, led to the formulation of social learning theory, which posits that people learn from observing, imitating, and modeling other people (Bandura 1977).

Conclusion

Bandura and his colleagues' Bobo doll experiment was conducted when behaviorism was

regarded as the driving force for human behavior, with children learning new behaviors as a result of rewards and punishments. By demonstrating that aggressive behavior can be learned by observing a model, in the absence of any rewards or punishments, the Bobo doll experiment opened the door to future research documenting a range of factors that contribute to the development of aggressive behavior. This work remains relevant as researchers continue to examine whether children imitate aggressive behavior learned from modern forms of violent media such as video games and as policymakers attempt to determine which protections are necessary to minimize children's exposure to violent models. Understanding that people learn from observing, imitating, and modeling other people is a long-lasting contribution of the Bobo doll experiment.

Cross-References

- ▶ Aggression
- ▶ Albert B.
- ▶ Laboratory Experimentation
- ▶ Modeling
- ▶ Observational Learning

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Bodily Activation

▶ Physiological Hyperarousal (PHY)

Bodily Anxiety

▶ Physiological Hyperarousal (PHY)

Body Acceptance

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Synonyms

Body appreciation; Positive body image

Definition

Accepting one's body regardless of not being completely satisfied with all aspects of it.

Introduction

How we see, think, feel, and act toward our bodies is conceptualized as our body image (Cash and Pruzinsky 2004). These perceptions, thoughts, feelings, and behaviors are often emotionally valenced, meaning they are positive or negative in nature (Cash and Smolak 2011). In the simplest sense, an individual is said to have a negative body image if the sum total of these emotional valences is negative. Likewise, if these valences are cumulatively positive, an individual is said to have a positive body image. Dig a little deeper, however, and the constructs of positive and negative body image become considerably more complex.

Body Acceptance

Body acceptance is a construct that is closely related to positive body image. Although similar,

body acceptance and positive body image are not the same thing nor, is positive body image merely the opposite of negative body image (Bailey et al. 2015; Tylka and Wood-Barcalow 2015; Williams et al. 2004). Rather, body acceptance is one of several components that constitute positive body image (e.g., Avalos et al. 2005; Wood-Barcalow et al. 2010) Further, body acceptance is a core, critical component of positive body image. In a recent synthesis by Tylka (2011) of studies of positive body image, body acceptance emerged as one of the two core characteristics that define positive body image (the other being body appreciation) – a finding upheld by numerous subsequent studies conducted with diverse populations (e.g., Bailey et al. 2015).

Body acceptance is defined as accepting one's body regardless of not being completely satisfied with all aspects of it (Tylka 2011). Body acceptance is not the belief that one's body is perfect or highly physically attractive, nor is it the belief that one's body cannot be changed at all (Tylka and Wood-Barcalow 2015). Rather, it is the firm acceptance that one's body is "good enough" according to one's own standards, with the caveat that these standards are distinct from the narrowly defined and prescriptive sociocultural body standards that contribute to the development of negative body image (e.g., Rodgers et al. 2015).

Body acceptance is a multi-step process that involves both (i) acknowledging that one has body features that one is not satisfied with and (ii) subsequently accepting these features. The rationale for acceptance can (and ought to) vary. For example, a study of university-attending women in the USA found that those with positive body image chose to admire their body features as unique (Wood-Barcalow et al. 2010). Adolescent indigenous Canadian girls with positive body image, and whose body features are notably distinct from narrowly defined sociocultural body norms, also accept their body features as unique (McHugh et al. 2014). Alternatively, the rationale for body acceptance could take the form of emphasizing form over function. For example, the bodies of male jockeys and female weightlifters do not conform to sociocultural body norms and additionally contravene gender role expectations, but their bodies are nevertheless suited to functions that garner them widespread acclaim, personal satisfaction, and sporting and financial success.

Popular media discourse on body acceptance tends to focus on weight, and in particular, overweight and obesity. Scholarly discourse on body acceptance – and on body image more generally – is predominated by studies of physically able adolescent girls and young women and often in regard to body fat and body size (Bailey et al. 2015; Cash and Smolak 2011; Tiggemann 2015). Fat acceptance, for example, is a form of body acceptance that has existed in scholarly discourse for decades. Twenty-five years ago, Erdman (1991) published qualitative descriptions of body acceptance among fat women that included their attitude toward the healthiness and attractiveness of fat bodies, their attitude toward accepting their body size versus striving to change it, and their commitment to changing societal attitudes towards fat people.

Body acceptance extends well beyond fat acceptance, however, and includes, for example, individuals who have suffered acute physical disabilities and cancer (Bailey et al. 2015; Buki et al. 2016). Qualitative research conducted with men and women who have suffered from a spinal cord injury has revealed that body acceptance is the core component of positive body image among this population (Bailey et al. 2015), followed closely by body appreciation. Qualitative research on positive body image conducted with Latina women who have undergone treatment for breast cancer has revealed that the process of body acceptance was susceptible to negative reactions from male partners (Buki et al. 2016), suggesting that the subscription of intimate partners to sociocultural body norms is an impediment to body acceptance among this population (and likely others). The scope for further diversification of research on body acceptance is self-evident, including among men (Griffiths et al. 2016) and, as one specific example, the increasing number of men who use anabolic steroids predominantly to improve the appearance of their muscles (Murray et al. 2016).

Conclusion

In sum, body acceptance exists as one fundamental component – and perhaps *the* fundamental component – of positive body image. Body acceptance is at the forefront of scholarly research on body image and is viewed as essential to the future of the field (Cash and Smolak 2011; Tylka and Wood-Barcalow 2015). The several hundred extant studies on positive body image identified by Tylka and Wood-Barcalow in 2015 (Tylka and Wood-Barcalow 2015) will certainly grow in the coming years and with a view to diversifying the populations in which positive body image is explored (Bailey et al. 2015; Tiggemann 2015; Tylka and Wood-Barcalow 2015). The fruits of these efforts will foster a more comprehensive understanding of body image that is less constrained by the historical over-focus on negative body image and will equip clinicians with new and improved strategies to promote health and well-being and to treat and prevent negative body image.

Cross-References

- ▶ Body-Esteem Scale
- ▶ Body Language

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Body Appreciation

- ▶ Body Acceptance

Body Language

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Synonyms

Nonverbal communication

Definition

Body language refers to the aspect of communication that is transmitted nonverbally (and automatically) through body movements.

As such, body language strictly speaking refers only to behaviors such as facial, vocal and postural expressions, touch, proxemics, and gaze but not to stable features such as physical attractiveness and facial morphology or (conscious) behavioral choices such as hair style, clothing, and adornment. Yet, these elements of nonverbal behavior often interact with elements of body language, and hence the two terms are often used interchangeably.

The study of body language has a long tradition in psychology. In his seminal book on *The Expression of the Emotions in Man and Animals*, Darwin (1872/1965) already commented extensively on body language in humans and animals. His goal was to demonstrate the evolutionary continuity between emotion expressions in humans and animals, and he focused therefore on the many similarities between these expressions and laid the groundwork for the notion that body language is universal. Other early important works include the study of kinesics (body movement, Birdwhistell 1970) and proxemics (the study of personal space, E. T. Hall 1963). Important early overview articles were written in the early second half of the twentieth century (Duncan Jr. 1969; Miller et al. 1959; Wiener et al. 1972), and in 1972 a classic edited book was published by Hinde (Hinde 1972).

The notion that body language is universal is often voiced in sentences such as "A warm smile is the universal language of kindness" (William Arthur Ward). Evidence (albeit not undisputed) for universality has been found for (facial) emotion expressions (see Hareli and Hess, ▶ "Facial expressions and emotion") and the signaling of dominance and sociality (Bente et al. 2010; Senior et al. 1999). By contrast, the meaning of gestures is typically highly culture dependent (Kita 2009).

Research on body language has addressed both the communication of states in humans and animals – most often emotions – and the communication of traits. The latter both with regard to the expressive features that characterize certain traits, for example, "the loud voice of extraversion" (Scherer 1978), and with regard to first impressions in humans. However, the field is overall heavily biased toward the study of emotional facial expressions (see Hareli and Hess, Facial expressions and emotion). In what follows, I will focus on the communication of emotions through channels other than the face and the communication of traits, with emphasis on dominance and affiliation.

Emotion communication. Next to facial expressions (see Hareli and Hess, Facial expressions and emotion), voice, posture, and touch also signal emotions. There are two main approaches to classifying emotional speech. On one hand, human perceivers can be asked to listen to voice excerpts and decode the emotions expressed. On the other, acoustic features of the emotional voice such as pitch, duration, and intensity or voice quality features can be measured and related to the intended emotion (Juslin and Scherer 2005). Research employing the judgment study paradigm was able to ascertain that so-called basic emotions (happiness, anger, sadness, fear, disgust, surprise) at least are well recognized in speech, but early attempts at acoustic analysis were not always as successful (Banse and Scherer 1996). However, newer approaches in affective computing using more sophisticated analysis algorithms have started to make inroads in that regard (Schuller and 2011).

Darwin's (1872/1965) descriptions of emotion expressions contained many descriptions of

emotional postures in both humans and animals. Early studies by Bull and colleagues (e.g., Bull and Gidro-Frank 1950) suggested that some basic emotions can be recognized from postures and in recent years interest in postures has blossomed again. Work on static expressions suggests that at least the basic emotions can be well recognized from postural cues alone (see Atkinson 2013, for a review). Other work has shown that basic emotions can also be recognized from gait at levels ranging up to 92% correct for sad and fearful expressions (Schneider et al. 2013). In addition, emotions such as pride and others that are not considered as basic (mainly because they are not associated with a prototypical and unique facial expression) seem by contrast to have a universal postural component (Tracy and Matsumoto 2008).

Despite early research suggesting a relationship between emotion and touch (Clynes 1977), research on touch has been mostly focused on its use as a function of intimacy (Burgoon 1991; McDaniel and Andersen 1998) and as a cue to relative power. The latter is based on Henley's (1973) notion of a touch privilege for individuals higher in power. However, the findings in that regard remained mixed; even though there is some evidence for differences in touching between men and women, these differences are not systematically related to power or status differences (Hall 1996; Hall and Veccia 1990). However, more recently touch has been found to communicate anger, fear, disgust, love, gratitude, and sympathy at better than chance levels (Hertenstein et al. 2006). There is also evidence that squeezing touch is better for communicating unpleasant and aroused emotional intention, whereas finger touch is better for communicating pleasant and relaxed emotional intention (Rantala et al. 2013).

Person perception. Correct judgments of personality characteristics can be made based on very "thin slices" of behavior, that is, extremely short exposures to what may appear to be minimal information (Ambady et al. 1995; Ambady and Rosenthal 1992), including static photos of only the eye region (Rule et al. 2009). One important source of such judgments is facial appearance (Zebrowitz 1997) and emotion expressions (see Hareli and Hess, Facial expressions and emotion).

Dominance and affiliation are basic human social orientations (Leary 1957) which are transmitted through nonverbal behavior. Thus, stable features such as a square jaw, high forehead, or heavy eyebrows cross-culturally connote social dominance (Keating et al. 1981; Senior et al. 1999). On the other hand, a rounded face with large eyes, thin eyebrows, and low facial features – a baby face – connotes approachability (Berry and McArthur 1986). The same information is also transmitted via emotional facial expressions due to the perceptual overlap between these expressions and the stable features. Of these, anger, happiness, and fear displays have been shown to be associated with perceived dominance and affiliation. Accordingly, drawing the eyebrows together in anger leads to increased attributions of dominance, whereas smiling leads to increased attributions of affiliation (Knutson 1996). Similarly, it has been argued that fear expressions elicit affiliative reactions (Marsh et al. 2005). As such, emotional expressions can also be used to infer behavioral intentions (Hareli and Hess 2010). In ratings of neutral faces the resemblance of certain facial features to emotion expressions drives the attribution of behavioral intentions to faces (Zebrowitz et al. 2003).

Next to facial features and expressions, body posture cross-culturally signals dominance and affiliation. Thus, postures that increase perceived size (legs spread apart, arms akimbo) tend to communicate dominance, whereas orientation toward the interaction partner tends to signals sociability and affiliation (Bente et al. 2010). As Darwin already noted, these signals tend to be similar across species (see Weisfeld and Beresford 1982 for a comparison of human and primate dominance behaviors). The similarity is not limited to primates; thus, in domestic dogs a high posture (head up and tail upright, ears pricked, straight back, and straight legs) also signals dominance (van der Borg et al. 2015).

Affiliation cues are often more ambiguous and complex than dominance cues. One aspect that has been noted early is that affiliation is often signaled by open postures and an orientation toward the interaction partner, especially by women (Mehrabian 1969). More recent research

suggests that a potent cue to affiliation may be not so much the orientation of the individual but the synchronization of nonverbal behaviors between individuals (Hess and Fischer in press). Mimicry – the imitation of the nonverbal behavior of others – results in synchronized behavior between interactions partners. Both the imitation of postures and gestures (Chartrand and Lakin 2013) and the imitation of emotion expressions (Hess and Fischer 2013, 2014) have been shown to not only depend on affiliation but also to foster affiliation. Thus, people mimic others' behavior more in contexts when participants have positive rather negative attitudes toward each other, when they are similar rather than dissimilar, when they belong to the same rather than a different group, or when they want to cooperate rather than to compete with each other. Moreover, the relationship is not unidirectional, in that mimicry also serves to increase perceived similarity and liking (see Hess and Fischer in press for a review).

Gestures. Another important domain of body language is gestures. Speech is typically accompanied by gestures, even when these, for example, on the phone, cannot be seen by others. This link can be observed even in congenitally blind children, albeit at much reduced rates (Iverson et al. 2000). Emblems or conventionalized gestures are gestures that have a specific transcribable meaning. Examples are finger gestures for victory or peace or head shakes as well as pointing gestures. These vary between cultures, for example, in much of Europe no is signaled by a head shake, but in Greece and regions influenced by Greece a head toss up is used (Morris et al. 1979). In pointing gestures, the fingers and palm positions vary as well as the movement pattern. Reasons for such variations include whether relative or absolute frames of reference are used or how time is conceptualized in space. Thus, many cultures map the future to the front of the person and the past to the back, but other mappings exist as well. The availability of words and syntactic features of languages also entrains differences in the accompanying gestures (for a review see Kita 2009). Politeness rules also impact on gestures. Thus, in Ghana where the use of the left hand is taboo for giving or eating, left-handed pointing is also taboo (Kita and Essegbey 2001). Another variable aspect regards the space used by gestures as shown in a classic study by Efron who compared Southern Italian and Eastern European Immigrants to New Yorkers (Efron 1972).

B

Cross-References

- ▶ Facial Expressions and Emotion
- ▶ Vocal Communication of Emotion

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Body-Esteem Scale

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Definition

The Body-Esteem Scale – Revised is a 28-item gender-specific multidimensional measure of body esteem for women (sexual attractiveness, weight concern, physical condition) and men (sexual attractiveness, upper body strength, physical condition). Respondents rate specific body parts and functions using a five-point Likert scale ("strong negative feelings" to "strong positive feelings").

Introduction

Body esteem, an important dimension of self-esteem, refers to self-evaluations of the body. Formal body-esteem research has been conducted for over 75 years, but prior to the mid-1980s researchers had assumed that body esteem was both unidimensional and identical for women and men. Yet when Franzoi and Shields (1984) investigated Secord and Jourard's (1953) Body-Cathexis Scale (BCS) using principal components analyses (PCAs), they found clear evidence that body esteem was not unidimensional nor were the multiple factors similar for women and men. In other words, these findings indicated that (1) when people evaluate their body parts and body functions, they organize their evaluations into more than one category, and (2) these evaluative categories, or dimensions, are gender specific. For example, while Franzoi and Shields (1984) found that women organize certain body self-evaluations around weight concerns, men organize certain body self-evaluations around muscle strength concerns.

Development and Use of the Original Body-Esteem Scale

Faced with evidence that body esteem was both multidimensional and gender specific, Franzoi and Shields (1984) collected additional data and conducted additional PCAs using 23 original BCS items and 16 new body items, which ultimately yielded a 35-item questionnaire, the Body-Esteem Scale (BES). The BES factor structure was both multidimensional and gender specific, with the three dimensions for men measuring respondents' attitudes toward their physical attractiveness, upper body strength, and physical condition, while the three dimensions for women measuring attitudes toward sexual attractiveness, weight concern, and physical condition. Over the next four decades, researchers utilized the Body-Esteem Scale to enhance our understanding of the relationships between body esteem and multiple social and clinical constructs, including racial ethnicity (Franzoi and Chang 2002), sexual orientation (Striegel-Moore et al. 1990), socioeconomic status (Kornblau et al. 2007), age and generational trends (Franzoi and Koehler 1998), cultural sexism (Oswald et al. 2012), mating preferences (Wade 2000), sexual desire (Seal et al. 2009), and disordered eating (Franko et al. 2012). The BES has been translated into various languages, including German (Swami et al. 2008), Polish (Bak-Sosnowska et al. 2014; Lipowska and Lipowski 2013), and Spanish (Jorquera et al. 2005).

Revision of the Body-Esteem Scale

Body esteem is a culturally sensitive construct, meaning that the body parts and body functions that women and men consider important when evaluating themselves are likely to change based on cultural shifts in the standards that define attractive and healthy gender-typed bodies. Three decades after the publication of the BES, Frost et al. (2017) conducted a series of PCA analyses of the original BES items and found that the scale's factor structure and item composition was in need of adjustment to more accurately reflect contemporary body esteem. After conducting additional PCA analyses of both original BES items and new items involving 1237 participants, Frost and her colleagues created a 28-item revision of the BES. As with the original BES, the BES-R has strong internal consistency and good convergent and discriminant validity and conceives of body esteem as both gender specific and multidimensional.

Female BES-R Subscales

The nine-item *sexual attractiveness* subscale measures attitudes toward aspects and functions of the body associated with facial attractiveness and sexuality (body scent, buttocks, chest or breasts, appearance of eyes, sex drive, sex activities, face, head hair, skin condition). The eight-item *weight concern* subscale measures attitudes toward body aspects and functions that can be altered by food intake (waist, thighs, body build, hips, legs, figure or physique, appearance of stomach, weight). Finally, the six-item *physical condition* subscale measures attitudes toward health, stamina, and strength (physical stamina, muscular strength, energy level, physical coordination, health, physical condition). This subscale is similar to the male physical condition subscale, minus the weight-related items.

Male BES-R Subscales

The eight-item *sexual attractiveness* subscale measures attitudes toward aspects and functions of the body associated with facial attractiveness and sexuality (body scent, appearance of eyes, sex drive, sex organs, sex activities, face, head hair, skin condition). The five-item *upper body strength* subscale measures attitudes toward the upper body, especially those that can be enhanced through anaerobic exercise (muscular strength, biceps, body build, arms, chest or breasts). The ten-item *physical condition* subscale measures attitudes toward health, stamina, and strength (physical stamina, reflexes, energy level, physical coordination, agility, figure or physique, appearance of stomach, health, physical condition, weight). The fact that weight-related body items (e.g., weight, appearance of stomach) load on this factor suggests that men primarily evaluate these body aspects in terms of how they help or hinder their movement through physical space rather than with how their bodies look as static beauty objects.

Reliability and Validity Data

Frost et al. (2017) reported adequate internal reliability of the BES-R subscales, with coefficient alphas ranging between 0.72 and 0.90 (for females, sexual attractiveness: $\alpha = 0.72$; weight concern: $\alpha = 0.89$; physical condition: $\alpha = 0.81$; for males, sexual attractiveness: $\alpha = 0.80$; upper body strength: $\alpha = 0.88$; physical condition: $\alpha = 0.90$). As with the original BES findings (Franzoi and Shields 1984), the BES-R subscale intercorrelations are somewhat higher for men than they are for women, suggesting that male body esteem, while multidimensional, is not as differentiated as female body esteem. This gender difference may be due to the longstanding cultural tendency to objectify women's bodies more than men's bodies, resulting in women being more likely than men to evaluate their bodies on a part-by-part basis, yielding lower female subscale intercorrelations. Measures of convergent and discriminant validity suggest that the BES-R provides a unique and accurate assessment of both female and male body evaluations, as did its predecessor. This is particularly important given the history of the scale's use in examining the

relationship between body esteem and numerous areas within the social sciences. In summary, the BES-R can be considered a psychometrically sound measure of body esteem for many years to come.

Conclusion

Since the original BES was first published in 1984, this measure has played an important role in our scientific understanding of the psychosocial dynamics of physical self-evaluation, both as a static beauty object and as a dynamic instrument of action. Two of the primary contributions that this scale has made to our understanding of body esteem is that (1) it was the first empirically based measuring instrument to recognize that body esteem is multidimensional rather than unidimensional, and (2) it was the first measure to recognize that women and men attach different meanings to the same body parts and body functions. The BES-R retains the distinction of being the only existing gender-specific body attitude measure. As such, the BES-R remains unique among existing measures in capturing the complexity of the body-esteem construct.

Cross-References

- ▶ Construct Validity
- ▶ Convergent Validity
- ▶ Socially Desirable Responding
- ▶ Socioeconomic Status Differences
- ▶ Test-Retest Reliability

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Bogus Pipeline

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Definition

The bogus pipeline is an experimental technique that encourages honest responding by leading participants to believe that the experimenter has

access to their true attitudes through the ostensible use of a lie-detecting device.

Introduction

The bogus pipeline technique generally involves the use of physiological equipment (e.g., a lie detector) that ostensibly allows the researcher to know if individuals are responding truthfully or not. Therefore, it is assumed that individuals – believing that the experimenter has access to their true attitudes – will respond more honestly (Jones and Sigall 1971). This technique has been used successfully in past research to collect self-reports on topics that may elicit a strong social desirability bias in participant responses such as attitudes toward race (Plant et al. 2003; Sigall and Page 1971), sexuality (Alexander and Fisher 2003; Fisher 2013), homosexuality (Boysen et al. 2006), and cheating (Fisher and Brunell 2014). The bogus pipeline procedure has also been extended more recently to examine self-assessments of individual difference variables such as self-esteem (Myers and Zeigler-Hill 2012) and narcissism (Brunell and Fisher 2014).

Procedure

The bogus pipeline technique was formally introduced in 1971 by Edward Jones (of Duke University) and Harold Sigall (of University of Rochester) in their landmark paper "The bogus pipeline: A new paradigm for measuring affect and attitude." The procedure is laboratory based and employs deception to convince participants that their physiological responses will reveal their true attitudes to the experimenter. When faced with the dilemma of whether to respond in a socially desirable manner or to respond honestly, it is assumed that participants will be motivated to provide more honest self-reports so as not to appear inconsistent. The type of ostensible physiological monitoring used for the procedure is flexible. Lie-detector machines, heart rate monitors, and skin conductance electrodes are commonly utilized by researchers employing the bogus pipeline procedure. It is not important for the physiological equipment to *actually* function, but it is of prime importance that participants *believe* that it truly functions. To that end, one essential element of the bogus pipeline procedure is the validation phase. After participants are connected to the physiological equipment, the experimenter demonstrates the "accuracy" of the equipment. This step is essential in the success of the bogus pipeline procedure as it enhances the believability of the manipulation. Once validation is complete, participants are asked to respond to self-report measures. Upon completion of the procedure, participants engage in a debriefing session in which the experimenter reveals and explains the use of deception during the procedure.

Conclusion

Due to the fact that the bogus pipeline procedure employs deception to convince participants to respond more honestly, its use as an experimental technique has been called into question on ethical grounds. Despite these criticisms, the bogus pipeline procedure has been utilized in an array of psychological research since it was first introduced in 1971. Furthermore, it does appear to be an effective experimental procedure. A meta-analysis of 31 bogus pipeline studies supported the contention that the bogus pipeline procedure actually does encourage participants to provide more honest self-reports (Roese and Jamieson 1993). The bogus pipeline technique continues to be used by researchers interested in finding a way around socially desirable responding, but its popularity may be somewhat limited by its labor-intensive procedure and the need for a laboratory outfitted with physiological equipment.

Cross-References

- ▶ Attitudes
- ▶ Impression Management
- ▶ Social Desirability Response Style

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Boldness

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Synonyms

Fearless dominance; Fearless temperament; Threat sensitivity; Trait fear

Definition

Boldness is a biobehavioral trait that relates to the developmental concept of fearless temperament. It encompasses tendencies toward social dominance, emotional stability/resilience, and adventurousness.

Introduction

Boldness is a dispositional construct reflecting characteristics of emotional resiliency, interpersonal dominance, and venturesomeness. Boldness is strongly linked to the developmental notion of fearless temperament. Importantly, boldness is a biobehavioral trait with clear referents in the brain's defensive motivational system; as such, it is a valuable target of investigation for linking neurobiological systems to psychological characteristics of people. In this brief review, we consider historic referents for this trait construct in the psychological literature and discuss how it relates to normal and abnormal personality dispositions and what we know about its causal bases and neurobiological aspects.

Historic Referents for the Boldness Construct

The idea of biologically based differences in fear reactivity has been emphasized in the child development literature for some time. Kagan (1994), for example, identified timidity in novel situations as a core facet of temperament, and posited that children extreme in this tendency are prone to develop anxiety-related problems in later life. Dispositional fearfulness has also been emphasized in the adult personality literature, for example, in constructs of "harm avoidance," conceptualized narrowly as avoidance of dangerous or unfamiliar situations (Tellegen and Waller 2008) or as a broad trait encompassing social shyness, fearful anticipation, intolerance for uncertainty, and low energy/resilience (Cloninger 1987). Referents in the general psychological literature for the opposing concept of fearlessness include research on

characteristics of courageous individuals and psychological resilience (Rachman 1978).

Another major referent for the concept of boldness is the literature on psychopathic personality (psychopathy). In his classic 1941 book, *The Mask of Sanity*, Cleckley characterized psychopathy as a disorder involving proneness to wild, unrestrained behavior disguised ("masked") by an outward appearance of "robust mental health." Along with features reflecting deviancy, his diagnostic criteria for the disorder included social charm, lack of anxiety or nervousness, and failure to learn from punishment. Inspired by Cleckley's description, early and later research on psychopathy in offender samples focused on deficient fear reactivity as a core element of constitutionally based ("primary") psychopathy.

More recent research with community non-offender samples has led to delineation of boldness as a specific facet of psychopathy, distinct from its impulsive-disinhibitory and callous-exploitative facets. A major development in this regard was factor analytic work on the Psychopathic Personality Inventory (PPI; Lilienfeld and Widows 2005), a self-report inventory designed to index psychopathic traits in the general population, which revealed two distinct, orthogonal factors underlying its eight subscales. One of these factors, labeled "fearless dominance," is defined by the PPI's Social Potency, Stress Immunity, and Fearlessness subscales; the other, termed "self-centered impulsivity," is marked by Carefree Nonplanfulness, Impulsive Nonconformity, Machiavellian Egocentricity, and Blame Externalization subscales. (The PPI's remaining subscale, coldheartedness, appears to index a separate dispositional tendency – interpretable as callousness or meanness; Patrick et al. 2009).

The correlates of these two PPI factors differ substantially: Fearless dominance relates to certain pathological tendencies such as narcissism, emotional insensitivity, and risk-taking but also – consistent with Cleckley's "mask" concept – has salient adaptive correlates including verbal proficiency, social confidence, lack of anxious-depressive symptomatology, and increased achievement and educational attainment (Benning et al. 2005a). As an illustration of this adaptive aspect to fearless dominance, Lilienfeld et al. (2012) presented evidence that some of the most revered of the US presidents – Theodore and Franklin Roosevelt and John F. Kennedy – were notably high on this dispositional dimension. Self-centered impulsivity, by contrast, is associated mainly with pathological tendencies, including early behavior problems, boredom susceptibility, aggressiveness, affective dysregulation, proneness to abuse substances, and decreased educational/occupational function.

Drawing on these results for the PPI along with other conceptual and empirical sources, Patrick et al. (2009) formulated a triarchic model that conceives of psychopathy as externalizing proneness (disinhibition) accompanied by emotional detachment in the form of boldness and/or callousness (meanness). In line with Cleckley's "mask" description and scales comprising the PPI's fearless dominance factor, Patrick et al. defined boldness as a broad trait encompassing social dominance, emotional resiliency, and venturesomeness. They suggested that Cleckley's concept of psychopathy as masked pathology reflects disinhibition accompanied by boldness, whereas the criminalistic notion of psychopathy as predatory-aggressive offending reflects disinhibition combined with meanness. Of note, recent research by Crego and Widiger (2016) corroborates the idea that boldness is strongly represented in Cleckley's description.

Measurement and Associations with Other Personality Traits

Two major operationalizations of boldness have been the fearless dominance factor of the PPI and the boldness scale of the Triarchic Psychopathy Measure (TriPM), an inventory designed specifically to assess the constructs of the triarchic model (Drislane et al. 2014). These boldness measures correlate strongly with each other (~.8) and show robust associations with normal-range traits and pathological personality dispositions. For example, they each show positive and negative relations, respectively, with five-factor model dimensions of extraversion and neuroticism and with counterpart

dimensions of the Multidimensional Personality Questionnaire. Boldness has also shown reliable associations with certain clinical scales of the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) and the Personality Inventory for DSM-5, which assesses pathological personality traits as described in Sect. III of the fifth edition of the *Diagnostic and Statistical Manual of Mental Disorders*. These associations have made it possible to create scale measures of boldness using items from these and other preexisting inventories. The ability to create scale measures of this construct from different established inventories creates opportunities to study boldness in unique ways using specialized existing datasets – including prospective-longitudinal, twin, and biological-assessment datasets.

A question that arises from research on the personality correlates of boldness is why this construct cuts across trait dimensions that are viewed as separate from one another in well-established personality models. A potential explanation for this, considered in the next section, is that boldness reflects an underlying biobehavioral disposition that is expressed in different psychological-experiential domains.

Neurobiology of Boldness

The construct of boldness has clear referents in neurobiology: It has been linked conceptually and empirically to under-reactivity of the brain's defensive motivational system, a neural network that governs detection and response to potential threats. The defensive system includes limbic structures such as the amygdala, whose activation in the face of aversive cues can be indexed in humans and animals by increased startle reactivity to abrupt noise probes. In line with the idea that primary psychopathy involves deficient fear, a well-documented finding in studies with offenders is that those high in affective-interpersonal features of psychopathy show deficient startle-blink potentiation during aversive cuing. Benning et al. (2005b) likewise found that high-bold community participants showed a lack of aversive startle potentiation.

Kramer et al. (2012) extended this work by confirming, through use of structural equation modeling, that the various scale measures of fear and fearlessness operate as common indicators of a coherent bipolar trait dimension, with PPI – fearless dominance anchoring the fearless pole of this continuum. These authors further demonstrated that (a) scales tapping distinct modes of fear expression (i.e., in domains of social interaction, perceived experience, and activity seeking) covaried together even after accounting for their common relations with the general fear/boldness trait factor and (b) the general factor, but not the domain-specific factors, covaried with aversive startle potentiation. The implication is that biologically based differences in reactivity of the brain's defensive system are expressed in differing domains of function – including social-interpersonal, affective-experiential, and exploratory-behavioral. Another notable feature of the Kramer et al. study is that participants consisted of twins, enabling the authors to demonstrate a sizable contribution of genetic influences to score on the general fear/boldness dimension.

Extending further from the foregoing work, recent research by Yancey et al. (2016) has demonstrated that scores on this scale-assessed boldness/fear dimension can be combined with physiological measures of aversive response (including startle potentiation) to quantify variations in fear/boldness "psychoneurometrically," i.e., at the interface of reported fearfulness and biological defensive reactivity. Fear/boldness quantified in this manner correlates robustly with both diagnostic and neurophysiological criterion measures (i.e., fear-disorder symptoms and brain indicators of fear response). Work of this type demonstrates the utility of boldness as an individual difference construct that can help to elucidate the role that neurobiological processes play in clinical problems ranging from psychopathic personality to phobic fear.

Conclusion

Boldness is an individual difference characteristic involving social dominance, emotional resiliency,

and venturesomeness that can be quantified using items from various self-report inventories. It has clear neurobiological referents in the brain's defensive motivational system and thus can be operationalized as well using physiological indicators combined with trait-scale measures. As such, boldness represents a promising individual difference construct for elucidating the interplay between neurobiological systems and clinically relevant psychological characteristics of individuals.

Cross-References

- EASI Temperament Survey
- Fearless Dominance
- International Affective Picture System
- Multidimensional Personality Questionnaire (MPQ)
- Narcissistic Personality Inventory
- Personality Inventory for the DSM-5
- Shyness and Sociability
- Youth Psychopathic Traits Inventory (YPI)

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Borderline Personality Disorder

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Definition

Borderline personality disorder is a mental disorder associated with a pervasive, enduring pattern of instability in relationships, behaviors, emotions, and sense of self.

Introduction

Borderline personality disorder (BPD) is a personality disorder characterized by a chronic pattern of instability, most notably in the domains of

interpersonal functioning, behavior, emotion, and self-concept. Individuals suffering from BPD usually have tumultuous relationships, engage in impulsive behaviors, are affectively labile, and may struggle with identity disturbance. Related to behavioral impulsivity, individuals with BPD often exhibit suicidal and self-harm behaviors (Paris 2005). The Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5, American Psychiatric Association 2013) estimates the prevalence of BPD to be 1.6% in the general population, though some estimates are as high as 5.9% (APA 2013). BPD appears to be the most common personality disorder among patients treated at both inpatient and outpatient mental health facilities; averaged across studies, evidence suggests that it is found among slightly more than 30% of all patients receiving mental health treatment (Zimmerman et al. 2005). Due to its severity, complexity, and comorbidity rates, BPD tends to be difficult to treat and is often poorly understood both within and outside the psychiatric community. Patients with BPD are notoriously difficult to treat – both because aspects of the pathology are resistant to change and because many therapists find aspects of the pathology difficult to work with as compared to other disorders. However, tremendous strides have been made in recent decades in terms of research, diagnosis, training, and treatment, leading to a continually expanding understanding of the etiology of and effective intervention with the disorder. This entry will begin by providing an overview of the current diagnostic criteria for BPD and its history as a disorder in the *DSM*, will then review the characteristics associated with BPD, and will conclude by highlighting recent debates surrounding the diagnosis as well as treatment considerations.

Current Diagnostic Criteria for Borderline Personality Disorder

BPD is defined in the DSM-5 as a mental disorder characterized by "a pervasive pattern of instability of interpersonal relationships, self-image, and affects, and marked impulsivity beginning in early adulthood and present in a variety of contexts, as indicated by five or more of the following: (1) frantic efforts to avoid real or imagined abandonment, not including para-suicidal behaviors, (2) a pattern of unstable and intense interpersonal relationships, characterized by alternating between extremes of idealization and devaluation, (3) identity disturbance, (4) impulsivity in at least two areas that are potentially self damaging, such as excessive spending, risky sexual behavior, substance abuse, binge-eating, etc, (5) recurrent suicidal behavior, gestures, threats, or self-mutilating behavior, (6) affective instability due to a marked reactivity of mood, (7) chronic feelings of emptiness, (8) inappropriate, intense anger that is difficult to control, (9) transient stress related paranoid ideation or severe dissociative symptoms" (APA 2013, p. 663).

The interpersonal features of BPD typically include unstable and intense relationships, as individuals with BPD struggle with being alone and are intensely fearful of abandonment, leading to a severe sensitivity to rejection (De Panfilis et al. 2016). These relationship difficulties are further complicated by rapidly shifting and intense emotions and moods, sometimes within minutes to hours. Additionally, BPD individuals often experience disturbances in their identities, as they struggle to integrate and maintain a realistic and intact sense of self. People with BPD often oscillate between positive and negative perceptions of themselves and may be uncertain about their goals, values, or sexual preferences. Chronic feelings of emptiness and boredom are also frequently experienced by BPD individuals. This persistent affective, interpersonal, behavioral, and identity dysregulation reflects Schmideberg's (1959) oft-cited description of BPD as a disorder of "stable instability" across all areas of functioning. Interpersonal features, such as dependency or fear of abandonment, and affective features, such as anxiety or anger, are the most common and enduring traits among BPD patients (Leichsenring et al. 2011). The course of treatment for BPD varies, as it is less stable over time than other personality disorders. Some research suggests that symptoms often remit over time; among those treated for BPD in their 20s, only 25% will still meet the

criteria for BPD by the time they are 40–50 years old (Castonguay and Oltmanns 2013). Other research notes that while the more volatile behaviors tend to ease over time, difficulty achieving high levels of vocational and relational functioning remains chronically persistent (Zanarini et al. 2010). These varied rates of symptom remission and long-term functioning among BPD individuals speak to the unstable nature of the disorder.

A Historical Overview of Borderline Personality Disorder

The term "borderline" was first used in a psychological context by Adolph Stern (1938) to describe people "on the border line between neurosis and psychosis," thus defying categorization (Lewis and Grenyer 2009). In 1953, Robert Knight wrote about "borderline schizophrenia," which led to the colloquial use of the term among psychoanalysts to describe patients who they perceived as regressing to psychosis when confronted with ambiguous or unstructured situations (Gunderson 2009). At that time, psychoanalysis was believed to be appropriate for neurotic patients but unsuitable for those suffering from psychosis; because of their supposed similarity to psychotic patients, "borderline" patients were also considered unsuitable for psychoanalysis and, therefore, untreatable.

In 1967, psychoanalyst Otto F. Kernberg reconceptualized "borderline" as a distinct personality organization situated between the neurotic and the psychotic realm. Broadly speaking, personality organization refers to a person's underlying psychological structure, ranging on a continuum of severity from neurotic to psychotic and defined in terms of the capacity for reality testing, nature of the concept of self and other, and primitive versus mature defense mechanisms. In contrast, personality disorder refers to a specific set of observable symptoms and characteristics exhibited by the individual. Kernberg (1975) described borderline organization as a broad category of patients whose underlying psychology does not have chronic breaks from reality testing associated with psychotic patients, but who also lack the integrated sense of self, stable relationships, and affect regulation associated with neurotic patients (Kernberg and Michels 2009). He described individuals in this range of borderline functioning as suffering from diffuse identity, primitive defense mechanisms, and transient departures from reality testing in the context of heightened distress. One primitive defense mechanism commonly employed by borderline patients is splitting, in which good and bad mental states related to oneself and to others are kept separate. Kernberg (1975) believed that an overreliance on splitting, and the resulting lack of a coherent sense of self and others, stemmed from a failure to integrate early representations of significant caregivers (or "objects"). Due to often overwhelming negative childhood experiences, including trauma and abuse (Lewis and Grenyer 2009), the borderline use of splitting serves to preserve and protect positive mental representations from being contaminated or destroyed by negative ones (Kernberg 1975). This richer developmental understanding of borderline organization and its developmental roots led Kernberg to assert that borderline patients are, in fact, treatable.

Masterson (1972) also supported the use of long-term psychotherapy for this population and drew attention to the early environmental characteristics shared by many BPD patients, such as poor parenting; physical, sexual, and emotional abuse; and abandonment (Gunderson 2009). In contrast, psychiatrist Donald Klein (1977) believed the use of the term "borderline" primarily served to label those patients for whom psychoanalysis did not work, so that psychoanalysis could maintain its special place of preeminence. Despite these objections, early clinical observations about BPD have endured. Schmideberg's (1959) description of the "stable instability" of borderline patients is often used to describe BPD, as is Modell's (1963) description of the borderline patient's use of others as "transitional objects" (Gunderson 2009). Early observations of this population's fear of abandonment, use of the defense of splitting, and unstable perceptions of self and other also persist as hallmarks of BPD.

As the field of psychiatry moved toward a more descriptive approach to conceptualizing psychopathology, involving the emphasis of observable symptoms and empiricism, Dr. Roy Grinker attempted to apply this lens to BPD with his 1968 book *The Borderline Syndrome* (Gunderson 2009). His work inspired additional papers on borderline pathology, which likely led to the inclusion of Borderline Personality Disorder in the DSM-III in 1980. The DSM-III also introduced schizotypal personality disorder, definitively distinguishing borderline personality disorder from disorders similar to schizophrenia; it was agreed that while reality testing was impaired under stress, BPD patients were not psychotic.

While BPD was increasingly recognized as treatable, the field struggled to describe these patients in a non-pejorative way, characterizing them by their neediness, treatment resistance, and high risk of suicide. Many psychoanalysts described difficulty overcoming their negative countertransference reactions, or "countertransference hatred," which was common among those who treated borderline patients (Maltsberger and Buie 1974). Kernberg (1975) reframed these common reactions as stemming from the patient's unconscious, destructive urges. Rather than assuming a disparaging stance toward this population, he elucidated how the adverse experiences borderline individuals suffered in childhood contribute to their later presentation of complicated, sometimes volatile, and at times coercive behaviors (Gunderson 2009).

Despite its entry into the DSM, the diffuse nature of BPD as a diagnosis has persisted: for example, Akiskal et al. (1985) described borderline as "an adjective in search of a noun." Some psychologists believed that "noun" is depression, due to the frequent comorbidity of the two disorders (Gunderson 2009). Others feel that because of this comorbidity, borderline is not a unique diagnosis at all. Factor analytic studies suggest that BPD is perhaps better conceptualized as a dimension of severity running through all personality disorders, rather than a specific diagnostic category (Sharp et al. 2015). Compounding this issue of diagnostic diffusion, BPD patients display considerable heterogeneity of features; any combination of five (or more) of nine criteria is required for the diagnosis, producing up to 256 possible variant expressions of the disorder (Critchfield et al. 2008). Thus, two people can be diagnosed with BPD and share only one of the diagnostic criteria. Since its introduction in the DSM-III, few changes have been made to the disorder in subsequent editions. BPD continues to be a controversial diagnostic entity; however it is gaining attention as a public health concern. In 2008, the US House of Representatives passed House Resolution 1005 unanimously naming May Borderline Personality Disorder awareness month, thanks to the efforts of public advocates (Gunderson 2009).

Characteristics of Borderline Personality Disorder

BPD is the most frequently diagnosed personality disorder in clinical settings (Leichsenring et al. 2011). Epidemiological studies have found that 1.6–5.9% of the general population meets criteria for BPD (APA 2013). The prevalence is higher in clinical contexts, with 6% of patients seen in primary care settings meeting criteria for BPD, compared to 10% of outpatients in mental health clinics and 20% of patients in psychiatric inpatient settings. These numbers may also be an underestimate, as some studies of nonclinical samples suggest that BPD is underreported and often left untreated (Leichsenring et al. 2011). One study found that BPD diagnoses were four times more common in primary care settings than the general population, suggesting that people with BPD may disproportionally access primary care treatment (Leichsenring et al. 2011). Their extensive use of both medical and mental health treatment means that BPD has a high cost to society. BPD is diagnosed primarily in females at a rate of seven to one, and 80% of people in treatment for BPD are women (Becker 2000; Leichsenring et al. 2011). Yet there is no evidence that these diagnostic differences reflect the actual prevalence of the diagnosis and may speak more to diagnostic issues (Leichsenring et al. 2011; Paris 2005),

with similar behaviors in men being attributed to other diagnoses such as narcissistic personality disorder. However, there are notable gender differences in regard to comorbid disorders; men with BPD demonstrate higher rates of co-occurring substance abuse disorders, while women with BPD show higher rates of eating disorders (Castonguay and Oltmanns 2013; Leichsenring et al. 2011).

At present, there are two distinct views of the developmental trajectory of BPD. The psychoanalytic view emphasizes early experience, particularly developmental ruptures in relationships with attachment figures (Bateman and Fonagy 2004). Several psychoanalytic theorists cite unempathic parental care, traumatic experience, and poor parent-child "match" as shared features of development (Kernberg and Michels 2009). Psychiatry focuses more on constitutional factors, such as genetic links to bipolar and other affective disorders, temperamental characteristics such as impulsivity and negative affectivity, and brain functioning (Kernberg and Michels 2009). Indeed, research suggests that there is a biological and genetic component to BPD. People with BPD are five times more likely to have a first-degree relative with BPD than by chance alone, and one twin study found that 42% of the variance in BPD symptoms can be attributed to genetics (Lewis and Grenyer 2009). Additionally, impulsivity in BPD individuals may also be related to inhibition areas of the brain involved in cognitive control such as the prefrontal and preorbital cortex and the anterior portion of the cingulum (Posner et al. 2002). More specifically, research found that BPD patients had decreased activity in the dorsolateral prefrontal and orbitofrontal cortex in contrast to normal control subjects when processing inhibitory words and had increased amygdalar activity when processing neutral words (Kernberg 2006b). Research also supports aspects of Marsha Linehan's (1993) biosocial theory of BPD, framing etiology as a combination of a biological disposition and a childhood environment that invalidated the persons' emotional experiences and beliefs about themselves (Lewis and Grenyer 2009). Therefore, it appears that biological, genetic, and environmental factors all play a role in the development of BPD.

The contribution of adverse childhood experiences to the development of BPD is also supported in the research; people diagnosed with BPD have much higher rates of traumatic or adverse childhood events compared to the general population and compared to people diagnosed with other personality disorders (Lewis and Grenyer 2009). Although the results are mixed, with some studies finding that 81–91% of people with BPD experienced abuse or neglect in childhood (Lewis and Grenyer 2009), and others finding that as few as one third had those negative experiences (Yen et al. 2002), the literature broadly demonstrates that early adverse events can indeed play a role in the development of BPD (Bandelow et al. 2005). Childhood sexual abuse is particularly common in this population, which some have suggested helps to explain the higher rate of BPD in women, since they are more likely to have experienced childhood sexual abuse. These correlations have led many people to see trauma as an important etiological factor for BPD (Lewis and Grenyer 2009). However, trauma is neither necessary nor sufficient for the development of BPD, again leading researchers to conclude that it is most likely a combination of genetic and developmental/environmental factors.

Indeed, the psychodynamic literature supports this multifaceted model of development of BPD as well. For example, drawing upon neurobiological literature, Kernberg (2006a) argues that genetic and constitutional dispositions contribute to the predominance of negative affect, which in turns increases their susceptibility to the development of disorganized attachment and exposure to various psychosocial stressors. As a result of the constitutionally higher negative affect and subsequent difficulty in effectively processing environmental stressors, these individuals rely splitting in order to preserve what is typically a fragile representation of positive experiences and emotions. For this reason, the use of splitting allows the individual to maintain some semblance of functioning, but ultimately results in an unintegrated concept of self and other (Kernberg 2006a). Kernberg and Michels (2009) aptly point out,

however, that research has not yet been able to fully clarify how the neurobiological composition specifically contributes to psychological development in terms of structural levels of personality organization.

This foundational negative affectivity is thought to also significantly contribute to the frequency with which many people with BPD engage in non-suicidal self-injury and suicidal ideation. In fact, Oldham (2006) suggests that suicidal symptoms, which include recurrent suicidal behaviors, gestures, threats, or self-mutilating behavior, are particularly prominent when affective or behavioral dysregulation characterizes the symptom presentation. Some studies indicate that the rate of completed suicide among BPD patients is between 8% and 10%, 50 times higher than among the general population, while 60–70% of BPD patients make unsuccessful suicide attempts (Doll et al. 2013; Leichsenring et al. 2011; Oldham 2006). It is estimated that BPD is present in 30% of individuals who die by suicide, 40% of individuals who make suicide attempts, and 50% of psychiatric outpatients who die by suicide (Oldham 2006). Risk factors for attempting suicide include a prior history of suicide attempts, persistent substance abuse, comorbid mood disorder, high levels of hopelessness, a family history of completed suicide or suicidal behavior, a history of sexual abuse, high levels of behavioral impulsivity, and antisocial traits (Oldham 2006). Research suggests that age plays a role in patterns of suicidal behavior as well – suicidality is most common when BPD patients are in their twenties, while patients younger than 20 are more likely to display low-risk, impulsive suicidal actions. The highest rate of completed suicide is among people in their thirties who have sought treatment repeatedly with little impact (Paris 2005). Comorbidity also plays a role in suicidality; for example, one study showed that for inpatients with BPD, comorbid depression increased the number and seriousness of their suicide attempts (Soloff et al. 2005). Further, in patients with BPD only, symptoms of depression and suicidality are usually reactive to perceived stress and typically brief in duration, and suicide attempts tend to be impulsive. For BPD individuals with comorbid major depression, however, suicidality develops and gradually deepens over time and is often accompanied by signs of depression such as loss of appetite, sleep disturbances, and anhedonia (Oldham 2006).

Stanley and Brodsky (2005) have distinguished between two types of self-destructive behavior. One form consists of suicide attempts and suicide gestures, both of which consist of intentionally self-destructive acts where the individual has at least a partial intent to die. The other form consists of self-injurious behaviors, which are nonsuicidal self-injury or self-mutilation that consists of intentional self-destructive behavior with no intent to die, such as excessive drinking, high-risk sexual activity, cutting, or burning. Parasuicide, which refers to any nonlethal, intentional self-injurious behavior, is also included under this umbrella of self-injurious behavior; it is estimated that approximately 75% of BPD patients make at least one nonlethal suicide attempt, while an even higher percentage engage in self-injurious behavior (Oldham 2006). It is important to note that both self-injurious and suicidal behavior may occur in the same patient. Further, it is estimated that the presence of self-injurious behavior doubles the patient's risk for suicide. While self-mutilation behaviors are concerning and potentially dangerous, these actions often serve an emotional regulatory function for patients and are not necessarily associated with an intention to die (Gunderson and Ridolfi 2001; Paris 2005). Some research also suggests that self-injurious behavior in BPD patients may be associated with different motivations, meanings, or goals at various times for the same patient, at times possibly producing a feeling of relief for acute dysphoria, at other times serving as a way to self-punish, and sometimes functioning as a way to express anger (Gunderson and Ridolfi 2001; Oldham 2006). It may also be accompanied by an analgesic effect, which suggests the release of endogenous opiates during acute intensifications of dysphoric states (Oldham 2006).

Most people with BPD meet criteria for another psychiatric diagnosis; 84.5% have a comorbid psychiatric disorder that is not a personality disorder, and 73.9% meet criteria for another personality disorder (Leichsenring et al.

2011; Lenzenweger et al. 2007). Due to the affective component of BPD, it is common for BPD patients to also suffer from major depressive disorder (MDD), with 86% of BPD patients meeting criteria for depression, 62% meeting criteria for a substance use disorder, 54% meeting criteria for an eating disorder, and 45% meeting criteria for dysthymia (Lewis and Grenyer 2009). Due to the high rates of trauma discussed above, it is unsurprising that PTSD diagnoses are also common in this population, with one study finding that 58% of BPD patients also met criteria for PTSD (Lewis and Grenyer 2009). This is notably higher than the general population rate of PTSD, which is 10%. In light of this fact, some have conceptualized BPD as a trauma spectrum disorder (Leichsenring et al. 2011). Those advocating for BPD as a trauma-related disorder point out that BPD and PTSD symptoms overlap in several domains, particularly emotion regulation and interpersonal functioning (Lewis and Grenyer 2009).

Diagnostic Considerations

Considering the diagnostic complexity and comorbidities outlined above, it is no surprise that diagnosing BPD can be difficult. Despite being one of the most researched disorders, findings regarding the reliability and validity of BPD as a diagnostic entity are inconsistent (Becker 2000). Lewis and Grenyer (2009) posit that the diagnostic criteria of BPD lack reference to the early childhood trauma that is often found to be present in the history of those with BPD. They believe, therefore, that BPD would be best categorized as complex PTSD or a trauma spectrum disorder and that reformulating it as such would lead to a greater understanding of both the etiology and treatment of the disorder. However, others have argued that this reformulation would conflate risk with causation, since not every person who experiences childhood trauma develops BPD and not every person with BPD has a history of trauma. Also, as noted earlier, some studies have found much lower rates of PTSD in BPD populations (Yen et al. 2002).

Responding to the aforementioned problems with BPD and other personality disorders as diagnostic entities, a proposal for radically restructuring personality disorder diagnosis in the DSM-5 was offered (APA 2013). Though ultimately not adopted, DSM-5's Section 3 Alternative DSM-5 Model for Personality Disorders (AMPD) offered a hybrid model that combined an assessment of personality *functioning* with personality *traits* (APA 2013). Levels of personality functioning (Criterion A) evaluate both self (identity, self-direction) and interpersonal (empathy, intimacy) functioning. For example, BPD functioning would be characterized by impairments in identity (diffuse, unstable, self-critical, empty), self-direction (unclear goals, aspirations, plans), empathy (hypersensitive, difficulty recognizing others' emotions, negativity bias), and intimacy (intense, unstable, extreme perceptions). Dimensions of personality traits (Criterion B) evaluate the pathological trait facets of antagonism, disinhibition, detachment, negative affectivity, and psychoticism. For example, BPD trait pathology would be characterized by negative affectivity (labile, anxious, depressive, separation insecurity), disinhibition (impulsive, risk taking), and antagonism (hostility). There is a robust literature demonstrating that personality pathology maps onto Criterion B trait dimensions (Rojas and Widiger 2017), and the support for Criterion A dimensions of functioning in personality pathology is growing (Waugh et al. 2017).

By contrast, the National Institute of Mental Health (NIMH) has sought to shift its focus away from DSM diagnoses altogether, and to instead focus its research priorities on dimensions of neurobiological functioning that transcend a given categorical (DSM) disorder, called Research Domain Criteria (RDoC; Cuthbert and Insel 2013). Neurobiological systems of focus that are most relevant to BPD would likely include fear system reactivity, positive valence instability, reward system seeking, and deficits in constraint/effortful control. This approach would shift the focus away from evaluation of BPD as a specific personality disorder and toward dimensions of psychopathology that may characterize an array of disorders (i.e., fear responsivity).

While these developments in how to conceptualize diagnosis are recent and continually developing, there does seem to be agreement about greater consideration of the dimensional aspects of BPD pathology.

Treatment Considerations

It is widely agreed upon in the literature that long-term psychotherapy is the most effective treatment for individuals with BPD (Lewis and Grenyer 2009). The APA Practice Guidelines for the Treatment of Patients with BPD recommend psychotherapy as the primary evidence-based treatment (Oldham 2006), though medication may be a helpful adjunctive treatment to target specific mood symptoms. Since suicide risk is significant for this population, suicidal ideation and attempts should not be taken lightly by the therapist, and it should be monitored closely. Safety planning is critical, as well as developing new skills to manage distress that do not rely on self-harm. A number of treatment modalities have garnered empirical support for their efficacy, including dialectical behavior therapy (DBT; Linehan et al. 1994), transference-focused psychotherapy (TFP; Clarkin et al. 2007), and mentalization-based therapy (MBT; Bateman and Fonagy 2004). While these treatments vary widely in their techniques and theoretical foundations, they all recommend a structured approach to therapy that first addresses decreasing life-threatening behaviors and symptoms that threaten the patient's current functioning and safety. Each also emphasizes reducing experiential avoidance once the patient has been relatively stabilized and a therapeutic relationship has been established and increasing the patient's level of functioning and productivity (Lewis and Grenyer 2009; Lieb et al. 2004). Castonguay and Oltmanns (2013) point out that while BPD patients may feel attached to the therapist more quickly and easily than patients with other personality disorders, their relational difficulties will manifest as well. This includes testing professional boundaries and alternating between idealizing and devaluing the clinician. Therefore, maintaining boundaries and calling attention to the patient's perception of the therapist are important parts of BPD treatment. Moreover, because the lives of BPD patients are characterized by chaos, it is of vital importance that the clinician maintains consistency, structure, and a focus on mutually agreed-upon treatment goals (Castonguay and Oltmanns 2013).

Kernberg and Michels (2009), who are proponents of the more psychodynamic TFP modality, expand on this idea of structure and therapeutic boundaries, pointing out that since BPD patients tend to get worse in unstructured therapy settings, BPD treatment strategies include more active therapists and a greater focus on the moment-to-moment patient-therapist dynamic in an effort to explore the relationship. This approach helps patients to recognize their affective reactions and what triggers them, to connect their own and others' actions with thoughts and feelings, and to regard behavior as motivated and reflective of intentions and desires. Indeed, research supports the efficacy of TFP. For example, in a randomized clinical trial comparing TFP to DBT and a supportive therapy control, both TFP and DBT evidenced significant improvement in suicidality, depression, anxiety, anger, and functioning, while only the TFP group demonstrated significant improvements in assault and irritability (Clarkin et al. 2007). TFP was also found to be uniquely effective in demonstrating change in attachment representations and reflective functioning during the course of treatment (Levy et al. 2006). Additionally, an uncontrolled study found that compared to the year prior to TPF treatment, the number of BPD patients who made suicide attempts significantly decreased, as did medical risk following self-injurious behavior. During the treatment year, patients had significantly fewer hospitalizations and days of psychiatric hospitalization compared to the year prior (Clarkin et al. 2001).

Research suggests that DBT has also proven to be an effective treatment for patients with BPD. DBT is a manualized, cognitive-behavioral treatment that teaches specific skills to regulate emotions, tolerate emotional distress, and improve functioning in interpersonal conflicts. Through mindfulness practices, behavioral

analysis, exposure-based treatment procedures, reinforcement contingencies, individual and group therapy, phone coaching, and a therapist team support system, DBT is a highly structured, rigorous, and effective treatment for individuals suffering from BPD, particularly patients struggling with suicidality and self-injurious behaviors (Lieb et al. 2004). In a review by Matusiewicz et al. (2010), randomized controlled trials suggested that DBT yields significantly greater reductions in the frequency of suicidal behavior and anger and higher rates of treatment retention when compared with a variety of other CBT techniques. Some of the first DBT studies by Linehan showed that in comparison to treatment-as-usual conditions, participants with BPD showed reductions in anger, greater social adjustment, and improved interpersonal functioning (Linehan et al. 1994, 1999), and this has been replicated when comparing DBT to a treatment condition delivered by well-trained clinicians (Turner 2000). Patients in the DBT treatment group had significantly fewer suicide attempts, emergency room visits, and inpatient days; decreased impulsiveness, depression, and anger; and greater global adjustment (Turner 2000), indicating that DBT may be an efficacious treatment for patients with BPD. In another study by Linehan et al. (2006), BPD was compared with community treatment by experts. Patients in the DBT group were half as likely to make a suicide attempt, required less hospitalization for suicide ideation, had lower medical risk, and were less likely to drop out of treatment (Linehan et al. 2006).

Although research overall suggests that DBT and TFP appear to be better than treatment as usual for certain aspects of BPD, particularly suicidality (Leichsenring et al. 2011), there is no clear evidence that any treatment leads to patients no longer meeting the criteria for BPD. In fact, Kernberg and Michels (2009) point out that while the more behaviorally dysregulated symptoms of BPD respond relatively quickly to structured treatments, the more subtle and nuanced underlying personality dispositions may be slow to change, as BPD patients still show interpersonal and emotional difficulties decades after completion of treatment. The limited timespan of random controlled trials, therefore, poses a major challenge to the field of BPD treatment research and should be taken into account when evaluating change.

There is also research to support pharmacology treatment for individuals with BPD, though the evidence is mixed and inconclusive (Leichsenring et al. 2011). APA guidelines recommend symptom-targeted pharmacotherapy to be combined with psychotherapy (Oldham 2006). In general, newer generation atypical neuroleptics in low doses are recommended for treating cognitive-perceptual symptoms, and SSRIs are recommended for stabilizing impulsive aggression and affective dysregulation. Research suggests that BPD patients respond inconsistently to a variety of medications, although only 30% respond satisfactorily over time (Kernberg and Michels 2009). Further, after several months of treatment, many patients who initially responded well to medication report decreased effectiveness of the treatment, as their underlying personality structural disposition seems to interfere with the medication's influence (Kernberg and Michels 2009). Lieb et al. (2004) point out some limitations of pharmacological studies, specifically that medication is typically tested in moderately ill patients as opposed to severely impaired patients. They also note the high drop-out rates of treatment and the low symptom stability, which makes patients prone to high placebo response rates.

Conclusion

In sum, borderline personality disorder (BPD) is characterized by "stable instability" across domains, including affect, relationships, behavior, and sense of self. People with BPD often report feeling empty or bored and fear that they will be rejected or abandoned. They are also likely to engage in non-suicidal self-injury and to experience suicidal thoughts. There are several empirically supported interventions for BPD, most of which target behavioral and emotional dysregulation, impulsive self-harming behaviors, and interpersonal problems. When working with people with BPD, it is important to be aware of the

impact of stigma on seeking out services in the past and the potential ramifications of the diagnosis on future treatment. It is also important to maintain consistency and structure in the treatment and to be conscious of comorbid diagnoses as well as the potential role of trauma in their presentation.

Cross-References

- ▶ Personality Disorder
- ▶ Transference-Focused Psychotherapy

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Boredom Proneness

► Boredom Propensity

Boredom Propensity

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Synonyms

Boredom proneness; Boredom susceptibility; Trait boredom

Definition

Boredom researchers have yet to agree upon a singular definition of boredom propensity. The most prominent conceptualizations of boredom propensity are discussed below. Boredom propensity may be tentatively understood as a characteristic tendency or vulnerability to experiencing boredom.

Introduction

From medieval monks to romantic novelists to modern-day filmmakers, scholars and artists have been discussing boredom since the fourth century (Svendsen 2005). Recently, researchers have joined the conversation. Indeed, boredom has become interesting – at least to psychologists.

In particular, psychologists have become interested in the personality trait of *boredom propensity*. Interest in boredom propensity has arisen out of the observation that people differ in terms of the prominence of boredom in their lives, and for some individuals, boredom is a recurrent and oppressive problem. This entry will explore how boredom propensity has been defined and measured, its consequences and correlates, and potential future research directions.

How Has Boredom Propensity Been Defined and Measured?

The majority of research on boredom propensity has been conducted using two self-report scales: the Boredom Proneness Scale (BPS; Farmer and Sundberg 1986) and the Boredom Susceptibility Subscale of the Sensation Seeking Scale, Form V (ZBS; Zuckerman et al. 1978).

Farmer and Sundberg (1986) defined "boredom proneness" as "the tendency toward [s] experiencing boredom" and viewed their scale as more specifically assessing the degree of "connectedness with one's environment. . .as well as the ability to access adaptive resources and realize competencies" (p. 5, 10). The original BPS consisted of 28 true-false items. Sample items include "Much of the time I just sit around doing nothing," "I am often trapped in situations where I have to do meaningless things," and "Time always seems to be passing slowly." In 1990 Vodanovich and Kass converted the BPS into a 7-point Likert format in order to increase sensitivity, and this has become the most commonly used version of the scale today. The 7-point Likert format version of the BPS generally results in coefficient alphas between 0.79 and 0.91, a 1-week test-retest reliability ranging from 0.79 to 0.89, and 2-month test-retest reliability of 0.76. Since Vodanovich and Kass's 1990 paper, a number of different revisions and factor structures have been proposed for the BPS, with no one structure being consistently replicable. Recently, Struk et al. (2015) suggested that this inconsistency might be partly due to reverse scored items on the BPS hanging together as a pseudo-factor. After addressing this and other methodological issues, they proposed a new 8-item short form, single-factor version of the BPS called the sBPS. The sBPS represents the most current and best psychometrically informed version of the BPS.

Zuckerman (1979) defined "boredom susceptibility" as the "aversion for repetitive experiences of any kind, routine work, or dull and boring people and extreme restlessness under conditions when escape from constancy is impossible" (p. 103). Boredom susceptibility is conceived as being part of the broader construct of sensation seeking, which is defined as a trait involving "the need for varied, novel, and complex sensations and experiences and the willingness to take physical and social risks for the sake of such experience" (Zuckerman 1979, p. 10). The ZBS consists of ten forced choice options that describe an individual's possible reactions to environmental circumstances. Sample items include "I have no patience with dull or boring persons" versus. "I find something interesting in almost every person I talk to" and "I enjoy spending time in the familiar surrounds of home" versus "I get very restless if I have to stay around home for any length of time." Across 21 studies reporting reliability statistics for the ZBS, the ZBS had a mean alpha coefficient of 0.62 and a median alpha of 0.61. Split-half reliabilities have been found to range from 0.38 to 0.75. Given the ZBS's weak reliability, researchers interested in the ZBS and

the construct it assesses are encouraged to revise the scale to improve its psychometric properties.

A comparison of the BPS and the ZBS reveals that they measure different *types* of boredom propensity. The BPS items tap an individual's inability to become meaningfully engaged with his or her experience, whereas the items on the ZBS assess an individual's tendency to be uncomfortably under aroused in under stimulating environments. Mercer-Lynn et al. (2011) provided empirical evidence of the distinction between the BPS and the ZBS by showing that they are related to entirely different types of psychosocial problems. Higher BPS scores were associated with higher levels of neuroticism, experiential avoidance, attentional and non-planning impulsivity, anxiety, depression, dysphoria, and emotional eating, whereas higher scores on the ZBS were associated with higher levels of motor impulsivity, sensitivity to reward, gambling, and alcohol use and lower levels of neuroticism, experiential avoidance, and sensitivity to punishment.

Preliminary research suggests that boredom propensity is not simply a general measure of poor well-being, nor is it redundant with better-established personality factors. For instance, the BPS has been shown to be distinct from depression, apathy, and anhedonia (Goldberg et al. 2011), and cross-sectional regression models have revealed that BPS scores predict the internalizing problem of depressed mood, whereas ZBS scores predict the externalizing problem of anger, over and above a host of potentially confounding personality factors (Mercer-Lynn et al. 2013).

What Are Boredom Propensity's Consequences and Correlates?

Presumably individuals who are "high" on boredom propensity should have an increased tendency to experience state boredom. To our knowledge, this crucial potential consequence has not been systematically examined using the necessary longitudinal methods. Moreover, Mercer-Lynn et al. (2012) found that BPS scores did not interact with a boring situation to cause state boredom. Instead, the authors found main effects for BPS scores and experimental condition (boredom induction vs. non-boredom induction) in the prediction of state boredom scores. This raises the possibility that the BPS does not assess individuals' increased tendency to become bored when placed in a boring situation.

Beyond causing state boredom, boredom propensity could have other important consequences, either directly or indirectly via increasing state boredom. Indeed, research has shown that boredom propensity – as measured by the BPS and ZBS – is correlated with a range of affective, cognitive, behavioral, and social problems (for a comprehensive review, see Vodanovich and Watt 2016).

Affective Problems: The BPS is positively related to depression, anxiety, anger, and apathy.

Cognitive Problems: Individuals scoring high on the BPS perform poorly on lab-based attention tasks. Individuals scoring high on the BPS have problems with goal-directed action and are less likely to experience smooth information processing. Further, individuals scoring high on the BPS tend to find cognitively demanding activities aversive.

Behavioral Problems: Problem gambling has been linked to both ZBS and BPS scores. Scores on the BPS and ZBS have also been associated with impulsivity. Boredom susceptibility (ZBS scores) in particular has been linked to alcohol abuse and substance use.

Social Problems: Individuals who score high on the BPS tend to be more reckless drivers and are less inclined to vote.

Unfortunately, precise insight into boredom propensity's possible negative effects has been impeded in two main ways. First, the BPS and the ZBS are based on notably different conceptualizations of boredom propensity, and, as such, researchers must be careful not to generalize across these scales. Second, boredom propensity cannot be experimentally manipulated. Therefore, we cannot experimentally hold constant critical variables that vary with boredom propensity to isolate causal factors.

What Is the Future of Boredom Propensity Research?

The most pressing issue impeding work on boredom propensity is the absence of a singular,

agreed upon definition upon which to build a psychometrically sound measurement tool. What is required for a more fulsome and empirically useful definition of boredom propensity is a nomological network. A nomological network would outline theory and research on boredom propensity's central characteristics, as well as its theorized and empirically validated relationships with causes and consequences. Indeed, interest in integrating the disparate research and theory on boredom is increasing. Vodanovich and Watt (2016) have called for collaboration on a "unified" definition of boredom (p. 218), and Struk et al. (2015) have highlighted the need for measures of boredom propensity to be validated within a broader and more accurate understanding of boredom propensity itself.

For example, in terms of definition, boredom propensity could refer to the tendency to experience state boredom frequently, intensely, for extended periods of time, or as highly distressing. Alternatively, boredom propensity could refer to difficulty coping adaptively with state boredom and having trouble relieving state boredom when it occurs. Or, boredom propensity could be defined as the constellation of psychological factors that are thought to cause state boredom. As a final option, boredom propensity might capture the tendency to experience state boredom in specific circumstances. These are just some of the approaches that could be taken in specifying a definition of boredom propensity. Moving forward, it is recommended that conceptualizations of boredom propensity be anchored in emerging consensus around definitions of state boredom.

To date, empirical work has largely focused on boredom propensity's worrying effects on the individual (Vodanovich and Watt 2016). However, as noted above, a small area of research suggests that boredom propensity might also have substantial social consequences. Further work in this area is needed. For example, future work could examine if negative societal consequences of state boredom (such as out-group aggression) are also observed at the trait level.

An additional avenue for research is boredom propensity's positive effects – for instance, authors have discussed boredom as an opportunity to reflect on one's life path. However, the work conducted to date has been theoretical or has examined state boredom rather than boredom propensity.

Finally, potential interventions for boredom propensity have been entirely neglected. Future work could build on some existing, scattered research. For instance, Dr. Wijnand van Tilburg's body of work framing boredom as a response to meaninglessness suggests that establishing meaningfulness through strategies such as nostalgia could reduce boredom. Vodanovich and Watt (2016) have suggested that interventions for improving individuals' ability to structure their free time may help reduce boredom during leisure time.

Conclusion

There has been a notable increase in academic papers on the topic of boredom in psychology, especially in the last 10 years (Vodanovich and Watt 2016). Existing research on boredom propensity paints a fascinating picture and has established a foundation for future researchers to continue to build upon. In particular, it is recommended that current and future boredom propensity researchers help develop a definition of boredom propensity that is not measure specific and that clearly outlines boredom propensity's relationship with state boredom.

Cross-References

- ▶ Personality and Attentional Deficits
- ▶ Personality and Depression
- ▶ State/Trait Interactions

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Boredom Susceptibility

▶ Boredom Propensity

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Early Life and Educational Background

Peter Borkenau was born on October 26, 1949, in Bad Nauheim, Germany. He earned his Diploma in Psychology from Heidelberg University at Heidelberg, Germany, in 1975, and his Ph.D. in personality psychology from Heidelberg University, Germany, in 1982 under the direction of Manfred Amelang.

Professional Career

Peter Borkenau taught at Heidelberg University, Germany, from 1979 to 1983, at Bielefeld University, Germany, from 1983 to 1993, at Jena University, Germany, from 1993 to 1995, and at Martin-Luther University Halle-Wittenberg, Germany, from 1995 to 2015. He retired in 2015, authoring about 150 publications during his career which appeared in outlets such as the *Journal of Personality and Social Psychology, Journal of Personality, European Journal of Personality, Journal of Research in Personality,* and *Personality and Individual Differences.* Peter Borkenau has served as the Editor of the *European Journal of Personality* from 1996 to 2000 and as an Associate Editor of the *Journal of Research in Personality* from 2009 to 2011. He is a member of the Editorial Board of numerous journals, among them the *Journal of Personality and Social Psychology*, and has been a member of the board of directors of the International Society for the Study of Individual Differences from 2003 to 2009.

Research Interests

Personality structure. One of Borkenau's research foci is the structure of personality. In one of his early publications, Amelang and Borkenau (1982) found that five very congruent factors could be identified in self-ratings on adjective scales, in ratings by knowledgeable informants on adjective scales, and in self-reports on a heterogeneous set of multidimensional personality inventories. They interpreted these factors similarly as is now common for the dimensions of the Five-Factor model of personality. Very early already, this study showed that five factors of personality are replicable across instruments and observers.

Peter Borkenau is professor of psychology at Martin-Luther-Universität Halle-Wittenberg at Halle, Germany. He is a personality psychologist who conducted research mostly on (1) personality structure, (2) accuracy of personality impressions, and (3) quantitative genetics of personality.

Usually, studies on personality structure are on correlations among personality traits across persons, but similarities among persons across personality traits (i.e., similarities among personality profiles), and correlations among personality states across time, may be analyzed as well. In Cattell's covariation chart, these are *R*-, *Q*-, and *P*-correlations, respectively. The latter approach, yielding factor structures at the level of individual participants, was taken by Borkenau and Ostendorf (1998). They collected self-reports by 22 research participants on 30 adjective scales (i.e., marker variables of the Big Five factors of personality) on 90 consecutive days and correlated and factor analyzed them within individual participants across time. Moreover, they compared the resulting within-person structures to a reference factor structure of the correlations, across persons, among the corresponding traits. The main finding was that the within-person structure across time resembled the structure across persons, implying that the Big Five are useful for describing not only the covariation among traits across persons, but also the covariation among states across time.

But why do personality traits covary? The answer differs for performance data (being typical in research on cognitive abilities) and for judgmental data like self-reports or descriptions by knowledgeable informants. Judgmental data are typical in personality research, and a strong predictor of their correlations is the semantic similarity between the personality-descriptive terms (Borkenau 1986, 1992). In the 1970s, that association had resulted in a systematic distortion hypothesis, suggesting that the correlations among personality traits reflected distorted memories instead of the actual correlations among the traits being studied. Borkenau (1986; Borkenau and Ostendorf 1987), however, showed that a systematic overlap hypothesis accounts for those findings more convincingly. This hypothesis states that the semantic similarities among personality-descriptive terms predict to what extent those terms refer to overlapping behavioral instances. For example, the trait-descriptive terms *gregarious* and *talkative* are similar semantically, and both refer to overlapping activities in the sense that many behavioral instances of talkativeness are instances of gregariousness as well. Hence, there is the positive correlation between ratings of *talkativeness* and *gregariousness*.

Accuracy of personality impressions. Another focus of Peter Borkenau's research is the accuracy of judgments of personality. By about 1990, it had been established that self-reports agree substantially with ratings by intimate acquaintances, particularly by spouses, but also – although less strongly – with ratings by strangers who had observed an unacquainted target person for several minutes only. But why is that the case? According to Brunswik's lens model, there are observable cues being correlated with the actual personality traits, and judges tend to infer the targets' personality from those cues in appropriate ways. For example, extraverts actually tend to smile more, and judges infer high levels of extraversion from extensive smiling (Borkenau and Liebler 1995). Thus, judgments of extraversion tend to be accurate if the judges only see the targets, either in person or on a picture.

To identify the mediating cues, real persons – not fictitious characters – are to be studied. Moreover, it is more productive studying ratings of real persons by strangers than studying ratings by acquaintances. This is because the information being available to strangers can be controlled, whereas the information being available to acquaintances is multifaceted and uncertain. Indeed, self-other agreement is higher for ratings by acquaintances than by strangers, but that may not only reflect more extensive observations of the target's behavior but also communication between target and judge on the target's personality. By contrast, any communication between targets and judges can be prevented if personality judgments are provided by strangers.

To address these issues, Borkenau and Liebler (1992) videotaped 100 target persons while entering a room, reading a weather forecast, and leaving the room. Moreover, the target persons described themselves on measures of the Five-Factor model of personality. The videotapes were later presented to 24 entirely unacquainted judges who reported their impressions of the

targets' personality on the same personality measure. Two approaches were taken to identify mediating cues: First, the information being available to the judges was manipulated by presenting either the entire videotaped information (talkie), or the footage with the sound turned off (silent film), or a still picture of the targets (still picture), or the sound from the footage only (audiotape). This approach allowed distinguishing between visual-dynamic cues, visual-static cues, and acoustic cues. Second, judges reported their impressions of 45 observable attributes (e.g., extent of smiling, neat appearance) that might operate as observable cues of personality.

The stranger ratings correlated substantially with the target persons' self-reports. This self-stranger agreement was highest for extraversion and lowest for neuroticism. Moreover, it was higher for judges who watched the talkie than for judges who watched the silent film, the still picture, or listened to the audiotape, implying that more information resulted in higher self-other agreement. By contrast, the consensus among strangers having been exposed to the same information did not increase with the quantity of the available information. This pattern is consistent with the PERSON Model of inter-judge agreement by David Kenny. A limitation of Borkenau and Liebler's (1992) study, however, is that the targets' actual personality was measured by self-report only.

Therefore, Borkenau and Liebler (1993) recruited 50 pairs of targets who described not only their own but also their partner's personality. Thus, ratings by knowledgeable informants were available in addition to self-reports. Moreover, to obtain a "hard" criterion measure, an intelligence test was administered, and not only the targets' personality but also their perceived intelligence were assessed. Otherwise, this study resembled that by Borkenau and Liebler (1992). Main findings were that the stranger ratings of intelligence were as strongly as the partner ratings associated with the targets' measured performance. This, however, held only if the sound of the videotapes was turned on: Ratings of intelligence by strangers who watched a silent-film of the targets were much less accurate, suggesting that it are mostly acoustic cues that mediate the accuracy of judgments of intelligence by strangers. Further analyses showed that in the silent-film but not in the talkie condition, the strangers inferred the targets' intelligence from their physical attractiveness although physical attractiveness was entirely unrelated to measured intelligence. By contrast, in the talkie condition the strangers inferred the targets' intelligence from the fluency of the target's speech that was actually correlated with their measured intelligence. This suggests that strangers resort to invalid cues if no valid ones are available, but otherwise prefer valid cues to invalid ones.

What is the minimal information being required that strangers provide judgments of the personality of stimulus persons that are more accurate than random guesses? To study that question, Borkenau et al. (2009) presented portraits of stimulus persons to unacquainted judges for extremely short time intervals, that is, either 50 ms, 100 ms, or 150 ms. The stimulus persons described their personality on the NEO Five-Factor Inventory and were assessed by the strangers on five bipolar adjective scales, one for each dimension of the five-factor model. It was found that consensus among the strangers, as well as agreement between strangers and stimulus persons, was higher for extraversion than for the other personality dimensions: Controlling for the stimulus persons' age and gender, even the ratings of extraversion by single judges were significantly correlated with the stimulus persons' self-reports. Moreover, there were no systematic differences in consensus and self-other agreement between the three exposure times. Thus, accurate impressions of strangers' extraversion seem to emerge extremely fast, that is, within 50 ms. Further analyses suggested that this accuracy seems to be mediated by the cheerfulness of the stimulus persons' facial expression.

In a recent study by Borkenau et al. (2016), stimulus persons wrote short essays (75 words on average) on their hobbies, their friends, their family, their academic studies, and their plans for the future, and strangers inferred the stimulus persons' personality from transcripts of those essays. To assess their accuracy, the personality judgments by the strangers were correlated with

personality descriptions by the stimulus persons' acquaintances. Contrary to the usual finding that self-stranger agreement is highest for extraversion, in this study acquaintance-stranger agreement was highest for openness to experience. Thus, it seems that agreement is highest for extraversion only if the judges see the targets' face. Distinguishing between the five essay themes, it was found that openness to experience was most accurately inferred from the stimulus persons' essay on their hobbies.

Quantitative genetics of personality. In his behavior-genetic research, Peter Borkenau investigated quantitative-genetic questions using observational data on adult personality. This combination is very rare, as most genetic research on adult personality relies on self-reports by monozygotic and dizygotic twins. This research yielded the surprising finding that two kinds of influences seem to contribute to individual differences in personality: (a) genetic and (b) nonshared environmental influences, that is, effects of the environment that do not contribute to the similarity of persons reared in the same household. By contrast, shared environmental influences (i.e., environmental influences that contribute to the similarity of persons grown up together) seem to be of negligible importance.

To investigate whether similar findings are obtained if adult personality is measured via behavior observations instead of self-reports, Alois Angleitner, Peter Borkenau and Rainer Riemann initiated the German Observational Study of Adult Twins (GOSAT). In that project, 300 twin pairs provided self-reports on the Big-Five dimensions, were described by two knowledgeable informants, and were videotaped in 15 semi-structured settings. The videotapes were later presented to 120 unacquainted judges such that twins from the same pair were assessed by different judges, and also their behavior in different settings was assessed by different judges. Model-fit analyses suggested about 40% genetic, 25% shared environmental, and 35% nonshared environmental influences and that extraversion was the only trait that seemed not to be influenced by shared environment (Borkenau et al. 2001). These – compared to self-report twin studies – stronger influences of the shared environment might reflect contrast effects in self-descriptions of twins, that is, that twins compare themselves to their co-twin, resulting in underestimates of their actual similarity.

The GOSAT study allowed studying genetic and environmental influences not only on average trait levels, for example, the twins' extraversion averaged across 15 settings, but also on Person x Situation profiles, that is, in which specific setting persons were more and in which they were less extraverted. Shared environmental influences were unimportant for these interactions, whereas genes accounted for about 25% of their reliable variance (Borkenau et al. 2006). The remaining 75% or the reliable variance was accounted for by the nonshared environment.

Finally, by focusing on the individual participants instead of the similarity between co-twins, the GOSAT study also contributed to a better understanding of the accuracy of personality impressions, as the impressions conveyed in the 15 settings were compared to each other as well as to the participants' self-reports and descriptions by acquaintances. Controlling for target age and gender, the average cross-situational consistency of the trait impressions was .43, suggesting substantial consistency. Agreement was limited mainly by nonshared meaning systems (i.e., different judges draw different conclusions from the same information) and by nonoverlapping information. Personality inferences from thin slices of behavior were significantly associated with reports by knowledgeable informants. These associations became stronger the more settings were included, but gains in prediction were low beyond six behavioral episodes (Borkenau et al. 2004).

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Robert F. Bornstein is Professor of Psychology in the Derner Institute of Advanced Psychological Studies at Adelphi University, Garden City, NY. He is a clinical psychologist who conducts research in four main areas (1) personality disorders, (2) personality assessment, (3) unconscious processes, and (4) interpersonal dependency.

Early Life and Educational Background

Bornstein was born on September 6, 1959, in New York City. He received his BA from Amherst College in 1981, where he was, to put it mildly, an undistinguished student. After earning C grades in many of the Biology Department's core courses, Bornstein was summarily dismissed from Amherst's premedical program midway through his sophomore year; he majored instead in Psychology and Fine Arts. His first publication, in 1979, was a study of bacterial membrane energetics. His theoretical and empirical work continues to be informed by his early training in biology and chemistry, as well as art history.

Bornstein completed his predoctoral internship at Upstate Medical University in Syracuse, NY, in 1985–1986, and earned his Ph.D. in clinical psychology in 1986 from the State University of New York at Buffalo, under the mentorship of Joseph Masling. His dissertation examined the generalizability of the subliminal mere exposure effect – the degree to which repeated subliminal exposure to drawings and photographs altered participants' attitudes toward the merely exposed images, and whether these attitudinal shifts altered behavior toward the people pictured in the photographs when participants encountered them in a postexposure laboratory negotiation task.

Through no fault of his own, Bornstein's professional lineage is distinctive. With respect to empirical research, Bornstein's roots may be traced to Wilhelm Wundt, as follows (each individual listed was dissertation chair of the person who comes after): Wilhelm Wundt, James McKeen Cattell, Robert S. Woodworth, John J. B.Morgan, George Kelly, Joseph Masling, and Robert Bornstein. With respect to clinical training, Bornstein's roots go back to Sigmund Freud (each individual listed here supervised the

clinical work of the person who follows): Sigmund Freud, August Eichhorn, Fritz Redl, Joseph Masling, and Robert Bornstein.

Professional Career

Bornstein taught at Gettysburg College from 1986 to 2006 and was Visiting Professor of Psychology at Fordham University in 1998–1999. Since 2006 he has been at the Derner Institute of Advanced Psychological Studies at Adelphi University. He has authored more than 200 articles in peer-reviewed journals, along with 15 books and more than 50 book chapters. His work has appeared in outlets including *Psychological Bulletin*, *American Psychologist*, *Current Directions in Psychological Science*, and *Annual Review of Clinical Psychology*. He has received grants from the National Institutes of Health and National Science Foundation and was Associate Editor of *Psychoanalytic Psychology* and Editor of the *Bulletin of the Psychoanalytic Research Society*. Bornstein was a consultant to the DSM-IV-TR Personality Disorders Work Group and Section Editor of the second edition of the Psychodynamic Diagnostic Manual (PDM-2). He was president of the Society for Personality Assessment from 2015 to 2017.

Research Interests

Bornstein's research encompasses a variety of topics and issues and draws upon diverse methods of inquiry, including laboratory studies, clinical investigations, integrative literature reviews, and meta-analyses. A unifying theme in this work is the belief that rigorous psychological inquiry should draw upon multiple disciplines and integrate concepts and findings from a variety of specialty areas within and outside psychology (e.g., cognitive psychology, social psychology, epidemiology, philosophy, neuroscience). Four major domains have characterized Bornstein's empirical work.

Personality Disorders

Bornstein's research in personality pathology has emphasized two themes: (1) the paucity of evidence bearing on the behaviorally referenced validity of personality disorder symptom criteria in the *Diagnostic and Statistical Manual of Mental Disorders* and *International Classification of Diseases*; and (2) the near-exclusive emphasis on maladaptive features of personality pathology in the diagnostic manuals. With respect to the first issue, Bornstein has conducted systematic surveys of the published literature, which confirm that the vast majority of studies examining personality pathology – upwards of 80% in recent years – rely exclusively on self-report (typically questionnaire) measures, both to classify participants and to assess outcome. As a result, much of the contemporary literature in this area is based on how personality disordered people perceive and present themselves, rather than on how they actually behave.

With respect to the latter issue, evidence confirms that many forms of personality pathology are associated with adaptive behavior in certain contexts. For example, although high levels of interpersonal dependency are associated with overuse of health and mental health services and increased health care costs, dependency is also associated with conscientious adherence to medical and psychotherapeutic regimens, and a more positive treatment outcome. Along somewhat similar lines, histrionic theatricality may cause difficulties in professional settings, but it is an asset in certain social contexts. Other adaptive features of personality pathology have been documented in obsessive, narcissistic, and schizoid individuals.

Personality Assessment

Bornstein's research in this domain focuses primarily on multimethod assessment and the integration of scores from different types of psychological tests. He developed an overarching framework to conceptualize convergences and divergences in scores from measures that use different methods to assess the same construct – the *process-focused model of test score integration*.

A key element of this model is an emphasis on the value of test score discontinuities in illuminating underlying personality dynamics. For example, studies using the process-focused approach have shown that individuals with dependent personality disorder tend to score high on both self-report and performance-based measures of interpersonal dependency; individuals with histrionic personality disorder obtain high scores on performance-based, but not self-report, dependency tests.

Thus, in contrast to the traditional assessment approach, which emphasizes the convergence of scores on measures that ostensibly tap the same construct (e.g., informant report and performance-based measures of obsessiveness), the process-focused model highlights the value of theoretically meaningful test score divergences in delineating key elements of personality. In addition, in contrast to the traditional approach wherein correlational methods are used to quantify the relationship between test score and outcome, the process-focused model incorporates experimental methods to manipulate underlying personality dynamics. By introducing experimental manipulations that deliberately alter the processes engaged by different psychological tests, the researcher can (1) confirm that altering these processes does in fact change test scores as expected and (2) illuminate the processes involved in tests that measure parallel constructs using contrasting methods.

Unconscious Processes

Bornstein's interest in unconscious processes began during graduate training, when he conducted a series of laboratory studies and meta-analyses examining the influence of stimuli perceived without awareness on attitudes, behaviors, and emotional responses. This series of investigations culminated in Bornstein's dissertation examining parameters of the mere exposure effect, described earlier. These studies not only demonstrated that the subliminal mere exposure effect is robust and replicable, but also showed that subliminal stimuli actually produce significantly stronger exposure effects than do similar stimuli consciously perceived. This pattern – formalized in the *perceptual fluency/attributional model of implicit perception* – reflects the fact that when people are unaware of having been repeatedly exposed to stimuli, they cannot generate situational attributions for their enhanced attitude toward those stimuli and instead attribute these positive attitudes to properties of the stimuli themselves (rather than aspects of the experimental procedure).

Other investigations examining unconscious processes included studies of implicit learning, subliminal lexical priming, and subliminal psychodynamic activation effects. Ultimately these investigations helped shape Bornstein's research on personality assessment – in particular the contrasting results produced by self-report and performance-based instruments – by providing a conceptual framework within which the interplay of conscious and unconscious processes in moderating psychological test results could be better understood.

Interpersonal Dependency

Rooted in part in his dissertation mentor's interest in the psychoanalytic concept of oral dependency, as well as his own studies of dependent personality disorder, Bornstein's work in this area has documented two previously unrecognized features of a dependent personality style: (1) that – as noted earlier – dependent behavior may be adaptive in certain contexts even while it is maladaptive in others, and (2) that high levels of interpersonal dependency may be associated with active as well as passive responding. To examine the adaptive features of interpersonal dependency and dependent personality disorder, Bornstein and colleagues developed the Relationship Profile Test (RPT), a self-report measure that yields separate scores for Destructive Overdependence, Dysfunctional Detachment, and Healthy Dependency. The RPT has been translated into nearly a dozen languages, and cross-cultural comparisons confirm that individuals in more sociocentric cultures yield RPT profiles that differ in predictable ways from those of people raised in individualistic cultures.

Other studies in this area have shown that contrary to clinical lore, dependent individuals may sometimes behave in assertive – even aggressive – ways, especially when close relationships are threatened. For example, although dependent college students are typically compliant and acquiescent, they compete actively with other college students in order to impress figures of authority (e.g., professors). Dependent men are at increased risk for perpetrating domestic violence when they believe that their partner may abandon them and other more benign social influence strategies (e.g., providing favors) are ineffective.

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In the following sections Bornstein's key contributions to the literature on personality disorders, personality assessment, unconscious processes, and interpersonal dependency are listed. Although they are categorized to reflect the primary emphasis and contribution of each publication, many of these papers have implications for more than one research domain.

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Boundless

▶ Glory (Horney)

BPAQ

▶ Aggression Questionnaire

BPAQ-SF

▶ Aggression Questionnaire

Brain Asymmetry

▶ Cerebral Asymmetries

Brain Plasticity

▶ Developmental Plasticity

Brain-Computer Interface

▶ Biofeedback

Bravery

► Courage

Brewer, Marilynn

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Early Life and Educational Background

Marilynn Brewer was born as Marilynn Bolt in Chicago, Illinois, in 1942. She later married Robert Brewer, a fellow social psychologist, in 1966 while writing her master's thesis. Although the couple divorced after having their daughter, Christine, Marilynn retained the surname Brewer. Her parents did not attend college but encouraged Marilynn to apply for a bachelor's degree. Marilynn completed her B.A. in Social Sciences at North Park College in 1963 with honors under the mentorship of Jean Driscoll, who she credits as being an influence behind her decision to pursue graduate work. In her book chapter "In Retrospect. . ." (Brewer 2011), she writes that because much of her family did not attend college, she would not have considered a graduate degree had she not had the support and encouragement of Jean Driscoll. Marilynn was accepted at Northwestern University for graduate school and awarded the National Institute of Mental Health Fellowship to fund her studies, with Donald T. Campbell as her primary supervisor. She obtained her masters in 1966, and her masters thesis which examined information integration in person perception, was published in the Journal of Personality and Social Psychology. Her masters, which she obtained in 1966, and examined information integration in person perception, was published in the *Journal of Personality and Social Psychology.*

Marilynn's early induction into social psychology was through her work with Campbell on the Cross-Cultural study of Ethnocentrism (CCSE) project. Researchers used a unique blending of ethnographic case studies and structured interviews to gather data on 23 facets of culture which influenced attitudes, beliefs, and behaviors toward the ingroup and outgroups of various communities throughout Africa, New Guinea, North America, and Asia. Marilynn was responsible for the organization and archiving of the field notes and credits this experience with blossoming her career-long interest in social identity and groups. The data from CCSE dispelled a prominent theory of intergroup relations which conceptualized ingroup and outgroup attitudes as dependent processes, such that outgroup prejudice was inevitably born from ingroup loyalty. The CCSE data demonstrated that ingroup bias was a separate process from outgroup hate, and Marilynn later published several articles and books expanding on these findings (See Brewer 1999; Alexander et al. 2005).

She conducted her dissertation on related research collected in East Africa that examined predictors of social distance between groups and published her work in the *Journal of Personality and Social Psychology.* She later went on to write a book expanding on this research, titled "Ethnocentrism and Intergroup Attitudes: East African Evidence" with Campbell in 1976. After graduating with her PhD in 1968, she took a two-year post doctorate with Campbell. In 1972, she began her first faculty position at Loyola University of Chicago.

Professional Career

Throughout Marilynn Brewer's professional career, she made an impact on the social psychological community in many ways. She contributed to the academic community through holding faculty positions at five universities, serving in leadership roles for several academic organizations, receiving numerous awards and grants for her research, and conducting research that greatly contributed to the advancement of social psychological theory regarding social identity, social cognition, inter and intragroup dynamics, and prejudice.

After leaving Loyola University, Marilynn took a position as an associate professor at

the University of California Santa Barbara, where she later served as department chair. Nine years later she became a Professor of Psychology and the Director of the Institute for Social Psychological Research at University of California Los Angeles.

Her time in California yielded many impactful collaborations and research works. At University of California Santa Barbara, Marilynn's research focus shifted to social cognition. It is important to note that roughly the same time period of the CCSE project, Henri Tajfel and his lab were conducting experiments on the minimal groups paradigm, which established that arbitrary group memberships generated in the laboratory produced the same distinctions in ingroup and outgroup attitudes and behaviors that were observed by the CCSE in groups with rich histories and cultures. The experiments corroborated the distinction between evaluative bias towards ingroups and the resulting apathy toward outgroups and true prejudice. In 1980, Marilynn spent a sabbatical at the University of Bristol with Tajfel and was involved in minimal groups experimentation. The Social Identity Theory (Tajfel and Turner 1979) had recently been published and proposed a novel approach to research on social identity and intergroup relations. Her collaboration with Tajfel and his lab was integral in the transference of this approach toward the study of group identity and intergroup relations to social psychological research in the United States. Many of Marilynn's influential works utilized and expanded on the Social Identity Theory and minimal groups experimentation.

While at UCSB, Marilynn and her colleague Norman Miller applied theory and methodology from the minimal groups experiments and the Social Identity Theory to the study of the contact hypothesis (Allport 1954). Bringing the study of the contact hypothesis into the laboratory, Brewer and Miller demonstrated that contact which promoted cooperative interpersonal interaction between members of different groups was most effective in reducing category-based information processing and allowing individuals to function separately from their own group memberships during a cooperative intergroup. Other work Marilynn did on prejudice included studying stereotypic representations of the elderly and how stereotypes of the elderly function as category prototypes. This work later cumulated into a "dual process" model of information processing (Brewer 1988), which differentiates between the cognitive processes behind social categorization and personalized perception.

During the same period as her research on intergroup contact, Marilynn collaborated with Dave Messick and Rod Kramer in the study of social dilemmas, a unique form of conflict which occurs when behavior that benefits the self simultaneously disadvantages the collective. Their computer-based laboratory paradigms revealed the role of group identity in individual choice making, such that priming symbolic collective identity reduced personal resource use during a resource shortage. These projects foreshadowed a renewed immersion into evolutionary theory, and after moving to UCLA, Marilynn published arguably one of her most well-known works, Optimal Distinctiveness Theory (Brewer 1991).

Optimal Distinctiveness Theory discusses social identity and group identification in terms of evolutionary adaptations that produced a need to belong with similar others while being distinct from outgroups. The theory suggests that these conflicting psychological demands stem from early humans who flourished in groups of optimal sizes, which allowed them to benefit from social support but not spread resources too thin.

In 1993, Marilynn returned to the Midwest and took a position as an Eminent Professor at the Ohio State University. Here she remained until retirement in 2008. Her research during her time at Ohio State included work examining the positive aspects of group life, identity beyond the group, and culturally based identity. She now resides in Australia, as a Professor Emeritus at Ohio State University and a visiting Professor at the University of South Wales.

During her career, Marilynn was involved with many psychological associations. She served as president of numerous associations, including the American Psychological Society

(1993–1995), the Western Psychological Association (1985–1986), the Midwestern Psychological Association (2004–2005), the Society for the Psychological Study of Social Issues (1984–1985), and the Society for Personality and Social Psychology (1990–1991). At the Society for the Psychological Study of Social Issues, she was the chair of several committees, including the Grants-in-Aid committee, the Kurt Lewin Award Committee, and the Otto Klineberg Intercultural and International Relations Committee, and Co-Chair of the Publications committee. She was also a member of the APA Reorganization Committee and the Gordon Allport Award Committee.

Marilynn received several distinguished awards for her work. These include the Donald T. Campbell award for Distinguished Research in Social Psychology (1992), the Kurt Lewin Award from the Society for the Psychological Study of Social Issues (1995), the Distinguished Scientist Award from the Society of Experimental Social Psychology (2004), and she was awarded Distinguished Scientific Contribution from the American Psychological Association (2007). Marilynn is also an Elected Fellow of the - American Academy of Arts and Sciences (since 2004) and received her honorary doctorate from University of Groningen, The Netherlands, in 2009. In addition, a Festschrift was published in celebration of Marilynn's contributions to the field (Kramer et al. 2011).

Marilynn Brewer has published over 100 scholarly articles and has written or been an editor of more than 60 books and book chapters.

Research Interests

Broadly, Marilynn's research examined social cognition and social identity. More specifically, her research explored construction and perception of socially based identities, intergroup relations, and intragroup dynamics. She was also involved in debates and new developments regarding methodology, theories of knowledge, and evolutionary theory. She developed novel methodologies and experimental paradigms to study theory and integrated evolutionary theory into the study of groups and identity. Early in her career, Marilynn's research centered on ethnographic data which studied groups around the world and their cognitive conceptions of their ingroup and relevant outgroups. From this foundation, she embarked on a career-long interest in the individual's cognitive representation of themselves, their group members, and outgroup members, and how intergroup and intragroup contact is affected by these social cognitive processes. As well as being highly active in research on prejudice and intergroup conflict, Marilynn's work also examined the conditions under which positive aspects of group life flourished, such as trust and cooperation. Her research importantly highlighted the influence of culture on identity and groups. Marilynn's research interests also included research application, and she published several works outlining research that informed on how to improve the inclusivity of organizations toward diversity. Throughout Marilynn's career, her research led to extremely valuable advances in social psychological theory and interdisciplinary studies of theory.

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Brief Aggression Questionnaire

► Aggression Questionnaire

Briñol, Pablo

Pablo Briñol
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Pablo Briñol is professor of social psychology at the Universidad Autónoma de Madrid (Spain) and a regular visiting scholar at Ohio State University. His research interest focuses on the study of the psychology of change, with emphasis on how individual differences can serve as moderators of different processes relevant to attitudes and persuasion.

Early Life and Educational Background

Pablo Briñol was born on November 19, 1971, in Madrid, Spain. He earned both his B.A. in psychology (1995) and his Ph.D. in social psychology (1999) from Universidad Autónoma de Madrid (UAM). Right after obtaining his doctorate, Pablo was hired as an assistant professor at UAM, institution where he is still in the faculty. After a postdoc with his adviser and mentor, Richard Petty, he also continues serving as a regular visiting scholar at OSU.

Professional Career

Dr. Briñol has published several books in the domain of attitudes and persuasion, and he has authored more than 120 publications. His research has appeared in top journals of psychology (e.g., *Psychological Bulletin*, *Perspectives on Psychological Science*, *Psychological Science*, *Psychological Inquiry*) and social psychology (*Journal of Personality and Social Psychology*, *Personality and Social Psychology Bulletin*, *Journal of Experimental Social Psychology*, *Social Cognition*, *European Journal of Social Psychology*, *European Review of Social Psychology*, *Advances in Experimental Social Psychology*), along with the top journals in other related fields such as marketing (e.g., *Journal of Consumer Research*, *Journal of Consumer Psychology*, *Psychology and Marketing*, *Advances in Consumer Research*, *Journal of Economical Psychology*, *International Journal of Advertising*) and communication (*Journal of Communication*, *Media Psychology*).

Research Interests

Pablo Briñol's primary research interest focuses on the study of the psychological mechanisms by which attitudes are formed, changed, and maintained. These fundamental processes range from the least thoughtful automatic processes (e.g., self-perception) to the most thoughtful metacognitive (e.g., self-validation). His research in the psychology of change has examined how different aspects of the source (e.g., credibility, attractiveness, status), message (e.g., emotional vs. rational, one-sided vs. two-sided), recipient (e.g., power postures, bodily responses, ease of retrieval, aggressive behavior), or context (e.g., transitory affect, social consensus) can influence persuasion by affecting those mechanisms. Dr. Briñol evaluates the impact of these and other persuasive treatments on attitudes with both deliberative and more automatic measures, assessing their relationship, and the subsequent implications for attitude structure. Furthermore, Briñol's research has emphasized the relationship between the person and the situation in

understanding psychological change, highlighting the importance of personality and individual differences in these domains.

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Brodmann Areas 9, 10, 11, 14, 24, 25, 31

► Medial Prefrontal Cortex (MedPFC)

Brodmann's Areas 23, 24, 25, 32, and 33

► Anterior Cingulate Cortex

Brooding

► Perseveration
► Rumination

B

Brummel, Bradley

Bradley Brummel
The University of Tulsa, Tulsa, OK, USA

Bradley J. Brummel is an associate professor of psychology at the University of Tulsa in Tulsa, Oklahoma. He is an industrial/organizational psychologist who conducts research on (1) personality in the workplace, (2) professional development, and (3) employee engagement.

Early Life and Educational Background

Brummel was born on March 19, 1980, in Grand Rapids, Michigan. He earned his B.A. in psychology from Calvin College in 2002. He earned his M.A. in 2005 and his Ph.D. in 2008 in industrial/organizational psychology from the University of Illinois at Urbana-Champaign under the direction of Fritz Drasgow.

Professional Career

Brummel has worked as a professor in the Department of Psychology at the University of Tulsa since 2008. He teaches courses to graduate and undergraduate students in psychological testing, social psychology, and industrial/organizational psychology. His research has appeared in outlets such as *Human Relations*, *Journal of Applied Psychology*, *Applied Psychology*: *An International Review*, *Journal of Management*, *Journal of Personnel Psychology*, and *Journal of Applied Social Psychology*. He is on the editorial board of *Journal of Research in Personality*. He is a member of the Association of Research in Personality

(ARP) and the Society for Industrial and Organizational Psychology (SIOP). He has received research grants from the National Science Foundation (NSF) and the Air Force Office of Sponsored Research (AFOSR).

Research Interests

Brummel's primary research interests involve the role of individual differences in the workplace. This includes both how individual differences influence work outcomes and how the workplace can influence personality. His work on personality includes examining the role of obligation and entitlement in the way in which people interact and form exchange relationships with their organizations. He also investigates how other personality traits influence professional development and success from the ability to be employed to development into leadership positions. His work examines the degrees to which professional development coaching and interactive training simulations have the potential to influence personality development in positive directions. Finally, his research examines the influences on employees' ability to be engaged in their work. These influences include personality, mindfulness, and coaching relationships as well as experiences with harassment and intimidation. He conducts research in interdisciplinary teams including engineers, computer scientists, clinical psychologists, and lawyers.

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Bulimia Nervosa

► Personality and Eating Disorders

Bullshitting

► Rationalization (Defense Mechanism)

Bullying

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Synonyms

Aggression; Cyberbullying; Exclusion; Harassment; Ostracism; Peer victimization; Rejection

Definition

Bullying is defined as a specific form of aggression that is characterized by a bully-victim power imbalance and repetition over time.

Introduction

Bullying occurs in traditional and cyber contexts (Modecki et al. 2014). Traditional bullying involves verbal (e.g., name-calling), physical (e.g., hitting), or relational/social (e.g., social exclusion) actions (Thomas et al. 2015). Cyberbullying is considered as a form of bullying (Olweus and Limber 2018); research has shown that people who are involved in traditional bullying are also likely to be involved in cyberbullying (Modecki et al. 2014). However, cyberbullying is distinct from traditional bullying due to its unique features of high accessibility, publicity, and anonymity (Kowalski et al. 2014).

Prevalence and Consequences of Bullying

The estimation for how often bullying occurs varies across studies partially due to different ways of defining and measuring bullying (Thomas et al. 2015). In general, about 30% of school children are involved in bullying (Evans et al. 2014). According to a recent meta-analysis (Modecki et al. 2014), the average prevalence rate of bullying involvement is 35% for traditional bullying perpetration, 36% for traditional bullying victimization, 16% for cyber perpetration, and 15% for cyber victimization.

Despite the prevalence of bullying, numerous research studies have demonstrated the detrimental effects for the victims. These effects include but are not limited to stress, suicidal ideation, depression, anxiety, loneliness, somatic symptoms, conduct and emotional problems, drug and alcohol abuse, low self-esteem and self-worth, and low life satisfaction (Hawker and Boulton 2000; Kowalski et al. 2014). Consistently, workplace harassment has been linked to poor well-being, counterproductive work behaviors, and turnover intentions among the victims (Bowling and Beehr 2006).

Who Are the Bullies and the Victims?

The typical victims are passive and submissive (Olweus 1994). They tend to be anxious, insecure, sensitive, quiet, and low in self-esteem (Olweus 1994). Although they are frequently the target of aggression and teasing, they are not aggressive or teasing toward others. The typical bullies are aggressive not only toward their peers but also teachers and parents (Olweus 1994). They tend to be impulsive, dominant, and low in empathy. Interestingly, people who are bullies are often victims as well (i.e., bully/victims). Consistent with this notion, being a cyberbully is correlated with being a cybervictim (Kowalski et al. 2014). Some research has argued that bully/victims are especially troubled, facing the most social and behavioral problems.

Interventions

Olweus (1994) developed and systematically tested the first school-based intervention program to reduce bullying. This program took a "whole school policy approach to bullying" by implementing measures at the school level (e.g., questionnaire surveys), the class level (e.g., class rules against bullying), and the individual level (e.g., serious talks with bullies and victims). The program turned out to be effective in reducing bullying. Since Olweus' work, many have implemented and tested this program, while others searched for and developed alternative interventions. A recent systematic review examined the effectiveness of 24 school-based bullying prevention programs that have been documented in 32 studies (Evans et al. 2014). This review reported mixed findings; specifically, half of the examined programs successfully reduced bullying (11 out of 22 studies), and two thirds reduced victimization (18 out of 27).

Conclusion

Bullying is a serious social problem that occurs both online and offline. Research has demonstrated the negative consequences of bullying, the individual factors associated with being the bullies and the victims, and the effectiveness of some of the school bullying-reduction interventions. Future research is needed to further validate the existing intervention programs and investigate why some of the programs are more effective than others.

Cross-References

- ▶ Aggression
- ▶ Harassment
- ▶ Social Exclusion

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Burdsal, Charles

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Charles Albert Burdsal, Jr. is professor of psychology and director of the Social Science Research Laboratory at Wichita State University in Wichita, Kansas.

Burdsal attended college at Texas Tech University, where he began as a pre-med student, ultimately receiving a BA in Psychology in 1966. He continued his education at Texas Tech University and obtained a PhD in 1971 under the advisement of Arthur B. Sweeney. After beginning his academic career as assistant professor of Business Administration at Wichita State University (WSU), he briefly left to serve as a research associate in the laboratory for personality and group analysis, led by Ray Cattell at the University of Illinois. He returned to WSU in 1972 as assistant professor of Psychology and has remained in the department since, serving as chair for nearly three decades.

Burdsal has been active in both psychological organizations and scholarly publishing. He has been a member of the American Psychological Association (APA) since 1985 and became a charter member of the Association for Psychological Science (APS) in 1989. He has also been a member of the Southwestern Psychological Association since 1970, serving in various leadership roles including President Elect and President from 2005 to 2007. He was a founding member of the Society for Applied Multivariate Research (SAMR), which he served in a variety of roles, including founding, publishing, and editing "Multivariate Experimental Clinical Research," a scholarly journal later renamed "Applied Multivariate Research." His editorial board contributions have spanned a remarkably broad range of basic and applied topics, from Behavioral and Brain Sciences to the Journal of Personality Assessment.

Burdsal's own research has reflected that same breadth, from articles on the development of quantitative analytic procedures to treatment effectiveness studies. His most widely cited article to date was coauthored with Cattell (Cattell and Burdsal 1975) and introduced the procedure of radial parcel double factoring, an efficient method that was demonstrated to be superior to either item factoring or traditional parcel factoring. Dr. Burdsal explained (2018) that he was responsible for developing the idea, and Cattell discovered why it worked. Subsequent research built on this contribution in a variety of ways and research on the applications of parceling continues. In

recent years researchers (e.g., Debowska et al. 2014; Yagi et al. 2011; Choi et al. 2014) have applied Cattell and Burdsal's developments to the validation of measures in cross-cultural settings.

Other influential publications illustrating the breadth of Burdsal's work include: a study of the psychometric properties of a measure of social capital (O'Brien et al. 2004), which found that social capital continued to be a meaningful construct in a US sample; a study in which pet owners identified problematic behaviors for which they would seek expert advice (Shore et al. 2008), which revealed that both dog and cat owners rated aggressiveness toward humans as problematic; and a study that surveyed the outcome evaluation procedures employed in residential treatment centers (Zimmerman et al. 2008), which found that although most residential treatment centers were conducting some form of outcome evaluation and most suffered from methodological limitations.

Burdsal's expertise in psychometrics has also been applied in practical work as an independent consultant and as an expert witness. For example, one long-term project (from 1972 to 1990) involved collaborating with a priest at St. Francis Academy Boys' Homes (now St. Francis Academy), a residential treatment center in Salina, KS, to develop and evaluate an early stage and secondary intervention program to help prevent delinquent children from being referred to St. Francis Academy. Burdsal has also worked with seminaries to evaluate priest job performance.

He continues work on a long-standing line of research on student assessment and evaluation of their instructors, which included the development and evaluation of a measure, the Student Perspectives of Teaching Effectiveness (SPTE). One study from this program of research (Burdsal and Harrison 2008) found that open-ended responses on the SPTE measure are correlated with its second-order factor, the Perceived Quality Index (PQI). Together, these provide convergent evidence that both are measuring student perceptions of teaching effectiveness. At Wichita State University, Burdsal enjoys teaching a yearlong research methods and advanced statistics course. He is currently running a directed study group in which he and students are learning to use R statistical software.

Burdsal has mentored many eminent psychologists over the course of his teaching career, including Dennis Jackson, associate professor of Psychology at the University of Windsor, Elizabeth Ablah, associate professor of Preventive Medicine and Public Health at the University of Kansas School of Medicine in Wichita, and Cayla Teal, assistant dean of Academic Affairs and research associate professor at Texas A&M College of Medicine.

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Buros Mental Measurements Yearbooks

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Synonyms

MMY (Mental Measurements Yearbooks)

Definition

The *Mental Measurements Yearbooks (MMY)*, published by the Buros Center for Testing, are a series of publications that provide reviews of new and revised assessment instruments; each yearbook is intended for use as a reference when selecting tools to measure a variety of specific psychological characteristics, personal skills, and abilities.

Introduction

In 1938, Oscar Krisen Buros published the first *Mental Measurements Yearbook*, creating a space for scholars to provide critical reviews of new and recently revised tests. By providing this important information to practitioners and the general public, Buros believed that the quality of standardized testing science and practice could both be improved (Carlson et al. 2014). In 1974, Bennett provided a summary of the various responses to the first edition of the MMY, indicating that readers of the first edition of the MMY seemed universally pleased, sending more than 100 letters of praise to the editor. However, authors and publishers were somewhat displeased with the process, which involved sending reviews to the test publishers for accuracy checks prior to publication. As a result, similar accuracy checks were removed from the process for future editions. According to Bennett (1974), the intended effect of improving the quality of available tests was not immediate following publication of the first edition. However, it did expose the lack of high-quality tests and the need for improvements in tests and associated practices.

Since the publication of the first yearbook, the Buros Institute of Mental Measurements, now known as the Buros Center for Testing, which is housed at the University of Nebraska, has published 18 subsequent yearbooks that review newly developed and revised instruments. The Buros Center for Testing typically publishes a new printed volume of the MMY series every 3 years. In 1984, MMY reviews became available through electronic databases (e.g., EBSCO Publishing), and in 2001 the Buros Center created its own electronic database titled *Test Reviews Online* (Carlson et al. 2014). Efforts are made to provide information on new and revised tests through *Test Reviews Online* in between printings of an updated MMY.

The upcoming edition of the series, the *Twentieth Mental Measurements Yearbook*, edited by Janet F. Carlson, Kurt F. Geisinger, and Jessica L. Jonson, is anticipated to include reviews of nearly 200 assessment instruments in education, psychology, business, law, health care, counseling, and management. Tests included in the current yearbook are classified into 18 categories that include the following: achievement, behavior assessment, developmental, education, English and language, fine arts, foreign languages, intelligence and general aptitude, mathematics, miscellaneous, neuropsychological, personality, reading, science, sensory motor, social studies, speech and hearing, and vocations. Qualified reviewers from a variety of fields and contexts (e.g., education, psychology, speech/language, hearing; universities, public schools, businesses, community agencies) provide critical reviews of the testing instruments. To meet the criteria for MMY review, a test must be commercially available, be published in the English language, include sufficient technical quality information, and be new, revised, or widely used since it last appeared in the MMY series (Carlson et al. 2014).

Purpose and Utility

The MMY aims to provide guidance to readers in the evaluation and selection of tests through its candid reviews. Information within the MMY test reviews can be useful for those looking to identify potential assessment instruments and make well-informed decisions about the appropriateness of a test for a particular client or situation. Users are advised to actively and critically read each review, recognizing that the authors of each review may have different perspectives on the importance of various aspects of an instrument and its development than others (Carlson et al. 2014). Reviews within the MMY can provide users with a sense of current thinking and developments in assessing a particular construct (e.g., self-esteem, mathematics) (Plake and Conoley 1995). They also may help inform test authors and publishers of areas for improvement in the development of their tests, thereby helping to facilitate future improvements in the quality of tests available.

A review of the online version of the MMY describes the website as user-friendly, easy to navigate, and convenient for professionals (Piotrowski and Perdue 2005). However, one limitation the reviewers noted was that accessing reviews on multiple tests could become expensive. Therefore, those looking to use the MMY may want to consider whether the full print version or individual online entries will be most cost and time efficient (Piotrowski and Perdue 2005).

Yearbook Format

Each yearbook begins with a description of the process used to select and review instruments for the current yearbook, a summary of characteristics of the instruments reviewed, and a guide for how to use the yearbook. The core of each yearbook includes separate entries for each instrument selected for review, with entries provided alphabetically. Near the end of the yearbook, a variety of lists are provided which indicate (a) those instruments for which insufficient material was available to allow for review; (b) those instruments that were requested by the editors but not received; (c) those instruments for which material was not available in time to facilitate a review for the current yearbook, but that will be included in the next yearbook; and (d) the names of those who provided reviews for each of the entries. The yearbook concludes with a variety of indexes intended to facilitate searches of information available in the entries, including an instrument name index, an author index, a publisher index, a subject index, a name index, and a score index.

Entries for each instrument begin by briefly highlighting the test's purpose, target population/age ranges, publication dates, administration and scoring procedures, price breakdowns, and author and publisher. Next, most entries include two independent critical reviews by scholars selected by the editors. Each review provides the following information: a more detailed description of the instrument, information on instrument development, a summary of technical information (i.e., standardization sample, reliability, validity), commentary, and an overall summary.

Documenting Historical Trends

Because of the nearly 80-year history of the MMY, analysis of MMY entries over time can assist with understanding various changes in testing. Published examples of such analyses are evident. For instance, Aronow and Reznikoff (1973) provide an account of how changing attitudes toward the Rorschach test are reflected by MMY reviews from the first edition to those published nearly four decades later. As the authors explain, reviews shift from describing the Rorschach favorably as "a useful and penetrating device" (1938 MMY, B308, p.1771 as cited in Aronow and Reznikoff 1973) to describing it with greater criticism in the fourth through sixth editions, including "Research findings. . .do not support such optimistic endorsements of the Rorschach, or, for that matter, any other projective-type

evaluative instrument" (Sixth MMY, B91, p. 1415 as cited in Aronow and Reznikoff 1973).

As another example, Reynolds and Sundberg (1976) analyzed the proportion of entries that corresponded to various test domains across the first seven editions of the MMY. They highlight the apparent growing emphasis on personality testing, based on the increasing proportion of entries that focused on personality, which reached 53% of entries in the seventh edition. In contrast, intelligence test entries had decreased to 21%. Reynolds and Sundberg (1976) explained that this seemed indicative of associated trends in the field of assessment at that time; new editions of intelligence tests were few but personality tests were being created at higher rates.

Between the seventh edition and the nineteenth edition, there has been a notable increase in the number of MMY instrument categories. The seventh edition categories included personality, vocational, intelligence, reading, and others (Buros 1972); the nineteenth edition has a total of 18 categories (as indicated above) (Carlson et al. 2014). Furthermore, changes in the proportion of entries associated with certain categories are evident since the seventh edition. Vocational tests now comprise 25% of all entries (up from 9% in the seventh edition); personality tests comprise just 18% of entries and intelligence tests just 6% of entries, down from 53 and 21% in the seventh edition, respectively (Buros 1972; Carlson et al. 2014).

Conclusion

The Buros Mental Measurements Yearbooks provide a comprehensive set of information on newly developed and revised measurement tools. Over the nearly 20 volumes published during the past 80 years, the MMY have maintained a status as highly respected sources for those seeking to identify and select assessment tools for a variety of purposes. *Test Reviews Online* facilitates communication about related information on newly available tests in between yearbook printings.

Cross-References

- ▶ High Stakes Testing
- ▶ Psychometrics
- ▶ Reliability
- ▶ Validity

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Bushman, Brad J.

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Brad J. Bushman is a Professor of Communication and Psychology at The Ohio State University and a Professor of Communication Science at the VU University Amsterdam (The Netherlands).

For over 25 years, he has studied the causes, consequences, and solutions to the problem of human aggression and violence. He is a member of President Obama's committee on gun violence and has testified before the US Congress on the topic of youth violence.

Early Life and Educational Background

Bushman was born on May 14, 1960, in Salt Lake City, Utah. He earned his B.S. in Psychology from Weber State University in 1984, an M.Ed. in secondary education from Utah State University in 1985, an M.A. in psychology from the University of Missouri in 1987, and an M.A. in statistics from the University of Missouri in 1990. He earned his Ph.D. in social and personality psychology from the University of Missouri in 1989 under the direction of Russell G. Geen.

Professional Career

Bushman was a professor at Iowa State University from 1990 to 2003 and at the University of Michigan from 2003–2010. He has been a professor at The Ohio State University since 2010. Since 2013, he also has been an Affiliate at the Criminal Justice Research Center at The Ohio State University. Since 2005, he has taught courses and conducted research at the VU University Amsterdam (The Netherlands) in the summers. He also is an Adjunct Faculty Associate at the University of Michigan's Research Center for Group Dynamics at the Institute for Social Research since 2010, a Research Fellow at the Institute of Sociology in Bucharest, Romania since 2014, an Adjunct Professor at the University of Luxembourg since 2015, and a Panel Member of the Center on Youth Violence and Juvenile Justice at Rutgers University since 2015. He was a Visiting Professor at the Warsaw School of Social Psychology (Poland) in 2005 and an Honorary Research Fellow at the School of Psychology at University of Kent (United Kingdom) from 2011–2014.

Bushman has authored more than 200 publications during his career, which have appeared in outlets such as *Science*, *Proceedings of the National Academy of Sciences* (*PNAS*) *American Psychologist*, *Psychological Review*, *Psychological Bulletin*, *Psychological Science*, *Journal of Personality and Social Psychology*, *Journal of Personality*, *Personality and Social Psychology Bulletin*, and *Social Psychological and Personality Science*. He has served as an Associate Editor for *Psychological Science*, *Perspectives on Psychological Science*, *Personality and Social Psychology Bulletin*, *Aggressive Behavior*, and *Entertainment Computing*.

Research Interests

Bushman investigates personal and situational factors that make people more or less aggressive. Personal factors related to increased aggression include trait aggressiveness, emotional susceptibility, irritability, dissipation-rumination, narcissism, psychological entitlement, psychopathy, catharsis beliefs, diabetic status, low educational ability, and gender (male). Personal factors related to decreased aggression include empathy, consideration of future consequences, and gender (female). Situational factors that increase aggression include exposure to violent media (e.g., television, films, video games, scriptures), exposure to weapons (e.g., guns, knives), hot temperatures, alcohol, provocation, frustration, ego threat, venting anger, rumination, rejection, ostracism, social exclusion, shame, hostile appraisals, and being "hangry." Situational factors that decrease aggression include self-distancing, distraction, social inclusion, and prayer.

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Buss Durkee Hostility Inventory

► Aggression Questionnaire

Buss Perry Aggression Questionnaire

► Aggression Questionnaire

Buss Perry Aggression Questionnaire-Short Form

► Aggression Questionnaire

Butcher, James N.

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James Neal Butcher is a professor emeritus of the Department of Psychology, University of Minnesota. He is a clinical-personality psychologist who conducts research and publishes in the areas of personality assessment, cross-cultural assessment, forensic evaluations, abnormal psychology, and personnel screening (primarily in airline pilot selection).

Early Life

Butcher was born on November 20, 1933, in Bergoo, West Virginia. His father was a coal miner who was killed in a coal mining accident when Butcher was 8 years old. His mother and five children moved to Charleston, WV, in 1942 where she worked in a factory that produced glass materials for WW II. She died in 1944 when Butcher was 11 years old. Butcher and one of his sisters, Joan who was 14 years of age, and two younger brothers, Jerry and Dickie, raised themselves independently in Charleston without an adult living in their home. Butcher began working carrying newspapers at age 11 to provide financial support for the family. The family received a small subsistence income from miner's compensation payments, a total of $36.00 per month for the family plus $18.00 per month for each minor child. The family tried to maintain a "normal" life – prepared meals, went to school, stayed at home most nights, maintained reasonable hours, and did everything possible to avoid being separated as a family. Joan was a very determined person and provided the glue to make this arrangement work. Everyone was well aware that if they failed at these tasks or called attention to their unusual living situation they might wind up living in an orphanage that, to everyone, was unacceptable. The family managed to stay together until Butcher went into the military and his brother Jerry (who had become quite religious) went to seminary. Joan continued to support Dickie until he became an adult. She eventually married and had two children.

Military Background

At age 17, Butcher enlisted in the US Army during the Korean War. He served 2 years in a parachute infantry division (82nd Airborne). He volunteered for service in the Korean War and served 1 year as an infantry soldier in the 17th Infantry Regiment during the war including the battles for Jane Russell Hill in October 1952 and Pork Chop Hill in April 1953. He was promoted to Sergeant First Class and served as platoon

sergeant in a front line infantry company. In 2013, he published a memoir of his early life and his military experience (Butcher J. N. (2013). *Korea: Traces of a forgotten war.* Ashland, OR: Hellgate Press).

After he was discharged from the military in 1954 Butcher worked in Charleston, WV, as a private detective for 2 years for the American Detective Agency. The owner of the agency gave him the opportunity because of his military combat experience in spite of the fact that he had no police or investigative background. This was an enjoyable line of work at first because it was often an exciting activity, provided some interesting problems to solve, following people around in conducting surveillances required some novel skill, and was even enjoyable catching a few bad guys in crooked activities. However, the work was somewhat sporadic at times, and it was somewhat difficult to support a family and also attempt to attend college. During this time, he began part-time college study on the GI Bill.

Educational Background

He began taking college classes in 1956 at West Virginia State College in Institute, WV (a predominantly African-American college at this time). He moved to Greensboro, NC, and took a job in a textile mill to provide family support while he attended Guilford College.

His entry into the scholarly world at Guilford College was a new and rewarding experience. The small and highly interactive classes with open content discussion promoted both learning and academic contribution. He obtained a B.A. in Psychology from Guilford College in North Carolina in 1960 and an M.A. in Experimental Psychology in 1962 and Ph.D. in Clinical Psychology from the University of North Carolina in 1964.

Family

In 1954, he married Nancy Oakley and they had three children: Sherry (now Sherry Butcher Wickstrom) who is presently academic dean of Anoka Ramsey Community College, Dr. Janus Dale Butcher (who is a family practice/sports medicine physician), and Neal Glynne Butcher who is deceased.

In 1979 Butcher married Carolyn L. Williams, Ph.D. They have a daughter (Holly Butcher Grant) who was trained as a journalist and is currently employed in public relations for a law firm.

Awards

Butcher obtained the following two Honorary Doctorates for his work in cross-cultural personality assessment:

Free University of Brussels, Brussels, Belgium, Awarded Doctor Honoris Causa (1990)

University of Florence, Florence, Italy, Awarded Laurea Honoris Causa in Psicologia (2005)

He was also awarded the Bruno Klopfer Award for Lifetime Contribution from the Society for Personality Assessment (2004).

Research Interests

Butcher's primary research interests are in several areas: personality assessment, personnel screening evaluation, posttraumatic stress disorder (PTSD), cross-cultural personality assessment, use of psychological assessment techniques in forensic evaluations, and computer-based psychological interpretation.

Overview of Professional Career Activities

Butcher accepted a teaching position in the clinical psychology program at Minnesota in 1964, in large part, because of his interest in continuing to conduct research in personality assessment with the MMPI and to work with the two pioneers in the area Starke Hathaway and Paul Meehl. However, he arrived at Minnesota only to find the MMPI research scene at Minnesota had become

somewhat sparse and that both Hathaway and Meehl had moved on to the pursuit of psychotherapy research and not working on the MMPI. Early in his career at Minnesota, he decided that an open forum on the MMPI was needed – a national conference that was devoted to new research and development on the instrument. He conducted the first *Conference on Recent Developments in the Use of the MMPI* in 1966. The MMPI Symposium was continued as an annual research conference along with workshops to provide training on the use of the MMPI in various settings. Research and clinical training on the MMPI was so strong that the workshops grew substantially over the years. Following the revision of the MMPI in 1989, the programs provided training to over 1200 people a year. Moreover, the conference series also went international in 1970 with a symposium and workshops in Mexico. The International programs continued every 2 years for 17 international programs.

Butcher taught at the University of Minnesota from 1964 to 2002 and served as the Clinical Psychology Director for 11 years (1974–1983). He served as Ph.D. supervisor for 55 doctoral students. He has authored more than 64 books and 250 journal articles and book chapters during his career. He served as an editor for the American Psychological Association journal *Psychological Assessment* (1992–1997*)* and *consulting editor for numerous journals* including *Clinical Psychology: Science and Practice, Experimental and Clinical Psychiatry (International, Journal of Behavioral Assessment and Psychopathology, Journal of Clinical Psychology*, *Journal of Experimental Psychiatry, and Psychological Assessment, Journal of Aviation/Aerospace Education & Research (JAAER).*

Butcher has conducted research on the Minnesota Multiphasic Personality Inventory (MMPI) instruments for over 50 years. His first publication on the MMPI was, as a graduate student, with two colleagues Brenda Ball and Eva Ray in 1964 on the comparison of MMPI profiles between Caucasian and African American students.

Personality assessment, especially the study of personality or behavioral characteristics with objective instruments like the MMPI, has been a major point of his career whether it is the study of diverse minority groups, serpent handling religious cults, people in other countries, or airline pilot applicants.

During the 1980s, Butcher was the lead author on the MMPI Restandardization Project in which the original MMPI was redeveloped, new normative data collected, and restandardized to produce the Minnesota Multiphasic Personality Inventory (MMPI-2). He also served as the lead developer for the adolescent version of the MMPI, the MMPI-A in 1992.

Computer-based interpretation of objective personality measures has been an important area of evaluation and development. Butcher conducted a number of studies on the use of computers in evaluating personality throughout his career. With research validated correlates of test scores, it is possible to construct a computer program that will compile an interpretive report that is more comprehensive, thorough, and research based than can be done by people. Even trained clinicians find computer-derived MMPI-2 narratives of value in developing their reports.

Butcher has had an extensive career in crisis intervention treatment and the study of PTSD and providing community service. He was a co-founder, supervisor, and board member of the Walk-In-Counseling Center (WICC) in Minneapolis, Minnesota, in 1969. The Walk-In-Counseling Center is a free clinic in Minneapolis aimed at providing free emergency and brief psychotherapy to clients in need (1969–1977) and remains an active free clinic today.

Butcher also was one of the developers of a disaster response program at the Minneapolis/St. Paul Airport designed to provide crisis intervention treatment in the event of an air disaster. As a function of this program, he offered free psychological counseling to family members of the Galaxy Air Disaster in Reno (1985). Butcher also organized, provided counseling therapy, and supervised a Crisis Intervention Disaster Response Program for Northwest Airlines following the crash of flight 255 in Detroit. This program was organized and implemented in six cities in the United States the day following the crash and continued for about 5 weeks. It involved

providing emergency mental health services for over 1000 persons in1987. He also organized, provided counseling services, and supervised the operation of a disaster response crisis intervention program following an airline accident of Aloha Airlines in Honolulu, Hawaii, in 1988.

He also collaborated extensively with a team of psychologists and psychiatrists in research and providing services for emigrants to the United States who had experienced traumatic experiences (e.g. torture) or other traumas in their home countries before coming to the USA, notably projects from Cambodia, Vietnam, Ethiopia, and Somalia.

During his career, Butcher has been involved in teaching in the field of abnormal psychology and conducting research on various aspects of the field. He is a co-author (with Jill Hooley, Susan Mineka, and Matthew Nock) of a widely used undergraduate textbook *Abnormal Psychology and Modern Life.*

Butcher's career included extensive international research and conducting workshop programs in psychological assessment. He conducted courses or workshops on personality assessment in 33 countries during his career and in many situations collaborated in assessment research projects with international researchers.

Forensic Testimony

Butcher is a coauthor of several books on using the MMPI-2 in evaluating clients in forensic testimony. His forensic testimony has been extensive and covers many types of legal cases such as family custody, personal injury, and criminal evaluations. His court testimony almost always focuses on the interpretation of MMPI-2 scores. Issues concerning technical aspects of the test or the likely meaning of a particular MMPI configuration or the assessment of symptom validity are also common themes in his court testimony.

Artistic Activities

Since 2000 when he took art classes at the Hampstead School of Art in London while on a sabbatical leave, he has been painting with watercolors and oils in addition to his academic career in psychology. His artistic contributions include:

The cover of the American Psychologist (October 2005) "Bike Trail in Excelsior."

Jacket cover of the book, The Use of the MMPI/MMPI-2/MMPI-A in Court by Pope, Butcher & Seelen (2006). American Psychological Association.

Butcher, J.N. (2006). Watercolors as a late-life adventure. Symposium presentation at the Annual Convention of the American Psychological Association, New Orleans, LA.

Some paintings exhibited on the cultural Internet site: http://www.londongrip.com/LondonGrip/Art%3A_James_Butcher_watercolours.html

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Recent Books

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Butcher, J. N., Cabiya, J., Lucio, E. M., & Garrido, M. (2007). *Assessing Hispanic clients using the MMPI-2 and MMPI-A*. Washington, DC: American Psychological Association.

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Pope, K. S., Butcher, J. N., & Seelen, J. (2006). *The MMPI/MMPI-2/MMPI-A in court* (3rd ed.). Washington, DC: American Psychological Association.

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Butcher, J. N. (2010). Personality assessment from the 19th to the early 21st century: Past achievements and contemporary challenges. *Annual Review of Clinical Psychology, 6*, 1–20.

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Gulden, A., Westermeyer, J. W., Lien, R., Spring, M., Johnson, D. R., Butcher, J. N., & Jaranson, J. (2010). A somatic symptom screen for posttraumatic stress: Replication in Ethiopian refugees. *Journal of Nervous and Mental Disease, 198*(10), 762–767.

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