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Appraisal Theories of Emotion: State of the Art and Future Development

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Although a scholarly topic over the centuries, emotion was first scientifically approached by Darwin (1872), who advocated a functional approach. Soon after, James (1890) started a debate about the elicitation and differentiation of the emotions and even about the very definition of the term *emotion*, which still continues. There have been periods of dominance for certain theories, like Tomkins' (1962) revival of Darwin's ideas in the form of discrete or basic emotion theory, a revival of peripheral theories by Schachter (1964), and various revivals of Wundt's (1896) dimensional theory. In the 1960s, Arnold (1960) and Lazarus (1966) pioneered a new theoretical approach called appraisal theory, which is in essence a systematization of ancient ideas about emotion, reflecting the ideas of Aristotle (1954), Hume (1739–1740/1969), Spinoza (1677/1989), and Sartre (1939). In the 1980s this approach took on new vigor, with a number of theorists proposing variants of appraisal theory, developing concrete predictions, and testing them empirically. Since then, "appraisal" has become a household word in emotion research, but the term is used in widely different forms and different theoretical and atheoretical contexts. This special section attempts to delineate the fundamental architecture of a family of theories that can be rightly called appraisal theories in a strict sense. In this special section we discuss the design features of these theories, their current development, and the empirical support for them, as well as unresolved issues, new developments, and critical objections. Four major contributions outline the scope of the current debate and a group of commentators provide a critical echo.

In this special section we focus on the theories of Arnold (1960), Lazarus (1991), Scherer (1984, 2009, 2013), Smith and Ellsworth (1985), Ellsworth (1991, 2013), Frijda (1986, 2007), Roseman (1984, 2013), Oatley and Johnson-Laird (1987), and Clore and Ortony (2000). The basic premise of appraisal theories is that emotions are adaptive responses which reflect appraisals of features of the environment that are significant for the organism's well-being. Many other emotion theories also see emotions as adaptive responses to the environment and some also toss in the term appraisal. Yet not all theories qualify as appraisal theories. We first describe appraisal theories and the criteria that differentiate them from other theories. Then we map out some of the diversity within the family of appraisal theories.

Basic Description of Appraisal Theories and Differentiation from Other Theories

Contemporary appraisal theories define emotions as processes, rather than states. This is reflected in the fact that the term emotion is often used as shorthand for an emotional episode. Appraisal theories are componential theories in that they view an emotional episode as involving changes in a number of organismic subsystems or components. Components include an appraisal component with evaluations of the environment and the person–environment interaction; a motivational component with action tendencies or other forms of action readiness; a somatic component with peripheral physiological responses; a motor component with expressive and instrumental behavior;

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and a feeling component with subjective experience or feelings. The emotion process is continuous and recursive. Changes in one component feed back to other components. For example, changes in appraisal may lead to changes in physiological and behavioral responses. These may, in turn, lead to changes in appraisal, either directly or indirectly (via a change in the stimulus situation). As a consequence, several emotional episodes may run in parallel. Some appraisal theories build on the notion of immediate efference (e.g., Ellsworth, 1991; Scherer, 2009): The processes in each of the components do not need to be completed before they can produce changes in later components.

Appraisal theories are not the only theories that treat the emotional episode as a process of changes in components. Many emotion theorists casually mention the term appraisal and some even describe it as a component (e.g., Ekman, 1994; Matsumoto & Ekman, 2009; Russell, 2003). The mere mention of appraisal, or even the inclusion of an appraisal component, is not sufficient for calling a theory an appraisal theory. In the remainder of this Introduction, we point to important differences between appraisal theories and other theories. Major differences include (a) the definition of appraisal, in terms of both content and type of process, (b) the role of appraisal in emotion and predictions about the relation between changes in appraisal and changes in other components, and (c) predictions about individual, cultural, and developmental differences.

Definition of Appraisal

Appraisal is a process that detects and assesses the significance of the environment for well-being. Significance for well-being is best conceptualized as the satisfaction or obstruction of concerns (Frijda, 1986, 2007). "Concerns" include the individual's needs, attachments, values, current goals, and beliefs (Frijda, 2007; Lazarus, 1991; Scherer, 2004); they include everything that an individual cares about (Frankfurt, 1988). It follows that appraisal is inherently transactional: It involves an interaction between the event and the appraiser (Lazarus, 1991).

Unlike other emotion theories that vaguely propose that cognitions contribute to emotions (Barrett, 2009; Russell, 2003; Schachter, 1964), appraisal theories specify the appraisal criteria or variables that are most important in differentiating emotions. In addition to the variables of goal relevance and goal congruence (which refer to the relevance and congruence of events for goals or, more broadly, concerns), most appraisal theories include the variables of certainty, agency (event caused by oneself, someone else, or impersonal circumstances), and coping potential or control. For example, a person sees her neighbor as the cause (agency) of her lack of sleep (goal incongruence) and does not know (certainty) whether she can change the situation (control). Some appraisal theorists also propose that novelty, expectancy, urgency, intentionality, legitimacy, or fairness, and/or norm compatibility contribute to differences in emotions. Appraisal is a process by which values are produced for one or more appraisal variables. There is fair, but not complete, agreement among appraisal theorists on the number and identity of these variables. These theorists do not claim that their list is exhaustive, or that it covers all people, cultures, or emotions.

Appraisal theories specify not only the contents of appraisal, but also the process of appraisal in terms of the underlying mechanisms, the nature of the representations on which these mechanisms operate, and the degree of automaticity. Appraisal theorists have proposed two or three mechanisms underlying appraisal, endorsing a dual or triple mode view of appraisal. Dual mode views (e.g., Clore & Ortony, 2000) distinguish between (a) a rule-based mechanism, consisting of the on-line computation of one or more appraisal values, and (b) an associative mechanism (also called schematic mechanism), consisting of the activation of learned associations between representations of stimuli and previously stored appraisal outputs (individual values or entire patterns). Triple mode views (e.g., Leventhal & Scherer, 1987) add a sensory-motor mechanism, consisting of the activation of unlearned associations between sensory features, hedonic feelings, and motor responses; for example, the association between the sensation of the earth shaking under one's feet, unpleasant feelings, and muscle contraction.

Although some critics have mischaracterized appraisal as a nonautomatic, rule-based process that operates on symbolic representations, appraisal theorists generally agree that various mechanisms can underlie appraisal and that they can operate on a wide range of representations: conceptual and/or propositional versus perceptual and/or embodied; symbolic versus subsymbolic; locationist versus distributed. They believe that appraisal often proceeds automatically (i.e., uncontrolled in the promoting or counteracting sense, unconscious, efficient, and/or fast; Moors, 2010), but can also sometimes proceed nonautomatically. Appraisal does not consist primarily of abstract cognitive principles, and often involves the recognition of action affordances in perceived events (Gibson, 1979)—the perception that an event invites or suggests what one can do with it, or what it prevents one from doing.

Role of Appraisal in Emotion

Like several other emotion theories, appraisal theories include appraisal as a component in the emotional episode. Unlike these other theories, appraisal theories assign a central role to this component, suggesting that appraisal triggers and differentiates emotional episodes through synchronic changes in other components. Appraisal determines the intensity and quality of action tendencies, physiological responses, behavior, and feelings (Clore & Ortony, 2000; Frijda, 2007; Lazarus, 1991; Reisenzein, 1994; Roseman & Smith, 2001; Scherer, 2001). This is what is meant when appraisal theorists argue that appraisal elicits or causes emotions (Moors, 2013). Several appraisal theorists have detailed hypotheses about the influence of appraisal on the other components (cf. below). Few of these authors think that appraisal is a necessary cause of changes in other components; most accept instances in which the other components are determined by processes that do not qualify as appraisal. As captured

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in the notion of recursiveness, most authors also accept influences from the other components on appraisal.

The feeling component is often seen as the conscious reflection of the changes in some (Lambie & Marcel, 2002) or all (Scherer, 2004) other components. For theorists who include appraisal as a component in the emotional episode, appraisal is one determinant of the feeling component. The appraisal process results in an appraisal output, that is, a representation of one or more appraisal values. This representation is unconscious by default but part of it can become conscious and hence become part of the content of feelings (Scherer, 2009). For theorists who believe that the appraisal component shapes the motivational, somatic, and motor components, appraisal is the core determinant of feelings. Appraisal theories allow variation in the number of appraisals that are made (appraisal variables that are processed). If only a few appraisals yield results, the emotional experience is relatively undifferentiated and global; if many appraisals are made, the emotional experience is highly differentiated and specific. Moreover, an emotional experience may become more complex over several recursive cycles.

Implications for Individual, Cultural, and Developmental Differences

Appraisal theories include hypotheses about individual, cultural, and developmental differences that other theories do not (Ellsworth, 1994). Appraisal theories can account for differences in people's emotional responses to the same situation. If two people differ in their appraisal of the event's novelty, goal congruence, controllability, or any of the other appraisal variables, their emotions will differ correspondingly. If they have different concerns, one person might appraise the event as furthering those concerns, while the other may see it as obstructing them. Some mental disorders may be characterized by chronically dysfunctional appraisals, as in obsessive-compulsive disease. Appraisal patterns may also differ in different cultures. For example, Japanese and Americans differ in their appraisals of agency. Japanese are more likely to blame themselves for negative outcomes and to experience shame, while Americans are more likely to blame others and experience anger (Imada & Ellsworth, 2011). Appraisal theories assume that there is a variable relation between stimuli and emotions, but a stable relation between appraisals and emotions. In general, the same appraisals lead to the same emotions; different appraisals lead to different emotions.

The appraisal process also depends on the availability of cognitive mechanisms which unfold over phylogenetic and ontogenetic development. Many animals can make rudimentary (and sometimes even quite sophisticated) appraisals (Désiré, Veissier, Després, & Boissy, 2004). While intrinsic valence appraisals are present in the newborn, some appraisals develop later, and appraisal theories predict that emotions will not be differentiated until the child is capable of making the relevant appraisals. For example, a cognitive restructuring around 9 months of age seems to be decisive for the operation of appraisals based on expectancy and determines the nature of the surprise response (Scherer, Zentner, & Stern, 2004). Similarly, the generalized distress experienced by infants differentiates into sadness and anger when the infant is able to perceive differences in agency.

Differences among Appraisal Theories and Unresolved Issues

In addition to the commonalities among appraisal theories described before, there are issues about which there is disagreement as well as issues that are not entirely resolved. These issues can be divided into those that relate to the appraisal process and those that relate to the relation between appraisals and other components. Issues related to the appraisal process can be divided into those that relate to the content of the appraisal process and those that relate to underlying mechanisms, representations, and operating conditions.

Appraisal Process

Content of appraisal. This section discusses the number and nature of the appraisal variables postulated and the number of the appraisal values that are possible for each variable. There is substantial agreement on a core set of appraisal variables. Examples are goal relevance, goal congruence (also called goal conduciveness or motive consistency), certainty, coping potential (also called control and/or power), and agency (also called cause). Other appraisal variables are included in some, but not all, appraisal theories. For example, some theories include novelty (or related concepts such as suddenness, change, familiarity, unexpectedness; Roseman, Spindel, & Jose, 1990; Scherer, 1984; Smith & Ellsworth, 1985), whereas others do not (Lazarus, 1991). Some include intrinsic valence or pleasantness (Frijda, 1986; Scherer, 1984; Smith & Ellsworth, 1985), whereas others do not (Lazarus, 1991; Roseman, 1984). Some include type of goal (Lazarus, 1991; Roseman, 1984), whereas others do not (Scherer, 1984). Some include norm/self compatibility (Scherer, 1984), whereas others subsume it under the variable of goal congruence (in combination with type of goal; Lazarus, 1991).

In some theories, appraisal variables are categorical, with a discrete number of possible values. For example, Lazarus (1991) proposed two values for goal congruence: goal congruence and goal incongruence. In other theories (Ellsworth, 1991; Scherer, 1984), appraisal variables are dimensional, with potentially infinite values. For example, goal congruence ranges from entirely goal congruent to entirely goal incongruent. In still other theories (e.g., Roseman, 1996), appraisal variables are dimensional but the system provides anchor points so that it can produce a discrete number of values.

The number and nature of the appraisal variables and/or values is closely related to the number and nature of the emotions that one can or wishes to explain. In general, more emotions require more appraisal variables and/or more appraisal values. Turning it around, more appraisal variables and/or more appraisal values allow more variety in emotions. Two appraisal variables with two values each can account for four emotions.

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Seven appraisal variables with an infinite number of values each can account for an infinite number of emotions. The number and nature of the emotions that one wishes to explain can be traced back to metatheoretical choices such as whether one strives for parsimony and/or a focus on natural language descriptors of emotions, on the one hand, or exhaustiveness and/or a focus on variety, on the other hand (Scherer, 1999).

Type of process. We mentioned that most appraisal theorists endorse a dual or triple mode view of appraisal. One set of questions involves the relations between mechanisms (e.g., rule-based, associative, sensory-motor), automaticity, and formats of representations or codes (e.g., image-like, verbal-like, symbolic, subsymbolic). Leventhal and Scherer (1987) suggested that (a) rule-based mechanisms are often nonautomatic and tend to operate on conceptual codes, (b) the associative mechanism is often automatic and typically operates on perceptual codes, and (c) the sensory-motor mechanism is automatic and operates on sensory codes. These assumptions, although in line with dual and triple mode views in other research domains, remain to be tested empirically. It is possible that rule-based mechanisms can also be automatic (Anderson, 1992; Clore & Ortony, 2000; Moors, 2010) and that the associative mechanism can also operate on conceptual codes (Smith & Kirby, 2001).

Another set of questions involves the relationship of the content of appraisal to automaticity, mechanisms, and codes. Appraisal theories assume that increasing practice leads to greater automatization and that all appraisal variables can be processed more or less automatically. This assumption has received increasing empirical support (cf. Moors, 2010).

Another question is which appraisal variables can be processed with which mechanism. Leventhal and Scherer (1987) suggested that all appraisal variables can be processed with all mechanisms. On the other hand, it has been suggested that some appraisal variables (novelty, intrinsic valence) can be processed with simpler mechanisms than others (norm/self compatibility; Ellsworth & Scherer, 2003; Frijda, 2007; Scherer, 2009).

In addition to the relations between appraisal variables, automaticity, mechanisms, and codes, numerous other processing details remain to be specified. One such issue is whether appraisal variables are processed sequentially or in parallel. In Scherer's (2009) theory, appraisal variables can be processed in parallel, but preliminary values for them are produced sequentially (Aue, Flykt, & Scherer, 2007; Grandjean & Scherer, 2008). Other appraisal theorists think the sequentiality assumption is overly restrictive.

A further set of questions focuses on the implementation of appraisal in the brain. One question is whether appraisal variables are tied to specific neural substrates or whether appraisal variables describe the content of information that is processed by content-independent mechanisms. Some appraisal researchers search for neural substrates that are specific for appraisal variables (e.g., Sander, Grafman, & Zalla, 2003). They show that regions (e.g., the amygdala) that were previously thought to be specific for one basic emotion (fear) are involved in a set of appraisal variables (novelty, goal relevance, intrinsic valence). They do not claim, however, that the amygdala is specific for these appraisal variables: The amygdala may have other functions, and there may be other regions that can process these appraisal variables.

From Appraisal to Emotion or the Other Components

Most appraisal theories have hypotheses (and research) about the relation between (patterns of) appraisal values and emotions indicated by natural language descriptors (although they believe that appraisals can also account for emotional states that are not described by language). For example, Lazarus (1991) hypothesized that stimuli appraised as goal relevant, goal incongruent, and difficult to cope with correspond to fear. Some appraisal theorists have also developed (and tested) hypotheses about the relation between appraisal values and values on other components like action tendencies (Ellsworth & Tong, 2006; Frijda, 1986; Frijda, Kuipers, & ter Schure, 1989; Roseman, 2001), physiological responses (Aue & Scherer, 2008; Scherer, 1993, 2009; Smith, 1989), and facial and vocal expressions (Laird & Bresler, 1992; Scherer, 2009; Scherer & Ellgring, 2007; Smith & Ellsworth, 1985).

Appraisal theories have hypotheses not only about the relation between appraisals and emotions or the other components, but also about the mechanisms underlying the influence of appraisal on the other components. There are two broad proposals. The first proposal (e.g., Lazarus, 1991) states that appraisal values are integrated in a pattern, which determines the emotion. This pattern determines the values of the other components. The question arises whether a representation of an emotion must be activated, and if so, what kind of a representation. The second proposal (e.g., Ellsworth, 1991; Scherer, 2009) states that each appraisal value directly influences (some of) the other components without travelling via a representation of an emotion. According to one variant of this proposal, appraisal values directly and independently influence each of the components (motivational, somatic, motor, feeling) in parallel. According to another variant of this proposal (e.g., Frijda, 2009; Scherer, 2009), appraisal values have to travel via the motivational component before influencing the somatic and motor components. Aspects of all these components are reflected in the feeling component.

Few appraisal theorists have presented hypotheses about the mechanisms underlying the influence of the components on the feeling component. Ellsworth (1991), Frijda (2007), and Scherer (2004) have suggested that the content of feelings represents an integration of several or all the other components. Unresolved issues are the extent to which aspects of each component are centrally represented, their weight in determining the overall quality of the feelings, and the extent to which they are experienced holistically or keep a certain amount of granularity. Lambie and Marcel (2002) argue this to be strongly dependent upon attentional variables.

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Conclusion

Appraisal theory was proposed (Arnold, 1960) and developed (Lazarus, 1966) to explain how different emotions may emerge from the same event, in different individuals and on different occasions. Appraisal processes do so by using information from events in their context, the individual's concerns, history, and other sensitivities. Appraisal processes and the information that they use thus form the main causal determinants of the various components that together form the multicomponential response patterns called "emotions." Appraisal processes mediate the significance of events for the individual's well-being. Appraisal theory thereby elaborates and specifies a central topic in the psychology of emotion: the confluence of cognition and emotion that results when information is viewed in the light of motivation.

Our sketch of appraisal theories hints at current developments in the theory. One development concerns the insight that emotional events are often highly complex. They tend to instigate various cognitive, motivational, and somatic components simultaneously, in competition, in conflict, or in interaction. Many events are congruent for one concern and incongruent for another. One both wants something and doesn't want it (Lewis & Todd, 2007; Mesquita & Frijda, 2011). This multiplicity is at the core of emotion regulation, and suggests an integration of emotion regulation *within* appraisal theory, and not as a set of additional or external phenomena.

Further developments concern detailed insights into the mechanisms underlying appraisal. Any mechanism that deals with the appraisal variables contained in events can potentially underlie appraisal. The mechanisms involved can operate on various codes, and they can take place in an automatic or nonautomatic way. This is most conspicuous when appraisals develop in social interactions. Cool reception of one's smile elicits the appraisal "not welcome" (i.e., goal incongruence) without any abstract categorization necessary to imbue the event with meaning and implications for action (Parkinson, 2007). Appraisal can occur on the spot in response to what another person does or does not do, whether or not the perceiver has preexisting knowledge. A new direction for research is the investigation of the mechanisms and codes that are actually involved in social and nonsocial situations. To conclude, there seems to be a movement toward greater agreement about the core features of appraisal theories. Nevertheless, many issues remain open, some of which receive in-depth attention in this special section.

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