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Theoretical Claims Necessitate Basic Research: Reply to Gawronski, LeBel, Peters, and Banse (2009) and Nosek and Greenwald (2009)

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The authors of this reply article note that B. Gawronski, E. P. LeBel, K. R. Peters, and R. Banse (2009) (a) expressed agreement in their comment with the analysis put forward in the target article (J. De Houwer, S. Teige-Mocigemba, A. Spruyt, & A. Moors, 2009) and (b) pointed to a further implication for the way in which the implicitness of a measure should be examined. The current authors note that B. A. Nosek and A. G. Greenwald (2009), on the other hand, raised questions in their comment about the definition of the concept "implicit" in the target article, arguing for a fundamentally different approach to measurement that emphasizes not theoretical understanding but usefulness for predicting behavior. In this reply, the current authors respond to these comments and argue that when theoretical claims are made about measures, these claims should be backed up with appropriate evidence. In the absence of basic research, measures and their relation to behavior can only be described.

Keywords: implicit measures, validity, individual differences, automaticity

In our target article (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009), we pointed out that the outcome of a measurement procedure can be called an implicit measure only if there is evidence to back up this theoretical claim. On the basis of an analysis of the concept of implicit measure, we argued that research should be directed toward revealing (a) what psychological attributes cause variation in the measure ("what" criterion), (b) the nature of the processes by which they do so ("how" criterion), and (c) whether these processes have features of automaticity (implicitness criterion). In the current reply, we discuss the comments of Gawronski, LeBel, Peters, and Banse (2009) and Nosek and Greenwald (2009) on our target article. In a first section, we acknowledge that research on the implicitness criterion should take into account the "what" criterion. Our second section focuses on Nosek and Greenwald's comments about the definition of the concept of implicit. In our final section, we evaluate whether research about measures should be concerned primarily with usefulness or with theoretical understanding.

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How to Examine the "What" and Implicitness Criteria?

Gawronski et al. (2009) correctly pointed out that research on the implicitness criterion cannot be seen independently from research on the "what" criterion. Claims about the implicitness of a measure are actually claims about the automaticity of the processes that are responsible for the validity of the measure, that is, the processes by which the to-be-measured attribute causes the measure. If a measure is valid (i.e., measures what it is supposed to measure) even under conditions that allow only for the operation of automatic processes, one can conclude that the processes responsible for validity are automatic and thus that the measure is implicit.

We also agree with Gawronski et al. (2009) that researchers should be careful in interpreting the effects of experimental manipulations on (implicit) measures. Experimental manipulations might have an effect not because they influence (and thus reveal the nature of) the processes by which the attribute causes the measure but because they affect other processes. This problem complicates research on the what, how, and implicitness criteria, because all three criteria imply specific claims about the processes by which the to-be-measured attribute causes the measure. As a solution, Gawronski et al. proposed combining experimental manipulations with a correlational approach. Although we agree that this is a very useful approach, we still believe that correlational evidence should not be given a privileged status when examining (implicit) measures. Correlations with criterion variables are not perfect indicators of the validity of a measure. They too can be influenced by processes other than those by which the to-be-measured attribute causes the measure. Nevertheless, the approach proposed by Gawronski et al. is valuable because it emphasizes the importance of looking for converging evidence using different

research strategies that can be used to establish the validity of measures (i.e., experimental, semi-experimental, correlational).

Implicit Is Automatic, Not Indirect

Whereas Gawronski et al. (2009) conveyed acceptance of our definition of implicit measures, Nosek and Greenwald (2009) objected to the idea of equating the concepts implicit and automatic. First, Nosek and Greenwald argued that because all measures include automatic and nonautomatic process components, it becomes difficult to categorically distinguish between implicit and nonimplicit measures. Although it is true that all measures are probably based on a mixture of processes with varying automaticity features, the implicitness of a measure is determined only by the automaticity features of those processes by which the to-be-measured attribute causes the measurement outcome. Moreover, we do not strive for a categorical distinction between implicit and nonimplicit measures. Different implicit measures can be implicit in different ways, that is, possess different (combinations of) automaticity features.

As a second argument against equating the concepts implicit and automatic Nosek and Greenwald (2009) suggested that the feature "inability to report a mental content" is an important aspect of the concept "implicit" that is not captured by the concept "automatic." We disagree. When someone is unable to self-report a mental content, the process of reporting that mental content is uncontrolled in the sense that the proximal goal to express the mental content is not sufficient to result in the expression of the content. As such, the feature "inability to report a mental content" can be understood in terms of the automaticity of a self-report process. Nosek and Greenwald could argue that implicit measures should be defined in terms of their ability to capture mental contents that cannot be self-reported. From our perspective, this is a definition in terms of the automaticity features of a self-report process. Although such a definition is possible, we believe that it is more informative to define and examine measures in terms of the processes that produce those measures without having to refer to the processes that operate in other (e.g., self-report) measures.

Even if the arguments of Nosek and Greenwald (2009) would have led us to reconsider our definition of implicit measures, we would not be tempted to adopt the alternative definition that they provide. According to Nosek and Greenwald, "a measure can be called implicit if it does not require awareness of the relation of the attribute to the response" (p. 374) even though the definition "does not require that this awareness be absent" (p. 374). After corresponding with Nosek and Greenwald about the exact meaning of their definition, we now believe that it implies the following: A (valid) measurement outcome can be called implicit if it is derived from performance during a task that participants can complete without being aware of the relation between the attribute that is measured and the responses they give. Hence, Nosek and Greenwald define the implicitness of measures on the basis of an objective feature of the measurement procedure. One simply has to determine whether the measurement procedure requires awareness of the relation between the attribute and response. Whether participants actually are aware of the relation is not crucial.

A big advantage of defining implicit measures in terms of the measurement procedure is that the definition is much easier to verify than a definition in terms of the properties of processes would be (see also De Houwer & Moors, in press). On the other hand, it also has important potential disadvantages. First, it is likely to create confusion amongst researchers. Historically, the term *implicit* has been used to describe the nature of processes. Hence, calling a measurement procedure implicit is likely to lead to the incorrect inference that the processes underlying the measure are also implicit. To avoid such confusion, implicit memory researchers have adopted the practice of reserving the term *implicit* to refer to a particular type of memory (i.e., the unconscious or unintentional impact of past events on current events) and the term *indirect* to refer to a particular type of memory task (i.e., a task that does not require participants to consciously or intentionally take into account past events; see Butler & Berry, 2001; Richardson-Klavehn & Bjork, 1988). As such, our definition of implicit is more consistent with historic use than is the definition of Nosek and Greenwald.

A second and more important potential problem is that a definition of implicit in terms of the measurement procedure might turn out to be inconsequential. A criterion for classifying measures should not only be easy to verify but should also distinguish between measures that are related in a different way to behavior (De Houwer & Moors, in press). It seems unlikely that the way in which a measure relates to behavior depends only on whether the measurement procedure requires awareness of the relation between the attribute and the response. A similar conclusion was reached in research on implicit memory. Many studies showed that performance on indirect memory tasks differs from performance on standard (direct) memory tasks only when memory retrieval in the indirect task was unintentional. Interestingly, awareness of the retrieval process turned out to be much less important (Butler & Berry, 2001). It might well be that future research will show that the added value of a particular implicit measure in predicting behavior also depends on whether the processes underlying the measure have certain features of automaticity. Because we do not want to prejudge which automaticity feature (e.g., intentionality, awareness) will turn out to be crucial, we opt for a broad definition in which the term *implicit* can be linked to each (combination of) automaticity feature(s). Making the link with the concept of automaticity also adds heuristic value to the concept of implicit memory and allows researchers to capitalize on recent advances that have been made with regard to the understanding of the concept automatic (e.g., Bargh, 1992; Moors & De Houwer, 2006).

Basic Research Is Necessary to Surpass Mere Description

Although Nosek and Greenwald (2009) acknowledged that basic research on the what, how, and implicitness criteria can be important for the future development of (implicit) measures, they argued that it is more important to examine the usefulness of measures, that is, the extent to which measures allow one to predict unique variance in relevant behavior. In their article, Nosek and Greenwald put forward two arguments to support this conclusion. First, they pointed out that research on the what, how, and implicitness criteria is not always necessary. Many existing measures have proved to be useful even when the processes underlying the measure are not understood or when there is no pretense that the measures map onto psychological attributes. Second, Nosek and Greewnald argued that it is not clear whether or when basic

research will allow one to conclude that a measure meets the what, how, and implicitness criteria.

We do not reject the two arguments put forward by Nosek and Greenwald (2009), but we do dispute the generality of their conclusion. First, it is true that the usefulness of a measure can be demonstrated simply by describing relations between measures and behavior. However, psychologists often go beyond mere description by formulating claims about what it is that a measure captures and how it does so. The claim that a measure captures something is a theoretical claim. Such a claim goes beyond the observed value of the measure by specifying what it is that produced that value (e.g., a particular psychological attribute). One cannot verify such claims simply by looking at the measure or the measurement procedure itself. Additional observations or arguments (i.e., results from additional research) are needed to back up the validity of that claim. The claim that a measure captures something in an implicit way is also a theoretical claim that needs to be confirmed by additional research. More generally, validity is a feature not of the measures themselves but of the theoretical claims that are made about those measures. All theoretical claims need to be clearly spelled out and supported by appropriate evidence. Therefore, when a researcher wants to make theoretical claims about a measure, basic research should be the top priority.[1]

Second, we do not dispute the argument that it can be difficult to envisage the end point of basic research about (implicit) measures. As is the case with basic research in general, theoretical claims are likely to change, each time necessitating additional research that can again lead to new claims and so forth. Rather than clinging to the ideal of absolute truth (or in the present context, absolute validity), one can deal with the transitory nature of basic research by being aware of the relativity of theoretical claims and the need to constantly improve them. In line with this perspective, we pointed out in our target article (De Houwer et al., 2009) that the what, how, and implicitness criteria should not be seen as end points that must be reached before a measure can be regarded as valid. Rather, they are goals to strive for. When making claims about what a measure captures and how it does so, one should be explicit about what one means and try to back up those claims with appropriate evidence. Basic research is the price that scientists should be willing to pay for claims that go beyond usefulness and description. Claims about measurement are no exception to that general rule.

[1] In our target article, we argued that claims about the validity of measures imply claims about the existence of psychological attributes. As Nosek and Greenwald correctly pointed out, we did not want to say that a psychological attribute can be measured only if it exists as a physical entity. A core concept of cognitive psychology is that mental states such as beliefs and attitudes can cause behavior. However, cognitive psychologists assume only that mental states and processes exist as theoretical concepts without committing to a particular neural implementation of those states and processes (see Marr, 1982). This is true regardless of whether the behavior that is produced by the mental state is assessed by the individual whose psychological attributes are measured (as in questionnaire measures such as the Minnesota Multiphasic Personality Inventory), by the researcher (as in reaction time measures, such as the Implicit Association Test), or by a third party (e.g., as is the case when students report on the teaching ability of instructors). From the perspective of cognitive psychology, each of these measures can be valid only if they are based on the (direct or indirect) observation of behavior that is produced by the to-be-measured psychological attribute. Other theoretical approaches to psychological measurement are possible. For instance, radical behaviorists postulate that behavior is driven by regularities in the environment rather than by mental states (e.g., Chiesa, 1994). Each approach makes different ontological theoretical claims about what it is that drives behavior and thus about what it is that measures (should) capture.

References

Bargh, J. A. (1992). The ecology of automaticity. Toward establishing the conditions needed to produce automatic processing effects. *American Journal of Psychology, 105,* 181–199.

Butler, L. T., & Berry, D. C. (2001). Implicit memory: Intention and awareness revisited. *Trends in Cognitive Science, 5,* 192–197.

Chiesa, M. (1994). *Radical behaviorism: The philosophy and the science.* Authors Cooperative. Boston MA.

De Houwer, J., & Moors, A. (in press). Implicit measures: Similarities and differences. In B. Gawrsonski & B. K. Payne (Eds.), *Handbook of implicit social cognition.* New York: Guilford Press.

De Houwer, J., Teige-Mocigemba, S., Spruyt, A., & Moors, A. (2009). Implicit measures: A normative analysis and review. *Psychological Bulletin, 135,* 347–368.

Gawronski, B., LeBel, E. P., Peters, K. R., & Banse, R. (2009). Methodological issues in the validation of implicit measures: Comment on De Houwer, Teige-Mocigemba, Spruyt, and Moors (2009). *Psychological Bulletin, 135,* 369–372.

Marr, D. (1982). *Vision: A computational investigation into the human representation and processing of visual information.* New York: Freeman.

Moors, A., & De Houwer, J. (2006). Automaticity: A conceptual and theoretical analysis. *Psychological Bulletin, 132,* 297–326.

Nosek, B. A., & Greenwald, A. G. (2009). (Part of) the case for a pragmatic approach to validity: Comment on De Houwer, Teige-Mocigemba, Spruyt, and Moors (2009). *Psychological Bulletin, 135,* 373–376.

Richardson-Klavehn, A., & Bjork, R. A. (1988). Measures of memory. *Annual Review of Psychology, 39,* 475–543.

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