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Review Paper

Holding on to our functional roots when exploring new intellectual islands: A voyage through implicit cognition research

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A B S T R A C T

Throughout much of the past two decades, contextual behavioral science has been applied to a diverse spectrum of psychological phenomena. This intellectual voyage into uncharted waters has brought with it exciting new developments at the methodological and theoretical levels as well as increased contact with other philosophical frameworks such as mechanism. This expansion into new territories requires that the researcher carefully walk a tight-rope between different intellectual traditions—an activity that is subject to several challenges and dangers. In the following paper we provide a detailed map on how to navigate such pitfalls in the study of implicit cognition. We open with a comprehensive overview of the core assumptions and analytic strategies upon which the cognitive (mechanistic) and functional (contextual) traditions have been built. As we shall see, both traditions have sought to understand, predict, and in some cases influence, behavior using radically different conceptual, theoretical and methodological tools. The Relational Elaboration and Coherence (REC) model as well as the Implicit Relational Assessment Procedure (IRAP) are offered as examples of how researchers can explore the domain of implicit cognition from a purely functional perspective. Finally, we examine the possibility that although the cognitive and functional frameworks operate at two independent levels of analysis each may be mutually informed by the work of the other, to the benefit of both.

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1. Introduction

Psychological science has long sought to unravel the enigma of how the inner and private world of the individual interacts with their overt behavior (for reviews see Banaji & Heiphetz, 2010; Nosek, Hawkins, & Frazier, 2011; Payne & Gawronski, 2010). More often than not, this work has been inspired by finding that people behave in two different and potentially conflicting ways. On the one hand, and consistent with our intuitive beliefs about behavior, we can respond to stimuli in our environment in a non-automatic fashion. These "explicit" responses are argued to be controlled, "intentional, made with awareness and require cognitive resources" (Nosek, 2007, p. 65) and are typically registered using direct measurement procedures such as questionnaires, interviews, and focus groups. On the other hand, our history of interacting with the social environment can also result in the formation of automatic or "implicit" responses that are characterized by differing degrees of awareness, intention and control (see Gawronski & Payne, 2010) and are often assessed using indirect procedures such as semantic and evaluative priming (Fazio, Jackson, Dunton, & Williams, 1995; Wittenbrink, Judd, & Park, 1997), the Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998) and the Implicit Relational Assessment Procedure (IRAP; Barnes-Holmes et al., 2006; for an overview of these tasks see Nosek et al., 2011; Gawronski & De Houwer, in press).[1]

An extensive literature now indicates that automatic and controlled responses correspond with one another when phobic stimuli (Teachman, 2007), consumer preferences (Maison, Greenwald, & Bruin, 2004) and political orientation (Choma & Hafer, 2009) are subject to inquiry. However, under specific conditions – and with respect to certain stimuli – automatic and controlled responding may also conflict. For instance, people often show automatic negative responses to members of other racial, ethnic or religious groups despite their self-reported egalitarian sentiments (McConnell & Leibold, 2001; Payne, Burkley, & Stokes, 2008). Automatic responses may not only correspond or diverge from controlled behaviors but – perhaps more importantly – differentially, additively or interactively predict future actions over and above their non-automatic counterparts (see Perugini, Richetin, & Zogmaister, 2010). For example, the degree to which people seeking psychiatric treatment automatically relate the self with death/suicide predicts their

likelihood of attempting suicide in the following 6 months (Nock et al., 2010), while automatic evaluative responding to one's partner predicts risk of future relationship breakup (Lee, Rogge, & Reis, 2010). Likewise, the quality and quantity of social interactions with members of other racial or ethnic groups (McConnell & Leibold, 2001), voting behavior (Galdi, Arcuri, & Gawronski, 2008) and likelihood of engaging in safe sex behaviors (Czopp, Monteith, Zimmerman, & Lynam, 2004) have all been predicted on the basis of automatic responding.

As in any area of (psychological) science, researchers interested in the study of implicit cognition have adopted a set of philosophical assumptions about the research domain, appropriate units of analysis and relevant truth criteria. When taken together, these pre-analytic assumptions provide the philosophical scaffold upon which individual theories have been built, methodologies crafted and empirical findings interpreted (see Hughes, Barnes-Holmes, & De Houwer, 2011). Although a number of philosophical frameworks or "worldviews" have been proposed to guide scientific activity (Pepper, 1942; Hayes, Hayes, & Reese, 1988), research in this area has been dominated by psychologists subscribing to a cognitive (mechanistic) – and to a lesser degree – functional (contextual) position (referred to hereafter as the mechanistic and functional approaches).

In the following paper we open with a detailed overview of the core assumptions and analytic strategies upon which the mechanistic and functional traditions have been built. Clarifying the goals of science, nature of truth and the basic units that different researchers adopt in the study of implicit cognition will provide the reader with an essential background against which to evaluate the rationale for past and future developments within this research area. Although the mechanistic approach has long guided this research enterprise we offer the Relational Elaboration and Coherence (REC) model as well as the Implicit Relational Assessment Procedure (IRAP) as examples of how researchers can explore this intellectual domain from a purely functional perspective. Importantly, this expansion into new territories requires that the researcher carefully walk the tight-rope between the mechanistic and functional traditions – an activity that is subject to several challenges and dangers. We outline how researchers can avoid these problems by maintaining a firm separation between the mechanistic and functional levels of analysis. Finally, and in line with recent work by De Houwer (2011), we close by examining the possibility that although the mechanistic and functional frameworks operate at two independent levels of analysis each may be mutually informed by the work of the other, to the benefit of both.

2. The mechanistic approach to psychological science

Arguably, the majority of empirical work within contemporary psychology – and implicit cognition in particular – has been conducted by researchers operating within a mechanistic worldview. Broadly speaking, mechanists conceptualize (psychological) events as being similar to a machine, composed of discrete parts that interact and are subject to specific operating conditions

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[1] Following De Houwer (2008), we define a procedure as either *direct* or *indirect* on the basis of its procedural properties and the outcome or effect of a procedure as either *implicit* or *explicit* based on the properties of the processes by which the attribute influences behavior. Although cognitive researchers often use terms such as implicit and explicit to distinguish conscious from unconscious (Greenwald & Banaji, 1995) or automatic from controlled processes (De Houwer, Teige-Mocigemba, Spruyt, & Moors, 2009), functional researchers employ these same terms simply as descriptive labels for different classes of behavior rather than mediating mental mechanisms. That said, several researchers have recently attempted to provide a functional definition of automaticity (De Houwer, & Moors, in press).