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Mutual influence of implicit and explicit attitudes

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ABSTRACT

Research and theory distinguish two types of attitude: automatic evaluative reactions and deliberate evaluative judgments, referred to as implicit and explicit attitudes, respectively. Although these attitudes are distinct, they may influence each other. Four studies tested whether implicit and explicit attitudes are both influenced by propositional and associative learning. We also tested whether changes in one kind of attitude mediate changes in the other. Study 1 found that propositional learning about novel individuals directly influenced explicit attitudes and indirectly influenced implicit attitudes through changes in explicit attitudes. Studies 2 and 3 replicated this finding and extended it by simultaneously demonstrating that associative learning through Evaluative Conditioning directly influences implicit attitudes and indirectly influences explicit attitudes through changes in implicit attitudes. Study 4 replicated these effects for attitudes toward familiar, rather than novel, targets. These results suggest that implicit and explicit attitudes can share common antecedents and influence each other.

Much research in social psychology has focused on understanding attitude formation and change. As just one example of the importance of these processes, HIV-prevention programs often attempt to fight the spread of AIDS with persuasive messages (Stover et al., 2002). In many countries with high infection rates, prevention efforts aim to change behavior by shaping attitudes. We now understand a great deal about how explicit attitudes (i.e., deliberate evaluative judgments) form and change, but less about how implicit attitudes (i.e., immediate evaluative reactions) form and change. We similarly know relatively little about the functional relations between explicit and implicit attitudes (Gawronski & Bodenhausen, 2006). We address these issues in the present studies, aiming to demonstrate that explicit and implicit attitudes can share common antecedents and influence each other.

Implicit and explicit attitudes

Objects in the environment can trigger evaluations automatically; that is, with little or no conscious guidance (e.g., Fazio, Sanbonmatsu, Powell, & Kardes, 1986). This finding led some theorists to suggest that people can hold distinct *implicit* and *explicit* attitudes toward the same attitude objects (e.g., Wilson, Lindsey, & Schooler, 2000). Whereas explicit attitudes reflect the deliberate evaluative judgments assessed by self-report scales, implicit attitudes reflect more immediate, perhaps automatic evaluative reactions and are measured indirectly. We note that the terms *explicit* and *implicit attitude* can carry theoretical connotations that may be inappropriate (e.g., that people are unaware of their implicit attitudes, or that the two attitudes are represented separately in memory; Fazio & Olson, 2003; Gawronski & Bodenhausen, 2006; Gawronski, Hofmann, & Wilbur, 2006; Jordan, Whitfield, & Zeigler-Hill, 2007), but we retain them in order to more clearly link our findings to past research in this area.

Dual system models provide a useful framework for understanding implicit and explicit attitudes (Gawronski & Bodenhausen, 2006; Rydell & McConnell, 2006). These models posit that people process information through two distinct cognitive systems (e.g., Sloman, 1996; Smith & DeCoster, 2000; Strack & Deutsch, 2004). One system is propositional, fast-learning and operates through controlled processes. The other is associative, slow-learning and operates through automatic processes. These systems may represent information differently; as either propositions that are assigned truth-values (i.e., are endorsed or not), or associations derived from the perceived contiguity and similarity of stimuli. Explicit attitudes may thus form and change primarily through propositional learning, and implicit attitudes through associative learning (Gawronski & Bodenhausen, 2006; Smith & DeCoster, 2000; Strack & Deutsch, 2004).

Whether implicit and explicit measures reflect meaningfully distinct evaluations has been controversial (Fazio & Olson, 2003). Accordingly, much research has focused on establishing the discriminant validity of implicit and explicit attitudes by documenting their differences. Thus, the two kinds of measures correlate only modestly with each other overall (Hofmann, Gawronski, Gschwendner, Huy, & Schmitt, 2005; Nosek, 2005), and predict distinct judgments and behaviors (e.g., Dovidio, Kawakami, & Gaertner, 2002; Spalding & Hardin, 1999). Additionally, consistent

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with dual system models, explicit attitudes are particularly sensitive to propositional learning, whereas implicit attitudes are more sensitive to associative learning (Rydell, McConnell, Mackie, & Strain, 2006).

Rydell and colleagues (2006) examined attitude formation and change for a novel target person, giving participants consistently positive or negative Behavioral Information about "Bob" (e.g., "Helps the neighborhood children") over 100 trials. Unbeknownst to participants, a subliminal prime, opposite in valence to the Behavioral Information, preceded each trial (e.g., negative primes preceded positive information). A second block reversed the valence of Behavioral Information and associative primes. Their results showed that explicit attitudes tracked propositional learning through Behavioral Information whereas implicit attitudes tracked associative learning through priming.

These studies support the discriminant validity of implicit and explicit attitudes, but do not preclude the possibility that they share common antecedents and influence each other. Rydell and colleagues (2006), by pitting propositional and associative learning against each other, demonstrated that explicit and implicit attitudes are sensitive to different influences. But their research design precluded testing whether implicit and explicit attitudes are both affected by propositional learning and associative learning, because these factors were intentionally confounded. The present studies examine these factors independently. We expect, in keeping with Rydell and colleagues' findings, that propositional learning will affect explicit attitudes directly. We expect it, additionally, however, to affect implicit attitudes indirectly through changes in explicit attitudes. Likewise, we expect associative learning to influence implicit attitudes directly and explicit attitudes indirectly through changes in implicit attitudes.

These findings could have meaningful implications for dual system models of implicit and explicit attitudes. Although the primary architects of dual system models clearly specify that the two systems are not fully independent, the ways in which they interact are not always clear. DeCoster, Banner, Smith, and Semin (2006), for example, specify that explicit measures reflect both deliberative and associative processes, but also conclude that "implicit measures must at least in part reflect aspects of memory that have no direct influence on explicit ratings" (p. 18). In addition, some models posit a more radical independence between the systems (see Briñol, Petty, & McCaslin, 2009). Cohen and Reed (2006) state that the processes by which divergent attitudes form may be "as two ships passing in the night, having something in common (i.e., the attitude object) but following separate paths. Neither the ships nor the attitudes collide" (p. 9). Demonstrating common antecedents and mutual influence between implicit and explicit attitudes would thus argue against a strictly independent dual system account.

Mutual influence of explicit and implicit attitudes

Currently, the most extensive theoretical account of the relations between implicit and explicit attitudes and how they may change in different contexts is the Associative-Propositional Evaluation (APE) model (Gawronski & Bodenhausen, 2006). This model encompasses our two proposed processes of attitude change: implicit attitude change mediated by explicit attitude change, and explicit attitude change mediated by implicit. The APE model integrates diverse findings from varied theoretical backgrounds, but has not been extensively tested on an *a priori* basis. It is thus desirable to examine *a priori* the possible mutual influences that may exist between implicit and explicit attitudes.

The APE model posits that changes in explicit attitudes are often mediated by changes in implicit attitudes, because implicit attitudes can become represented propositionally. A negative automatic reaction to an individual may be translated into the proposition, "I dislike Nathan." This proposition may then form the basis of an explicit attitude. Additional propositions (e.g., "Nathan tutors his brother," "Nathan is popular") may also contribute to the explicit evaluation, diluting the influence of implicit on explicit attitudes. But implicit attitudes may often directly influence explicit attitudes. Notably, this prediction can also be derived from the Motivation and Opportunity as Determinants (MODE) model of attitudes (Fazio & Olson, 2003; Olson & Fazio, 2009).

Consistent with this proposed process, associative learning through Evaluative Conditioning influences both explicit (Baeyens, Eelen, Crombez, & Van den Bergh, 1992) and implicit attitudes (Baccus, Baldwin, & Packer, 2004; Dijksterhuis, 2004; Olson & Fazio, 2001). Olson and Fazio (2001), in perhaps the most relevant study, consistently paired novel stimuli (i.e., Pokémon characters) with positive or negative stimuli. This conditioning procedure influenced both implicit and explicit target attitudes. In addition, Gawronski and Bodenhausen (2006) reported a reanalysis of these data demonstrating that implicit attitude changes fully mediated explicit attitude changes. We designed Studies 2 and 3 specifically to test this pattern of results on an *a priori* basis, and Study 4 to test this pattern for attitudes toward familiar, rather than novel, targets.

The APE model also suggests that implicit attitude changes are mediated by explicit attitude changes when new propositions change explicit attitudes and also result in the proactive construction of new associative evaluations (Gawronski & Bodenhausen, 2006). Indeed, some dual system models suggest that associations derive from the perceived contiguity between stimuli (Smith & DeCoster, 2000; Strack & Deutsch, 2004). Propositions themselves can create contiguity between concepts. Processing the propositions "Nathan helps needy children," "Nathan is popular," or the explicit evaluation "I like Nathan," may associate Nathan with positivity, perhaps affecting implicit attitudes toward Nathan. When these propositions are novel (rather than simply activating cognitive associations that already exist in memory) they may contribute to the proactive construction of new associations and thus mediate changes in implicit attitudes.

It is, moreover, unclear how this latter process might fit within the MODE model (Fazio & Olson, 2003; Olson & Fazio, 2009). Although current formulations of the MODE model are largely silent about whether changes in explicit attitudes can ever mediate changes in implicit attitudes, the model does specify that explicitly-measured attitudes are produced by automatically-activated attitudes and any additional "downstream" cognitive considerations. The MODE model thus suggests that "changes in the automatic [implicit] measure would mediate any change in the explicit measure" (Briñol et al., 2009, p. 297). A pattern of explicit attitude change mediating implicit attitude change would thus pose a challenge to current formulations of the MODE model.

Indirect evidence does support the possibility that explicit attitudes can mediate changes in implicit attitudes. In one study, Petty, Tormala, Briñol, and Jarvis (2006) first conditioned attitudes toward novel target individuals with positive or negative stimuli. They then told participants that those targets' political attitudes were similar or dissimilar to their own. Such attitudinal similarity is known to influence explicit attitudes (Byrne, 1961). Associative conditioning altered both explicit and implicit attitudes. Propositional similarity information also changed both explicit and implicit attitudes, but affected explicit attitudes more. These results are consistent with the possibility that explicit attitude change mediated implicit attitude change, but this possibility was not tested (see Gawronski & Bodenhausen, 2006). Another pair of studies, however, did find evidence of explicit attitudes mediating implicit attitude change (Gawronski & Walther, 2008). In these studies, target persons who expressed liking for others were themselves bet-