

The MODE model:

Attitude-Behavior Processes as a Function of Motivation and Opportunity

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First proposed in 1990, the MODE model aims to describe the multiple processes by which attitudes can affect judgments and behavior (Fazio, 1990). The model focuses on a basic distinction between two general classes of attitude-to-behavior processes – spontaneous versus deliberative – and considers *Motivation and Opportunity* to serve as the major *DE*terminants of which is likely to operate.

The spontaneous process highlights a mechanism by which attitudes can guide behavior without the involvement of any conscious reflection on the part of the individual. Instead, by virtue of its automatic<sup>1</sup> activation from memory upon the individual's encountering the attitude object, the attitude influences how the object is construed in the immediate situation – either directly, as when the activated evaluation forms the immediate appraisal (e.g., an immediate “Yuk” reaction), or indirectly, as when it biases perceptions of the qualities of the object. In effect, the automatically-activated attitude serves as a filter through which the object is viewed, just as suggested by the field's longstanding emphasis on the constructive nature of perception (e.g., Asch, 1940; Bruner, 1957; Hastorf & Cantril, 1954). Once activated, attitudes color perceptions of the object, and ensuing judgments or behaviors are a spontaneous reaction to these immediate perceptions. Thus, without any conscious consideration of one's attitude and without any necessary awareness of its influence, one's behavioral response to an object can be guided by the attitude through a process initiated by its automatic activation. In other words, behavior emerges as a downstream consequence of the automatically activated attitude.

In striking contrast are situations in which individuals deliberate about the costs and benefits of pursuing a particular action and, in so doing, consider their attitudes toward the behavioral alternatives and decide upon a behavioral plan (e.g., Ajzen, 1991; Ajzen & Fishbein, 1980). Of course, any such

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<sup>1</sup> In accord with Shiffrin and Dumais' (1981) characterization of automaticity, we use the term “automatic” to refer to the inescapable initiation of a response to a given stimulus. Encountering the attitude object activates the associated evaluation without the individual's intent, even if the individual is attempting to engage in some other task. Any such activation need not reach the level of awareness, but the activation does increase the likelihood that the evaluation will influence subsequent information processing (Bruner, 1957; Higgins, 1996). See Fazio (2007) for a more elaborated discussion of “automatic” attitude activation.

deliberation requires some expenditure of effort. Hence, the individual must be motivated to engage in the effortful analysis and also must have the opportunity (i.e., the time and the resources) to do so.

The MODE model also notes that the influence of attitudes on behavior sometimes may involve "mixed" processes, ones that involve a combination of automatic and controlled components. Any controlled component within a mixed sequence requires, once again, that the individual be both motivated to engage in the necessary cognitive effort and have the opportunity to do so. Thus, one might be motivated to gauge the appropriateness, or even counter the influence, of an automatically-activated attitude. That motivation might stem from an enhanced desire for accuracy (e.g., Schuette & Fazio, 1995), a sense of accountability (e.g., Sanbonmatsu & Fazio, 1990), a concern with social desirability (e.g., Fazio, Jackson, Dunton, & Williams, 1995), or, as in much of the research that has been conducted concerning racial attitudes and prejudice, motivations to control prejudiced reactions (e.g., Dunton & Fazio, 1997). Opportunity, from the perspective of the MODE model, is essentially a gating mechanism. One must have the resources and the time for the motivated processing. Provided the opportunity exists, an individual can counter or even correct for the influence of the automatically-activated attitude. However, if the individual is fatigued or cognitively depleted, or if the situation demands an immediate response, then there will be little opportunity to engage in motivated deliberation. In that case, judgments or behavior are likely to be influenced by the automatically activated attitude, regardless of any relevant motivational concerns.

#### *Early Tests of the MODE Model*

*Measuring and manipulating attitude accessibility.* Early research testing the MODE model focused on the model's reasoning regarding attitudinally-biased perceptions and, in particular, on the role of attitude accessibility. The model argues that any such influence on how the object is construed is initiated by the automatic activation of the attitude from memory. Thus, initial tests of the model were based upon research demonstrating that the likelihood of automatic attitude activation varied as a

function of the associative strength between the attitude object and the individual's evaluation of the object. This work was rooted in a view of attitudes as object-evaluation associations in memory and in research demonstrating that the strength of such associations could both be measured by latency of response to an attitudinal query and enhanced by repeated attitudinal expression (e.g., Fazio, Chen, McDonel, & Sherman, 1982; Fazio, Powell, & Herr, 1983). Faster responses to a direct query regarding one's attitude were indicative of a stronger object-evaluation association and greater attitude accessibility. Importantly, the latency with which individuals responded to an attitudinal query predicts the likelihood of automatic attitude activation upon mere presentation of the attitude object as a prime in an evaluative priming procedure (Fazio, Sanbonmatsu, Kardes, & Powell, 1986). This procedure examined the extent to which identifying the connotation of a target adjective (e.g., "disgusting") was facilitated by prior presentation of an attitude object (e.g., "anchovies"). Such facilitation was observed for trials on which the participant's attitude toward the prime was congruent with the valence of the target adjective. However, this priming effect varied as a function of the latency with which the participant could express his or her attitude toward the object when asked to do so directly. Objects characterized by faster response latencies produced stronger priming effects and, hence, more evidence of automatic attitude activation upon mere presentation of the object as a prime, than objects to which the participant had responded relatively slowly when asked to express attitudes. This finding meant that latency of response to an attitudinal query could serve adequately as a proxy for the likelihood of automatic attitude activation, thus permitting tests of the MODE model's postulate that attitudinally-biased perceptions should vary as a function of the accessibility of the attitude from memory.

In addition, rehearsal of one's attitude as a result of the need to respond to multiple attitudinal queries led both to faster latencies of response to a final query (e.g., Powell & Fazio, 1984) and to stronger effects when that attitude object was employed as a prime in the evaluative priming procedure (Fazio et al., 1986). Thus, attitude rehearsal enhanced the likelihood of automatic attitude activation.

This finding also served as a basis for much of the early research testing the MODE model. Repeated attitudinal expression was employed as an experimental manipulation that was predicted to enhance the relation between attitudes and perceptions, judgments, or behavior. In many cases, both the measurement and the experimental approaches were pursued in the interest of providing converging evidence for the moderating role of attitude accessibility.

Before moving on to research concerning the consequences of attitude accessibility, we wish to emphasize that the underlying view of attitudes as object-evaluation *associations* of varying strength is not intended to imply that attitudes develop only via an associative learning mechanism. From the very outset (Fazio et al., 1982), the framework emphasized that attitudes can be based on reasoning regarding the value of the attributes of the attitude object, behavioral experience with the outcomes yielded by interaction with the object, inferences from observation of one's own behavior, the emotions that the object evokes, evaluative conditioning processes, etc. Many routes exist to the development of an attitudinal representation sufficiently strong to activate the evaluation when the object is encountered (see Fazio, 2007, for a more detailed presentation of the conceptualization of attitudes).

*Accessible attitudes shape construals.* The importance of attitude accessibility as a moderating variable was documented in studies concerning the appraisal of information related to the attitude object. For example, in a study of the 1984 presidential election, Fazio and Williams (1986) found that respondents' attitudes toward the candidates predicted impressions of their performance during the televised debates. However, this relation grew stronger as attitude accessibility increased. A similar moderating role was evident in judgments of purported empirical evidence regarding the deterrent efficacy of capital punishment (Lord, Ross, & Lepper, 1979). Participants viewed research that reached a conclusion supportive of their attitudes as better conducted than research reaching the opposing conclusion. In two studies, one involving measurement of attitude accessibility via latency of response to a direct query and one involving experimental manipulation of attitude accessibility via repeated

attitudinal expression, Houston and Fazio (1989) found this effect to vary as a function of the accessibility of attitudes toward the death penalty. Biased processing was more evident for individuals with more accessible attitudes. Thus, new information about an attitude object appears to be colored by attitudes, especially more accessible attitudes.

Accessible attitudes also play an important role in the construal of multiply categorizable objects. Many objects, people, or events often can be construed in multiple ways. Yogurt can be construed as a health food or a dairy product, a flu shot as an injection or an immunization. In experiments involving the rehearsal of attitudes toward one of two potential categorizations, Smith, Fazio, & Cejka (1996) demonstrated that the more attitude-evoking possibility is more likely to dominate the categorization process. In other words, the object is likely to be construed in terms of the potential categorization toward which the individual has the more accessible attitude (for related evidence, see Fazio & Dunton, 1997; Young & Fazio, 2013).

*Roles of motivation and opportunity.* According to the MODE model, the impact of attitudes will be reduced when individuals have both the motivation and the opportunity to deliberate about the available information and, in so doing, overcome the influence of any pre-existing attitude. Research indicates that under appropriate conditions individuals faced with the need to make a decision will expend the effort to consider the available details, instead of relying upon earlier-formed attitudes. Sanbonmatsu and Fazio (1990) constructed a set of statements regarding two department stores in a way that the decision to buy a camera from one of the stores provided an indication of the process by which the decision was reached. The statements describing the various departments of one store were generally more positive than the statements regarding the other, with the exception of the camera department; the generally inferior store had the better camera department. After exposure to the stimulus information under instructions to form an overall evaluation of each store, participants were asked to imagine that they needed a new camera and to indicate the store at which they would shop.

An attitude-based decision process would promote shopping at the generally superior store, despite its inferior camera department. In contrast, a decision to shop at the generally inferior store would suggest that an individual engaged in the effort of retrieving the original attribute details from memory and recognized the superiority of its camera department. Especially given that participants had been encouraged to form overall impressions of the two stores (not differentiated impressions of each department within each store), the attribute-based decision process was clearly the more effortful.

Participants were more likely to choose the store indicative of attribute-based processing only when they were both motivated to deliberate and had the opportunity to do so. Motivation was enhanced for some participants by leading them to believe that their store selections would be compared to those of other session and that they would have to explain their decisions publicly. Opportunity was manipulated by placing half the participants under time pressure. When either motivation was low or individuals needed to make their decisions quickly, they were relatively more likely to choose the store indicative of an attitude-based process, i.e., the generally superior store, despite its weaker camera department. When both motivation and opportunity were high, participants were more likely to choose the store with the better camera department. These findings have important implications for the reasoned-action process upon which Ajzen and Fishbein (1980) focus – deliberation that involves the "computation" of attitudes toward the act in question by integration of one's evaluation of relevant beliefs regarding the behavioral alternative. Such effortful reflection is likely to occur only when people both are properly motivated and have sufficient opportunity to deliberate.

Further evidence regarding the importance of an accuracy motivation is provided by research that has examined the relation between accessible attitudes and judgments of new information related to the attitude object. Using the capital punishment paradigm mentioned earlier, Schuette and Fazio (1995) replicated the earlier finding regarding the moderating role of attitude accessibility on the relation between attitudes toward the death penalty and judgments of empirical research. Participants

for whom attitude accessibility had been enhanced by inducing them to express their attitudes repeatedly in an ostensibly separate experiment showed more evidence of attitudinally-biased processing than individuals who had expressed their attitudes only once. However, this effect was further moderated by a manipulation intended to motivate some participants to deliberate more extensively about the details of the capital punishment studies. They were told that the same research had been evaluated by a panel of experts and that the very purpose of the study in which they were participating was to examine whether educated laypersons could analyze study reports carefully enough to reach judgments that matched expert opinion. Moreover, the judgments of the participants in any given session were to be shared openly and serve as the basis for a discussion concerning why each did or did not match the panel's views. This information led to less attitudinally-biased judgments of the quality of the two capital punishment studies, even among those who had rehearsed their attitudes toward the death penalty. Thus, correspondence between attitudes and judgments was strong only in the cell of the experimental design involving higher attitude accessibility and lower accuracy motivation. Apparently, when individuals are properly motivated, they attend to information in a more objective and thorough fashion, constructing a judgment that is more likely to avert the influence of even a relatively accessible attitude.

*More recent tests of the MODE model.* As noted above, initial tests of the MODE model relied on consideration of the moderating role of attitude accessibility. The more spontaneous attitude-to-behavior process was more evident for individuals with more accessible attitudes, presumably because their attitudes were relatively more likely to be automatically activated upon their encountering the attitude object. The development of the evaluative priming paradigm, from a procedure designed to test hypotheses regarding automatic attitude activation as a function of the strength of object-evaluation associations (Fazio et al., 1986) to a measurement tool that provided an estimate of the attitude automatically activated by the presentation of the attitude object (Fazio et al., 1995), offered a new



approach to testing the model. The use of this tool, as well other implicit measures of attitude that followed (e.g., Greenwald, McGhee, & Schwartz, 1998; Payne, Cheng, Govorun, & Stewart, 2005), allowed for examination of the relation between an estimate of the attitude activated when the attitude object was encountered and related judgments or behavior. Moreover, the extent to which this relation varied as a function of motivation and opportunity could be examined. As a result, it became possible to test the model's predictions in new ways (see Fazio & Towles-Schwen, 1999; Olson & Fazio, 2009, for reviews). The resulting wave of research also led to the examination of forces beyond accuracy motivation or accountability that might evoke deliberative processing. In particular, research concerning racial prejudice began to examine how the relation between estimates of automatically-activated racial attitudes and race-related judgments or behaviors was moderated by motivation to control prejudiced reactions (Fazio et al., 1995; Dunton & Fazio, 1997).

#### *MODE Model Insights regarding Prejudice*

The interaction of more spontaneous and more deliberative processes is a well-documented dynamic in the domain of prejudice, with various theoretical views arguing for important roles for each (e.g., Devine, 1989, Dovidio & Gaertner, 2004). Our belief is that the MODE model provides an overarching framework to explain a variety of the fascinating phenomena documented in prejudice research, and offers clarity for a number of ambiguities in the literature.

*Automatically-activated racial attitudes.* Since the interplay of automatic and controlled processes was first introduced to the study of prejudice (Devine, 1989; Gaertner & Dovidio, 1986), implicit social cognition research has blossomed, as has the use of its chief tools, implicit measures of attitudes (for reviews see Fazio & Olson, 2003; De Houwer, 2009; Wittenbrink & Schwarz, 2007). Our priming technique for assessing automatically-activated racial attitudes (Fazio et al., 1995) involves the presentation of faces of given races as a prime for brief durations, followed by clearly valenced target adjectives participants are to identify as positive or negative as quickly and accurately as possible. If

one's attitude toward Blacks is negative and sufficiently strong, perception of a Black face should spontaneously evoke a negative response. If the target word that immediately follows this face is negative, one will be relatively quick to identify its valence (and relatively slow to identify its valence if it is positive). The procedure includes a cover story to obscure our interest in race, and in addition to the multiple Black and White primes of primary interest, additional White and other-raced fillers are included to further minimize participant awareness. Indeed, participants remain oblivious to our interest in prejudice throughout the procedure.

It is also important to note that participants are under instructions to study the briefly presented face primes so that they can pick them out in a later recognition task, ostensibly for the purpose of testing whether judging word meaning is such an automatic skill that they can perform the task well even they are assigned something else to do at the same time. Other than this, they are not instructed to process the face-primes in any particularly way (e.g., by categorizing them as Black or White as in the IAT; for research concerning such categorization, see Fazio & Dunton, 1997; Jones & Fazio, 2010; Olson & Fazio, 2003). Thus, the priming technique provides a window into respondents' spontaneous, unfettered evaluative reactions to Black and White individuals, categorized by race only to the extent that participants naturally do so. The view turns out to vary: while some White respondents evidence anti-Black bias, some do not, and others exhibit a pro-Black bias. Thus, instead of assuming relatively homogenous automatic prejudice across individuals (e.g., Devine, 1989), the MODE model recognizes meaningful variability in attitudes between individuals, variability that, as we shall describe next, has proven predictive of many race-related judgments and behavior.

An exhaustive review of the predictive validity of priming measures is unnecessary for the present purposes (for a more complete review, see Cameron, Brown-Iannuzzi, & Payne, 2012). Furthermore, the MODE model does not make simple main effect predictions per se regarding relations between automatically-activated racial attitudes and behavior; such attitudes are argued to influence behavior

only in the absence of motivation or opportunity. Nevertheless, we'll highlight a few studies where such main effects—likely owing to a dearth of moderating factors— have been observed.

In an initial investigation White respondents interacted with a Black female researcher after completing the priming measure (Fazio et al., 1995). Although unaware of participants' responses during the priming procedure, she found those characterized by more negative automatically-activated attitudes less friendly and less interested in their interaction. In a similar study involving an interaction between White participants and a Black experimenter (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997), automatic bias assessed by a priming measure related to less eye contact and other negative nonverbal behaviors while interacting the Black experimenter. More negative attitudes towards Blacks on the measure also correlate with reports of more negative recent interactions with Blacks (Towles-Schwen & Fazio, 2001).

The priming measure has proven predictive of more complex race-related judgments as well. In one such study, participants were recruited purportedly to evaluate the quality of student essays (Jackson, 1997). Each essay included a biographical sketch and race-revealing photo. Again, the attitude estimate derived from the priming measure proved predictive: participants with more negative attitudes toward Blacks evaluated an essay written by a Black individual more harshly. In a similar study, participants evaluated a number of purported applications for a position in the Peace Corps (Olson & Fazio, 2007). These materials were rich in information, containing resumes, personal essays, and questionnaire responses, and included materials from Black and White candidates previously matched on their credentials. Again, participants' automatically-activated attitudes predicted their evaluations of the Black relative to the matched White candidate.

*Motivated processes relevant to racial prejudice.* Several motives relevant to racial contexts have been addressed in the literature, including motivations to avoid racial conflict, abide by societal norms, or to be non-prejudiced in one's own and others' eyes (e.g., Dunton & Fazio, 1997; Plant & Devine,

1998), as well as more general goals like self-enhancement and comprehension (Kunda & Spencer, 2003) and those discussed earlier (e.g., accuracy). Here we will address the most relevant motives, i.e., those to avoid racial conflict and to be non-prejudiced.

The Motivation to Control Prejudiced Reactions scale (MCPR; Dunton & Fazio, 1997), a 17 item questionnaire with two factors, was designed for this purpose. It assesses two distinct motives relevant to interracial contexts. The first, dubbed “Concern for Acting Prejudiced” (or, “Concern”) gauges one’s desire to appear unprejudiced to oneself and to others, and includes items like “I feel guilty when I have a negative thought or feeling about a Black person.” The second factor, “Restraint to Avoid Dispute” (or, “Restraint”) addresses one’s desire to avoid race-related conflict, whether with or about Blacks, and includes items like, “If I were participating in a class discussion and a Black student expressed an opinion with which I disagreed, I would be hesitant to express my own viewpoint.”

Much has been learned about the nature of the two motivations. The Concern factor, for example, correlates highly with measures of humanitarianism-egalitarianism, but the Restraint factor does not (Fazio & Hilden, 2001). In a study of childhood experiences (Towles-Schwen & Fazio, 2001), Concern was associated with reports of more positive interactions with Blacks throughout childhood and relatively unprejudiced parents, whereas Restraint was associated with fewer and less positive interactions with Blacks and reports of greater parental prejudice. Thus, Concern appears to be more approach-oriented and Restraint more avoidance-oriented (see also Plant, Devine, & Peruche, 2010).

A recent study supports the notion that high Restraint individuals are more avoidant (Olson & Fazio, 2007). Here, participants were required to verbally report to an audience their evaluations of candidates they had earlier evaluated for the Peace Corps (as described earlier). According to judges’ ratings, participants’ public remarks corresponded to their private ratings, as one would expect. However, this relation was attenuated for individuals high in Restraint, suggesting they obfuscated their discussion of the Black candidate, causing the judges to struggle to grasp their recommendations.

In a study that demonstrates the Concern factor's orientation towards personal standards, participants who completed the MCPR in an earlier session partook in a study on "reactions to commercials," where they viewed several commercials, including a clever one designed to lead viewers to inadvertently exhibit a prejudiced response (Fazio & Hilden, 2001). It showed a Black man while describing a series of violent crimes. Viewers assume the pictured man was the criminal in question, but they later learn it was the police officer who apprehended him. In response to this trickery, most participants reported feeling agitated, particularly if they scored high on either of the motivation factors. High Concern individuals, however, also reported feeling guilty, suggesting that they experienced a violation of an internal standard of conduct (e.g., Higgins, 1987).

*Mixed processes.* The MODE model pays particular attention to mixed processes, that is, interactions between automatic and controlled processes. As discussed earlier, opportunity acts as a 'gate' through which motivated processes can influence judgments and behavior. When the gate is open, as it usually is in the studies we summarize below, motivated processes are predicted to interact with racial attitudes to influence outcomes. We'll first discuss research documenting moderating effects of Concern, followed by those involving Restraint.

One of the first tests of interactive effects involved a study where participants also completed the Modern Racism Scale (MRS; McConahay, 1986), an oft-used explicit measure of prejudice (Fazio et al., 1995; Olson, 2009). Its items require respondents to indicate their agreement with various statements like "Blacks should not push themselves where they are not wanted." This scale's original purpose was to provide a more subtle means of assessing prejudice toward Blacks. However, as a verbal 'behavior,' responses to it—or any measure that directly queries people on their attitudes—occur further downstream, and therefore are susceptible to the influence of motivated processes. Consistent with the model, correspondence between automatically-activated racial attitudes as assessed by the priming measure and the MRS was observed for people low in Concern; their attitudes appeared to

spontaneously guide their responses. For more motivated individuals, there was little correspondence (see also Degner & Wentura, 2008; Payne, 2001; Payne, Cheng, Govorun, & Stewart, 2005). In fact, to the extent that the priming measure revealed automatic prejudice, highly motivated individuals appeared to over-correct for their attitudes to the point that they appeared less prejudiced than individuals characterized by positive scores on the priming measure. Thus, the MRS appears to conflate prejudice and motivation to avoid it, a problem we suspect has the potential to beset any explicit measure of prejudice (Olson, 2009).

A major hurdle to more harmonious intergroup relations is avoidance of social situations where encounters with out-group members are likely. Research conducted by Towles-Schwen and Fazio (2003) demonstrates the MODE model's ability to predict such (un)willingness to enter situations. In this research, participants indicated their willingness to pursue situations (e.g., sit down at a crowded public table with the individual, go on a date, etc.) with a variety of potential interaction partners (e.g., a person in a wheelchair, an obese person, an Asian, a Black individual, etc.). Compared to a condition where the interaction partner was unspecified, participants indicated a willingness to enter situations with a Black partner that corresponded to their automatically-activated attitudes toward Blacks—so long as they were not motivated to indicate otherwise. More motivated individuals, however, corrected for their prejudice and reported a greater willingness to enter these interactions to the extent that they were more prejudiced. Hence, attitudes appeared to guide peoples' willingness to enter into interactions with Blacks spontaneously among the less motivated, but correction for prejudice was observed among the more Concern motivated.

The Restraint factor has evidenced consistent patterns of corrections for automatic prejudice in accordance with the MODE model in other studies. These studies generally involve forming an impression of a Black individual, a point we will return to later. For example, Dunton & Fazio (1997) asked participants to describe their impressions of the "typical Black male undergraduate" and then rate

the valence of their thoughts. As expected, automatically-activated racial attitudes predicted thought ratings for those low in Restraint motivation, suggesting a spontaneous application of prejudice to impression formation. More motivated respondents corrected for their prejudice; their impressions were similar in valence to those with racial attitudes opposite their own (i.e., motivated individuals with negative prejudice reported impressions similar to less motivated pro-Black individuals, and motivated individuals with positive prejudice reported impressions similar to less motivated pro-White individuals).

We reported similar findings in a more recent study on first impressions of individuals in various social and occupational contexts (Olson & Fazio, 2004). Here, after collecting motivation and attitude estimate data, we asked participants to provide their impressions of a variety of Black, White, and other-raced individuals who were depicted in different occupations. Critical pairs of Black and White targets were matched in terms of gender and the status and independence of their occupations (e.g., a White male professor, a Black male minister). Participants rated targets on various traits, and from these we created an index of their preference for Black relative to White targets within the pairs. As in Dunton & Fazio's (1997) research above, automatically-activated racial attitudes predicted the Black-White trait index for those with relatively low in Restraint. Higher restraint individuals evidenced correction for prejudice; those with more negative automatic attitudes toward Blacks corrected their impressions in a pro-Black direction, and those with more positive attitudes corrected in a pro-White direction.

*The roles of correctional goals and social context.* The studies just reviewed provide consistent evidence in support of the MODE model's tenets, particularly the notion that automatically-activated racial attitudes should predict race-related judgments and behavior in the absence of motivation or opportunity. Correction for prejudice has been consistently observed among motivated individuals. A broader look at this research, however, reveals two themes that speak to the nature of the motives that moderate the relation between attitudes and behavior in this domain. The first has implications for the correctional goal implied by the different motives. In studies showing moderating effects of the Concern

motive, correction is seen most among prejudiced individuals (e.g., Fazio et al., 1995). Specifically, prejudiced, Concern-motivated individuals correct for prejudice in a way that makes them appear more positive toward Blacks, but Concern motivated individuals who already have pro-Black automatic responses show less correction. Hence, it appears that Concern motivation has a uni-directional, “pro-Black” manifestation, which is consistent with research suggesting its ties to egalitarianism. On the other hand, moderating effects of Restraint show a more bi-directional correction pattern (e.g., Olson & Fazio, 2004; Towles-Schwen & Fazio, 2006), suggesting that Restraint-motivated individuals are correcting for both prejudice *against* Blacks as well as prejudice *in favor of* Blacks. While it might seem counter-intuitive that a class of motivated individuals would correct for a pro-Black bias when the general thrust of such motives would seem to draw them in the opposite direction, recall that high Restraint serves the goal of avoiding race-related conflict. Such conflict might obviously stem from accusations of prejudice against Blacks, but it is likely that it might also stem from a fear of appearing overly favorable toward Blacks (i.e., “reverse discrimination”).

A second theme to emerge from the studies we reviewed is that Concern appears to operate in judgments of groups, whereas the Restraint motive appears to operate in individual contexts. We have speculated (Olson & Fazio, 2009) that Concern motivation may stem from an interest in redressing historical inequalities regarding Blacks as a social group. Restraint, in being more conflict-avoidance-oriented, is likely to be more individual in its focus because the sort of conflict those characterized by this motive fear is largely interpersonal. Indeed, a meaningful way in which the various motives relevant to racial prejudice might be distinguished has to do with whether they are group-oriented or individual-oriented. Individual-level motives, in addition to Restraint, might include comprehension and self-enhancement (e.g., Kunda & Spencer, 2003) and more specific motives regarding liking or disliking of a target (e.g., Sinclair & Kunda, 1999). Group-level motives, in addition to Concern, might include Social Dominance Orientation (the desire for clear hierarchical distinctions between groups; Pratto, Sidanius,



Stallworth, & Malle, 1994), as well as recently discussed ideologies like multi-culturalism and color-blindness (e.g., Plaut, 2010). If such a distinction truly cleaves nature at its joints, then the intriguing possibility arises that one's individual-level and group-level motives might be dissociated. For instance, one might be motivated to avoid prejudice toward groups but not toward individuals, or vice versa.

Zabel and Olson (2013) recently tested these ideas in an extension of Olson and Fazio's (2004) research described earlier. As before, the MCPR and priming measure were administered to participants who later provided their impressions of people in various occupational roles. Prior to the impression task (and premised on the notion that social targets can be flexibly construed, e.g., Fazio & Dunton, 1997), participants were primed to construe social targets at either the group level or the individual level. Those in the former condition were shown pictures of 20 individuals analogous to those used in the impression task and for each were asked to speculate in open-ended fashion, "What makes this person a member of a group?" In the latter condition, participants responded to the same photos by listing "What makes this person an individual?" As expected, those primed to construe the targets at the individual level showed a moderating effect of the Restraint motive on the attitude estimate's relation to their impressions of Black vs. White targets, replicating Olson & Fazio (2004). However, the data were surprising for those primed to construe the targets as group members, for whom Concern was expected to be the operative moderating motive. Here, those higher in Concern reported more positive evaluations of *all* targets, both Black and White. Perhaps such a strategy is an effective means of appearing non-prejudiced to the self and others in contexts where it can be applied.

In a follow-up study, the 'like everyone' option was revoked and participants were forced to provide pair-wise preference judgments of the matched Black-White targets (given the interest in the Concern motive here, all participants were primed to construe the targets at the group level). The anticipated Attitude Estimate X Concern interaction was found: less motivated individuals' impressions appeared to be guided by their automatically-activated attitudes, and motivated individuals showed a

pattern of correction for negative racial bias. Hence, it does appear that Restraint is a motive that operates in individual contexts, and Concern is a motive that operates in group contexts.

*The role of opportunity.* We confess to pursuing empirical evidence for the role of the MODE model's opportunity variable with less vigor than we have motivational variables. Thankfully, others' recent work includes findings that support the moderating role of opportunity in the prejudice domain. Perhaps the most obvious operationalization of the opportunity variable is time. Given time constraints, the model predicts that motivated processes are less able to influence verbal and behavioral responses, allowing greater influence of automatic ones. This is just what recent research by Ranganath, Smith, & Nosek (2008) found: explicit measures of prejudice (as well as attitudes toward a variety of other objects) loaded on a common factor with implicit measures that tap more automatic responses only when participants reported their attitudes under strict time constraints (for parallel findings in the self-esteem domain, see also Koole, Dijksterhuis, & van Knippenberg, 2001). Analogous findings from studies asking respondents to report their 'immediate' or 'gut' reactions (versus more deliberative responses) have been reported across a variety of domains (e.g., Gawronski & LeBel, 2008; Jordan, Whitfield, & Zeigler-Hill, 2007; Kendrick & Olson, 2012).

The opportunity variable also can be viewed in terms of the current level of resources an individual has available to exercise control in the service of some goal. Research documents that a depleted state leaves the individual more prone to the influence of the automatically-activated attitude. For example, Govorun and Payne (2006) demonstrated that a resource-depleting Stroop color naming task diminished the controlled component of a process-dissociation procedure in a weapons identification task, leaving a greater role for automatic processes to guide judgments.

Alcohol consumption is yet another interesting way of considering the opportunity factor, as it has deleterious effects on working memory and response inhibition (e.g., Finn, Justus, Mazas, & Steinmetz, 1999). It is an ability to inhibit one's potentially automatic responses and instead choose a more

deliberate route that the opportunity factor affords, and that alcohol likely compromises (Houben, Wiers, & Jansen, 2011). Bartholow and colleagues (e.g., Bartholow, Dickter, & Sestir, 2006) recently examined the effects of alcohol consumption on self-regulatory processes in stereotyping. They found that moderate alcohol consumption did not affect the automatic activation of prejudiced associations, suggesting, as the MODE model argues, that relatively automatic processes are unaffected by variables that compromise more deliberate ones. However, alcohol did impair peoples' ability to inhibit prejudiced responses on a "go-stop" task, which is precisely what manipulations of the opportunity factor are predicted to do (for analogous findings beyond the prejudice domain, see Hofmann & Friese, 2008). In another study, participants completed both implicit and explicit measures of prejudice after consuming alcohol or not (Loersch, Bartholow, Manning, Calanchini, & Sherman, 2012). Consistent with the model and the research already described indicating implicit-explicit correspondence when either motivation or opportunity is low, these two measurement types aligned for those under the effects of alcohol, but not for those who weren't.

Research on cognition and aging parallels the work on alcohol. Put brusquely, being old is like being drunk in that both decrease inhibitory processing capacity (Hasher, Zacks, & May, 1999). Consistent with this reasoning, earlier work by Von Hippel, Silver, and Lynch (2000) showed that older adults have difficulty stemming prejudiced thoughts. More recently, and in support of the MODE model, Stewart, Von Hippel, and Radvansky (2009) clarified through a process-dissociation procedure that older adults don't show any more activation of automatic prejudice than younger adults, but their prejudice is more likely to be expressed because of their reduced ability to inhibit prejudices, in other words, because of a reduction in opportunity (see also Gonsalkorale, Sherman, & Klauer, 2009). Finally, certain behaviors are less susceptible to control by their very nature, and thus provide a naturally occurring means of assessing the role of opportunity. These include nonverbal behavior (DePaulo, 1992) as well as chronic, long-term behavior that cannot possibly be monitored at all times.

Less controllable behaviors should be less susceptible to the influence of motivated processes.

Consistent with this reasoning, automatic race-related bias has been found to “leak” into the nonverbal channels despite any motivation participants might have to conceal it (e.g., Dovidio, Kawakami, & Gaertner, 2002; Dovidio et al., 1997; McConnell & Leibold, 2001). Further, it is likely that long-term, repeated interactions will allow perceivers a glimpse into one’s automatically-activated racial attitudes, as no behavior can be constantly monitored at all times. Such is the case for college roommates, and in a recent study (Towles-Schwen & Fazio, 2006), White students randomly assigned to share a dormitory room with a Black student were more likely to have their roommate relationships dissolve to the extent that the priming measure revealed automatic racial bias.

### *Beyond Prejudice*

We have focused our attention primarily on research concerning prejudice largely because it is a domain in which automatically-activated attitudes and relevant motivations are readily observed to compete for dominance. However, considerable research beyond the domain of prejudice also supports the MODE model. For example, research on close relationships has found that the relation between automatically-activated attitudes toward a romantic partner and reports regarding satisfaction with the relationship varies as a function of individuals’ motivation to believe that the relationship is thriving. Scinta and Gable (2007) assessed such motivation in a sample of dating couples by inquiring about the extent to which individuals’ experienced “barriers to exit” the relationship. Believing that one had invested considerably in the relationship and had few relationship alternatives enhanced the motive to view the relationship favorably. Among those for whom this motivation was relatively low, the relation between automatic attitudes toward the partner and reports of satisfaction assumed exactly the form one would expect: more positive attitudes were associated with greater satisfaction. However, as “barriers to exit” increased, this relation attenuated and eventually reversed. Among those with a strong motivation to believe in the relationship, individuals with less positive automatically-activated

attitudes toward their partner actually reported greater satisfaction than those with more positive attitudes. Other research regarding romantic relationships is relevant to the opportunity postulate of the MODE model. Operationalizing opportunity as an individual difference variable concerning resource capacity, Murray et al. (2011) found working memory capacity to moderate the relation between attitudes toward the partner and various outcome measures. The relation was attenuated among individuals with the stronger capacity to deliberate about the partner and the state of the relationship (see also Murray, Gomillion, Holmes, Harris, & Lamarche, 2013; Murray, Lupien, & Seery, 2012). Finally, research documents that, in the long-term, romantic relationships are more likely to dissolve to the extent that partner evokes less positive attitudes (Lee, Rogge, & Reis, 2010), analogous to the findings noted earlier regarding interracial roommate relationships.

Motivation and opportunity also have proven critical in the domain of self-control. Just as the MODE model predicts, impulsive behavior has been found to vary as a function of motivation to behave otherwise and the extent to which the individual has the resources to counter those impulses. For example, in research by Hofmann, Rauch, and Gawronski (2007), the amount of candy participants consumed depended upon their automatically-activated attitudes toward candy, their motivation to monitor and control their diet, and whether they had recently undergone a resource-depleting emotional suppression task. Among the resource-depleted, candy consumption was predicted primarily by attitudes, whereas those with fuller resources acted more in accord with their dietary motivation. Parallel findings were obtained by Hofmann and Friese (2008) when resource capacity was manipulated via alcohol consumption. Whereas dietary restraint was the more important predictor of candy consumption among the sober participants, alcohol intake enhanced the relation between attitudes toward candy and candy consumption.

Similarly, because a happy mood state signals that all is well, whereas sadness motivates more deliberative processing, mood states have been shown to moderate the relation between attitudes and

behavior (Holland, de Vries, Hermesen, & van Knippenberg, 2012). Preference for candy bars versus apples (as assessed by a personalized IAT) predicted choice behavior when participants had been made to feel happy, but less so when they were made to feel sad. In the latter condition, participants' beliefs about the attributes of candy bars versus apples proved more influential.

Individual differences in working memory capacity also play a critical role in self-regulation (Hofmann, Gschwendner, Friese, Wiers, & Schmitt, 2008). Essentially, automatic attitudes toward a given temptation more strongly influenced behavior for individuals with lower working memory capacity, whereas self-regulatory goals relevant to the temptation were more effective in guiding behavior among those higher in capacity. Recent experimental evidence takes this a step further. Extensive training designed to enhance the working memory capacity of problem drinkers increased their ability to control automatic impulses to drink and led to reductions in alcohol use (Houben, Wiers, & Jansen, 2011). Thus, greater resource capacity lessened the influence of the problem drinkers' automatically-activated positivity toward alcohol.

#### *Implications for Implicit and Explicit Measures of Attitudes*

By now we hope it is clear that the MODE model speaks directly to the current debate about the role of implicit and explicit measures of attitudes in terms of both their interrelations as well as their relations to judgments and behavior. Although no measure is process pure (e.g., Conrey, Sherman, Gawronski, Hugenberg, & Groom, 2005) and effective means of partitioning automatic and controlled inputs exist (e.g., Jacoby, 1991), a well-supported premise to most research employing both implicit and explicit measures is that the former taps relatively automatic processes and the latter taps relatively controlled, propositional processes (e.g., Fazio & Olson, 2003; Gawronski & Bodenhausen, 2011; Rydell & McConnell, 2006). As we have discussed, the model predicts that automatically-activated attitudes will guide behavior in the absence of either motivation or opportunity to do otherwise. Its straightforward prediction is that implicit measures should generally correlate with explicit measures

(which are in essence a verbal behavior, and thus further downstream in the attitude-behavior process) in the absence of one of these moderating variables.

Numerous studies have revealed precisely the moderating pattern predicted by the model: implicit measures relate reliably to explicit measures when motivation is low (e.g., low motivation to control prejudice, Fazio et al., 1995; Dasgupta & Rivera, 2006; low need for cognition, Conner, Perugini, O'Gorman, Ayres, & Prestwich, 2007; Florack, Scarabis, & Bless, 2001), or opportunity is lacking (e.g., time pressure, Koole et al, 2001; Ranganath et al., 2008). Important differences between implicit measurement varieties notwithstanding (see Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005), it is telling that this basic pattern has been observed across a wide array of implicit measurement types in addition to priming (e.g., IAT: Dasgupta & Rivera, 2006; AMP: Payne et al., 2005; EAST: Degner & Wentura, 2008), and across a wide range of attitudinal domains beyond prejudice (e.g., the self: Olson, Fazio, & Hermann, 2007; relationships: Scinta & Gable, 2007).

More important than questions about correlations between measures is that of when each measurement type best predicts behavior. A loose consensus has emerged within the field that implicit measures are better predictors of less controllable behavior, and explicit measures are better predictors of more controllable behavior. However, the MODE model's emphasis on mixed processes—interactions instead of main effects—argues otherwise. Its spontaneous attitude-to-behavior route predicts that automatically-activated attitudes can influence any attitude-related behavior, regardless of its controllability, in the absence of motivation or opportunity to do otherwise. Consistent with this reasoning, a simple mapping of implicit measures to less controllable behavior and explicit measures to more controllable behavior is not what the literature reveals. Instead, implicit measures have proved predictive of all sorts of behavior on the controllability continuum, including quite controllable behaviors like verbal evaluations of social targets (e.g., Jackson, 1997), real hiring decisions by employers (e.g.,

Agerström & Rooth, 2011), career decisions (e.g., Von Hippel, Brener, & Von Hippel, 2008), voting (e.g., Payne et al., 2010), and sexual assault (Widman & Olson, 2012).

Finally, we observe that not long ago, implicit and explicit measures weren't so far apart. Indeed, early forays into implicit measurement revealed remarkable correspondence with explicit reports (Fazio & Olson, 2003). Likely this was because the measures assessed attitudes about which there was little motivation to interfere with accurate explicit reporting (e.g., flowers vs. insects; Greenwald et al., 1998; cockroaches vs. puppies; Fazio et al., 1986). Here, clear implicit-explicit correspondence was the rule. The original impetus for the priming measure was to assess an attitudinal strength variable (i.e., attitude accessibility), not to uncover some different attitudinal representation altogether (e.g., Wilson, Lindsey, & Schooler, 2000). Researchers have been tempted to identify separate automatic/unconscious and controlled/conscious attitudes in domains where reliable implicit-explicit dissociations have been observed (e.g., self-esteem; Spalding & Hardin, 1999), but here too the two measurement types correlate under conditions specified by the model (e.g., Olson et al., 2007; see also Lebel, 2010). Thus we contend that it is more appropriate to explain measurement dissociations in terms of conceptually different attitude-to-behavior processes than in terms of independent attitudinal systems.

### *Conclusion*

Over the past 20 or so years, the MODE model has served as a theoretical framework for understanding attitude-behavior relations in a variety of domains, including impression formation, impulsive behavior, prejudice, and close relationships, to name a few. It also provides insight into relations between implicit and explicit measures in these and other domains. It is the interaction between automatic and controlled components under conditions specified by the model – motivation and opportunity – that is central to its ability to provide such broad explanatory power.



## References

- Agerström, J., & Rooth, D. O. (2011). The role of automatic obesity stereotypes in real hiring discrimination. *Journal of Applied Psychology, 96*(4), 790.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, N.J.: Prentice Hall.
- Asch, S. E. (1940). Studies in the principles of judgments and attitudes: II. Determination of judgments by group and by ego standards. *Journal of Social Psychology, 12*, 433-465.
- Bartholow, B. D., Dickter, C. L., & Sestir, M. A. (2006). Stereotype activation and control of race bias: cognitive control of inhibition and its impairment by alcohol. *Journal of personality and social psychology, 90*(2), 272.
- Bruner, J. S. (1957). On perceptual readiness. *Psychological Review, 64*, 123-152.
- Cameron, C. D., Brown-Iannuzzi, J. L., & Payne, B. K. (2012). Sequential priming measures of implicit social cognition: A meta-analysis of associations with behavior and explicit attitudes. *Personality and Social Psychology Review, 16*, 330-350.
- Collins, A. M., & Quillian, M. R. (1969). Retrieval time from semantic memory. *Journal of verbal learning and verbal behavior, 8*(2), 240-247.
- Conner, M. T., Perugini, M., O'Gorman, R., Ayres, K., & Prestwich, A. (2007). Relations between implicit and explicit measures of attitudes and measures of behavior: Evidence of moderation by individual difference variables. *Personality and Social Psychology Bulletin, 33*(12), 1727-1740.
- Conrey, F. R., Sherman, J. W., Gawronski, B., Hugenberg, K., & Groom, C. (2005). Separating multiple processes in implicit social cognition: The Quad-Model of implicit task performance. *Journal of Personality and Social Psychology, 89*, 469-487.

- Dasgupta, N., & Rivera, L. M. (2006). From automatic antigay prejudice to behavior: The moderating role of conscious beliefs about gender and behavioral control. *Journal of Personality and Social Psychology, 91*(2), 268-280.
- Degner, J., & Wentura, D. (2008). The Extrinsic Affective Simon Task as an instrument for indirect assessment of prejudice. *European Journal of Social Psychology, 38*(6), 1033-1043.
- De Houwer, J. (2009). Comparing measures of attitudes at the functional and procedural level: Analysis and implications. In R. E. Petty, R. H. Fazio, & P. Briñol (Eds.), *Attitudes: Insights from the new implicit measures* (pp. 361-390). Mahwah, NJ: Erlbaum.
- DePaulo, B. M. (1992). Nonverbal behavior and self-presentation. *Psychological Bulletin, 111*, 203-243.
- Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56*(1), 5-18.
- Dovidio, J. F., & Gaertner, S. L. (2004). Aversive racism. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 36, pp. 1–51). San Diego, CA: Academic Press.
- Dovidio, J. F., Kawakami, K., & Gaertner, S. L. (2002). Implicit and explicit prejudice and interracial interaction. *Journal of Personality and Social Psychology, 82*(1), 62-68.
- Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology, 33*(5), 510-540.
- Dunton, B. C., & Fazio, R. H. (1997). An individual difference measure of motivation to control prejudiced reactions. *Personality and Social Psychology Bulletin, 23*(3), 316-326.
- Fazio, R. H. (2007). Attitudes as object-evaluation associations of varying strength. *Social Cognition, 25*, 664-703.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75-109). New York: Academic Press.

- Fazio, R. H., Chen, J., McDonel, E. C., & Sherman, S. J. (1982). Attitude accessibility, attitude-behavior consistency, and the strength of the object-evaluation association. *Journal of Experimental Social Psychology, 18*, 339-357.
- Fazio, R. H., & Dunton, B. C. (1997). Categorization by race: The impact of automatic and controlled components of racial prejudice. *Journal of Experimental Social Psychology, 33*, 451-470.
- Fazio, R. H., & Hilden, L. E. (2001). Emotional reactions to a seemingly prejudiced response: The role of automatically activated racial attitudes and motivation to control prejudiced reactions. *Personality and Social Psychology Bulletin, 27*(5), 538-549.
- Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline?. *Journal of personality and social psychology, 69*(6), 1013.
- Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual review of psychology, 54*(1), 297-327.
- Fazio, R. H., Powell, M. C., & Herr, P. M. (1983). Toward a process model of the attitude-behavior relation: Accessing one's attitude upon mere observation of the attitude object. *Journal of Personality and Social Psychology, 44*, 723-735.
- Fazio, R.H., Sanbonmatsu, D.M., Powell, M.C., & Kardes, F.R. (1986). On the automatic activation of attitudes. *Journal of Personality and Social Psychology, 50*, 229–238.
- Fazio, R. H., & Towles-Schwen, T. (1999). The MODE model of attitude-behavior processes. In S. Chaiken & Y. Trope (Eds.), *Dual process theories in social psychology* (pp. 97-116). New York: Guilford.
- Fazio, R. H., & Williams, C. J. (1986). Attitude accessibility as a moderator of the attitude-perception and attitude-behavior relations: An investigation of the 1984 presidential election. *Journal of Personality and Social Psychology, 51*, 505-514.

- Finn, P.R., Justus, A., Mazas, C., and Steinmetz, J.E. (1999). Working memory, executive processes and the effects of alcohol on Go/No-Go learning: testing a model of behavioral regulation and impulsivity. *Psychopharmacology*, *146*, 465-472.
- Fiske, S. T., Lin, M., & Neuberg, S. L. (1999). The continuum model: Ten years later. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 231–254). New York: Guilford Press.
- Florack, A., Scarabis, M., & Bless, H. (2001). When do associations matter? The use of automatic associations toward ethnic groups in person judgments. *Journal of Experimental Social Psychology*, *37*(6), 518-524.
- Gailliot, M. T., Michelle Peruche, B., Plant, E. A., & Baumeister, R. F. (2009). Stereotypes and prejudice in the blood: Sucrose drinks reduce prejudice and stereotyping. *Journal of Experimental Social Psychology*, *45*(1), 288-290.
- Gawronski, B., & Bodenhausen, G. V. (2011). 2 The Associative-Propositional Evaluation Model: Theory, Evidence, and Open Questions. *Advances in experimental social psychology*, *44*, 59.
- Gawronski, B., & Bodenhausen, G. V. (2007). Unraveling the processes underlying evaluation: Attitudes from the perspective of the APE model. *Social Cognition*, *25*(5), 687-717.
- Gawronski, B., & LeBel, E. P. (2008). Understanding patterns of attitude change: When implicit measures show change, but explicit measures do not. *Journal of Experimental Social Psychology*, *44*(5), 1355-1361.
- Gonsalkorale, K., Sherman, J. W., & Klauer, K. C. (2009). Aging and prejudice: Diminished regulation of automatic race bias among older adults. *Journal of Experimental Social Psychology*, *45*, 410-414.
- Govorun, O., & Payne, B. K. (2006). Ego depletion and prejudice: Separating automatic and controlled components. *Social Cognition*, *24*, 111-136.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. (1998). Measuring individual differences in implicit cognition: the implicit association test. *Journal of Personality and Social Psychology*, *74*(6), 1464.

- Hasher, L., Zacks, R. T., & May, C. P. (1999). Inhibitory control, circadian arousal, and age. In D. Gopher, A. Koriat (Eds.), *Attention and performance XVII: Cognitive regulation of performance: Interaction of theory and application* (pp. 653-675). Cambridge, MA US: The MIT Press.
- Hastorf, A. H., & Cantril, H. (1954). They saw a game: A case study. *Journal of Abnormal and Social Psychology*, 49, 129-134.
- Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review*, 94(3), 319-340.
- Higgins, E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins & A. W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 133-168). New York: Guilford Press.
- Hofmann, W., & Friese, M. (2008). Impulses got the better of me: Alcohol moderates the influence of implicit attitudes toward food cues on eating behavior. *Journal of Abnormal Psychology*, 117(2), 420-427.
- Hofmann, W., Gawronski, B., Gschwendner, T., Le, H., & Schmitt, M. (2005). A meta-analysis on the correlation between the Implicit Association Test and explicit self-report measures. *Personality and Social Psychology Bulletin*, 31(10), 1369-1385.
- Hofmann, W., Rauch, W., & Gawronski, B. (2007). And deplete us not into temptation: Automatic attitudes, dietary restraint, and self-regulatory resources as determinants of eating behavior. *Journal of Experimental Social Psychology*, 43, 497-504.
- Holland, R. W., de Vries, M., Hermsen, B., & van Knippenberg, A. (2012). Mood and the attitude-behavior link: The happy act on impulse, the sad think twice. *Social Psychological and Personality Science*, 3, 356-364.
- Houben, K., Wiers, R. W., & Jansen, A. (2011). Getting a grip on drinking behavior: Training working memory to reduce alcohol abuse. *Psychological Science*, 22(7), 968-975.

- Houston, D. A., & Fazio, R. H. (1989). Biased processing as a function of attitude accessibility: Making objective judgments subjectively. *Social Cognition, 7*, 51-66.
- Jackson, J. R. (1997). *Automatically-activated racial attitudes*. Unpublished doctoral dissertation, Indiana University.
- Jacoby, L. L. (1991). A process dissociation framework: Separating automatic from intentional uses of memory. *Journal of memory and language, 30*(5), 513-541.
- Jones, C. R., & Fazio, R. H. (2010). Person categorization and automatic racial stereotyping effects on weapon identification. *Personality and Social Psychology Bulletin, 36*, 1073-1085.
- Jordan, C. H., Whitfield, M., & Zeigler-Hill, V. (2007). Intuition and the correspondence between implicit and explicit self-esteem. *Journal of Personality and Social Psychology, 93*(6), 1067.
- Kendrick, R. V., & Olson, M. A. (2012). When feeling right leads to being right in the reporting of implicitly-formed attitudes, or how I learned to stop worrying and trust my gut. *Journal of Experimental Social Psychology*.
- Koole, S. L., Dijksterhuis, A., & van Knippenberg, A. (2001). What's in a name: implicit self-esteem and the automatic self. *Journal of Personality and Social Psychology, 80*, 669-685.
- Kunda, Z., & Spencer, S. J. (2003). When do stereotypes come to mind and when do they color judgment? A goal-based theoretical framework for stereotype activation and application. *Psychological Bulletin, 129*, 522-544.
- Lebel, E. P. (2010). Attitude accessibility as a moderator of implicit and explicit self-esteem correspondence. *Self and Identity, 9*, 195-208.
- Lee, S., Rogge, R. D., & Reis, H. T. (2010). Assessing the seeds of relationship decay: Using implicit evaluations to detect the early stages of disillusionment. *Psychological Science, 21*(6), 857-864
- Loersch, C., Bartholow, B. D., Manning, M., Calanchini, J., & Sherman, J. W. (2012). *Intoxicated prejudice: The influence of alcohol consumption on implicit and explicit measures of racial attitudes*.

Unpublished manuscript, University of Colorado.

Lord, C. G., Ross, L., & Lepper, M. R. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, *37*, 2098-2109.

McConahay, J. B. (1986). Modern racism, ambivalence, and the modern racism scale. In J. F. Dovidio & S. L. Gaertner (Eds.), *Prejudice, Discrimination, and Racism* (pp. 91-125). Orlando, FL: Academic Press.

McConnell, A. R., & Leibold, J. M. (2001). Relations among the Implicit Association Test, discriminatory behavior, and explicit measures of racial attitudes. *Journal of Experimental Social Psychology*, *37*, 435-442.

Murray, S. L., Gomillion, S., Holmes, J. G., Harris, B., & Lamarche, V. (2013). The dynamics of relationship promotion: Controlling the automatic inclination to trust. *Journal of Personality and Social Psychology*, *104*, 305-334.

Murray, S. L., Lupien, S. P., & Seery, M. D. (2012). Resilience in the face of romantic rejection: The automatic impulse to trust. *Journal of Experimental Social Psychology*, *48*, 845-854.

Murray, S. L., Pinkus, R., Holmes, J. G., Harris, B., Gomillion, S., Aloni, M., Derrick, J. L., & Leder, S. (2011). Signaling when (and when not) to be cautious and self-protective: Impulsive and reflective trust in close relationships. *Journal of Personality and Social Psychology*, *101*, 485-502.

Olson, M. A. (2009). Measures of prejudice. In T. Nelson (Ed.), *Handbook of Prejudice* (pp. 367-381). New York: Psychology Press.

Olson, M. A., & Fazio, R. H. (2003). Relations between implicit measures of prejudice: What are we measuring? *Psychological Science*, *14*, 636-639.

Olson, M. A., & Fazio, R. H. (2004). Trait inferences as a function of automatically activated racial attitudes and motivation to control prejudiced reactions. *Basic and Applied Social Psychology*, *26*, 1-

11.

- Olson, M. A., & Fazio, R. H. (2007). Discordant evaluations of Blacks affect nonverbal behavior. *Personality and Social Psychology Bulletin, 33*, 1214-1224.
- Olson, M. A., & Fazio, R. H. (2009). Implicit and explicit measures of attitudes: The perspective of the MODE model. In R. E. Petty, R. H. Fazio, & P. Briñol (Eds.), *Attitudes: Insights from the new implicit measures* (pp. 19-64). Mahwah, NJ: Erlbaum.
- Olson, M. A., Fazio, R. H., & Hermann, A. D. (2007). Reporting tendencies underlie discrepancies between implicit and explicit measures of self-esteem. *Psychological Science, 18*, 287-291.
- Payne, B. K. (2001). Prejudice and perception: the role of automatic and controlled processes in misperceiving a weapon. *Journal of personality and social psychology, 81*, 181.
- Payne, B. K., Cheng, C. M., Govorun, O., & Stewart, B. D. (2005). An inkblot for attitudes: Affect misattribution as implicit measurement. *Journal of Personality and Social Psychology, 89*, 277-293.
- Payne, B. K., Krosnick, J. A., PASEK, J., Lelkes, Y., Akhtar, O., & Tompson, T. (2010). Implicit and explicit prejudice in the 2008 American presidential election. *Journal of Experimental Social Psychology, 46*, 367-374.
- Plant, E. A., & Devine, P. G. (1998). Internal and external motivation to respond without prejudice. *Journal of Personality and Social Psychology, 75*, 811-832.
- Plant, E. A., Devine, P. G., & Peruche, M. B. (2010). Routes to positive interracial interactions: Approaching egalitarianism or avoiding prejudice. *Personality and Social Psychology Bulletin, 36*, 1135-1147.
- Plaut, V. C. (2010). Diversity Science: Who Needs It? *Psychological Inquiry, 21*(2), 168-174.
- Powell, M. C. & Fazio, R. H. (1984). Attitude accessibility as a function of repeated attitudinal expression. *Personality and Social Psychology Bulletin, 10*, 139-148.
- Pratto, F., Sidanius, J., Stallworth, L. M., & Malle, B. F. (1994). Social dominance orientation: A



- personality variable predicting social and political attitudes. *Journal of Personality and Social Psychology*, *67*, 741-763.
- Ranganath, K. A., Smith, C. T., & Nosek, B. A. (2008). Distinguishing automatic and controlled components of attitudes from direct and indirect measurement methods. *Journal of Experimental Social Psychology*, *44*, 386-396.
- Richeson, J. A., & Trawalter, S. (2005). Why do interracial interactions impair executive function? A resource depletion account. *Journal of Personality and Social Psychology*, *88*, 934-947.
- Rydell, R. J., & McConnell, A. R. (2006). Understanding implicit and explicit attitude change: A systems of reasoning analysis. *Journal of Personality and Social Psychology*, *91*, 995-1008.
- Sanbonmatsu, D. M., & Fazio, R. H. (1990). The role of attitudes in memory-based decision making. *Journal of Personality & Social Psychology*, *59*, 614-622.
- Schuetter, R. A., & Fazio, R. H. (1995). Attitude accessibility and motivation as determinants of biased processing: A test of the MODE model. *Personality & Social Psychology Bulletin*, *21*, 704-710.
- Scinta, A., & Gable, S. L. (2007). Automatic and self-reported attitudes in romantic relationships. *Personality and Social Psychology Bulletin*, *33*, 1008-1022.
- Shiffrin, R. M., & Dumais, S. T. (1981). The development of automatism. In J. R. Anderson (Eds.), *Cognitive skills and their acquisition* (pp. 111-140). Hillsdale, NJ: Erlbaum.
- Sinclair, L., & Kunda, Z. (1999). Reactions to a Black professional: Motivated inhibition and activation of conflicting stereotypes. *Journal of Personality and Social Psychology*, *77*, 885-904.
- Smith, E. R., Fazio, R. H., & Cejka, M. A. (1996). Accessible attitudes influence categorization of multiply categorizable objects. *Journal of Personality and Social Psychology*, *71*, 888-898.
- Spalding, L. R., & Hardin, C. D. (1999). Unconscious unease and self-handicapping: Behavioral consequences of individual differences in implicit and explicit self-esteem. *Psychological Science*, *10*, 535-539.

- Stewart, B. D., Von Hippel, W., & Radvansky, G. A. (2009). Age, race, and implicit prejudice using process dissociation to separate the underlying components. *Psychological Science, 20*, 164-168.
- Towles-Schwen, T., & Fazio, R. H. (2006). Automatically activated racial attitudes as predictors of the success of interracial roommate relationships. *Journal of Experimental Social Psychology, 42*, 698-705.
- Towles-Schwen, T., & Fazio, R. H. (2001). On the origins of racial attitudes: Correlates of childhood experiences. *Personality and Social Psychology Bulletin, 27*, 162-175.
- Towles-Schwen, T., & Fazio, R. H. (2003). Choosing social situations: The relation between automatically activated racial attitudes and anticipated comfort interacting with African Americans. *Personality and Social Psychology Bulletin, 29*, 170-182.
- Von Hippel, W., Brener, L., & Von Hippel, C. (2008). Implicit prejudice toward injecting drug users predicts intentions to change jobs among drug and alcohol nurses. *Psychological Science, 19*, 7-11.
- Von Hippel, W., Silver, L. A., & Lynch, M. E. (2000). Stereotyping against your will: The role of inhibitory ability in stereotyping and prejudice among the elderly. *Personality and Social Psychology Bulletin, 26*, 523-532.
- Widman, L., & Olson, M. (2012). On the relationship between automatic attitudes and self-reported sexual assault in men. *Archives of Sexual Behavior, 1-11*.
- Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological review, 107*, 101-126.
- Wittenbrink, B., & Schwarz, N. (Eds.). (2007). *Implicit measures of attitudes*. New York: Guilford Press.
- Young, A. I., & Fazio, R. H. (2013). Attitude accessibility as a determinant of object construal and evaluation. *Journal of Experimental Social Psychology, 49*, 404-418.
- Zabel, K., & Olson, M. A. (2013). *Construal level moderates correction of automatic racial bias in impression formations*. Unpublished manuscript, University of Tennessee.