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Occurrence Versus Moderation of the Automatic Attitude Activation Effect: Reply to Fazio

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In this reply to R. H. Fazio's (1993) commentary on the J. A. Bargh, S. Chaiken, R. Govender, and F. Pratto (1992) article, the main purposes and findings of that research are reviewed. This reply presents new data that replicates J. A. Bargh et al.'s original findings regarding the conditions under which reliable moderation of automatic attitude activation by attitude speed is more versus less likely. It also responds to R. H. Fazio's criticisms of J. A. Bargh et al.'s regressions and discusses the limitations of R. H. Fazio's and J. A. Bargh et al.'s renditions of them. This reply argues that automatic attitude activation is a pervasive phenomenon and that moderation by attitude speed may be a more limited tendency.

Fazio, Sanbonmatsu, Powell, and Kardes (1986) and Bargh, Chaiken, Govender, and Pratto (1992) examined *automatic attitude activation*—the tendency for the stored evaluation of an attitude object to become active on mere observation of that object (or its symbolic equivalent) in the environment. In all of this research, the test of whether automatic activation has occurred is whether presentation of the attitude object name just 300 ms before presentation of an adjective facilitates subjects' evaluation of that adjective as good or bad when the valences of the attitude object ("prime") and the adjective ("target") are congruent, relative to when they are incongruent, within each adjective valence condition. Thus, evidence for automatic activation would be obtained by this pattern of mean adjective evaluation latencies and a reliable Prime Valence × Target Valence interaction.

In our view, the essence of the differences between Fazio (1993) and ourselves concerns the extent to which idiosyncratic differences in the strength of the association in memory between the attitude object and its evaluation (as "good" or "bad") is the principal determinant of this automaticity effect. Fazio (1993, p. 758) holds that associative strength is "the key determinant." In contrast, we maintain that such moderation is more likely under certain experimental conditions than others. Moreover, our research has found that all attitude object stimuli studied are capable of automatically activating their corresponding attitudes. Therefore, the key determinant of the automaticity effect may be the mere existence of an evaluation stored in memory.

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Subjects' attitudes toward the attitude object stimuli in the Fazio et al. (1986) and Bargh et al. (1992) experiments were determined both idiosyncratically and normatively. In most experiments (Fazio et al., 1986, Experiments 1 and 2; Bargh et al., 1992, Experiments 1-3), subjects first engaged in an "attitude assessment task" in which each of the possible attitude object primes were presented one at a time, and subjects indicated their attitude toward each as quickly as possible by pressing either a *good* or a *bad* button. On the basis of the latencies of these responses, a subset of the good and bad attitude objects was selected for each subject to be presented as primes in the subsequent automaticity task. In some studies (Fazio et al., 1986, Experiment 3; Bargh et al., 1992, Experiments 1 and 2), positive and negative attitude object primes were preselected on the basis of the responses of previous subjects.

Individual differences in associative strength in the Fazio et al. (1986) and Bargh et al. (1992) research were operationalized in terms of how quickly subjects could evaluate the attitude object. In all but one of these studies, the attitude objects corresponding to the (a) subject's four fastest good and four fastest bad responses and (b) his or her four slowest good and four slowest bad responses were selected to be primes in the subsequent adjective assessment task. Thus, these fast and slow stimuli represented only the extreme tails of the distribution of the attitude object evaluation latencies.

The Fazio et al. (1986) Research

Fazio et al.'s (1986) major interest was to test the hypothesis that automatic attitude activation depends on associative strength. The prediction for each of the three Fazio et al. (1986) experiments was that automatic activation would occur for the fast (strong) but not the weak (slow) attitude object primes.[1]

[1] Fazio (1993, p. 758) suggested that we misconstrued his position as to whether the weak (slow) attitudes would show the automaticity effect. We apologize if this was the case, but we believe our apparent misunderstanding of the position taken by Fazio et al. (1986) is understandable given their consistent assertions that the automaticity effect would not occur for the slow primes. The prediction for Experiment 1

Indeed, the results of the first two experiments, in which attitude object primes were selected idiosyncratically, revealed a reliable automaticity effect only for the fast (strong) primes. In Experiment 3, attitude object primes were selected on the basis of their relatively slow evaluation latencies and also because of the high consensus of subjects' evaluations in Experiments 1 and 2, and their relative strength was varied by a repeated expressions manipulation. Whereas the automaticity effect was greater for the strong prime condition, it also occurred for the control prime condition; however, the implications of this finding for the generality of the automatic activation effect were not discussed.

The Bargh et al. (1992) Research

Bargh et al.'s (1992) major interest was the generality of automatic attitude activation: (a) whether most or only a small portion of a person's attitudes are capable of automatic activation and (b) whether the phenomenon would occur when theoretically significant alterations were made in the procedures used in the original Fazio et al. (1986) experiments.

Generalizability Across Attitudes of Variable Strength

The three Bargh et al. (1992) experiments examined the automaticity of subjects' slowest and fastest attitudes, and two of these studies also examined a set of preselected attitude objects that fell across the middle range of evaluation latencies but that were consistently evaluated as positive or negative by subjects in our normative study (see Bargh et al., 1992, Table 2). In our Experiment 1, for example, these midrange attitude objects had a mean evaluation latency that would be considered by the associative strength model to signify weaker evaluative associations than nearly 60% of the 92 attitude object stimuli that we (and Fazio et al., 1986) investigated and significantly weaker associations than the study's idiosyncratically selected fast attitude objects.

The automatic attitude activation effect occurred for the midrange attitude objects in both experiments. Indeed, our meta-analysis showed that the automaticity effect for the midrange primes across these experiments was not reliably different from the automaticity effect we observed across all three experiments for subjects' fastest attitudes.

The automaticity effect we observed across our three experiments for subjects' slowest, presumably weakest, attitudes also proved reliable. In fact, in Experiment 2 (see next section), the magnitude of the effect for the slow primes was not reliably different from that for the fast or midrange primes.[2] We regard our documenting the occurrence of automatic attitude activation for subjects' weakest as well as midrange and strongest attitudes as a major contribution of our research. These results showed that automatic attitude activation is more pervasive than previous research had indicated.

Generality of the Moderated Versus Unmoderated Automaticity Effect

Fazio et al. (1986) aspired to test whether some attitudes "are capable of being activated from memory automatically upon mere presentation of the attitude object" (p. 229, see also p. 233). However, there were several aspects of their paradigm that caused subjects to engage in more processing of the attitude object primes than just paying them minimal attention. Most notably, subjects were required to evaluate attitude objects immediately before the adjective assessment task that assessed automaticity (or, for half of Experiment 3's subjects, to make word judgments about these objects). If the automaticity effect requires only the mere presence (or mention) of the attitude object, obtaining it ought not to require that subjects first consciously think about the object or their feelings about it.

Our Experiment 2 removed this aspect of the paradigm by placing a 2-day delay between the attitude assessment phase of the experiment and the test of automaticity. This experiment, unlike our Experiments 1 and 3 and the Fazio et al. (1986) experiments, revealed no reliable moderation of the automaticity effect by attitude speed ($F < 1$ for the Attitude Speed $\times$ Prime Valence $\times$ Target Valence interaction). Yet in all three of our experiments, the overall, unmoderated automaticity effect (i.e., the Prime Valence $\times$ Target Valence interaction) was highly significant.

Replication of Bargh et al. (1992) Experiments 1 and 2

Our original Experiment 2 results stand in contrast to Fazio's (1993, p. 758) conclusion that idiosyncratic associative strength plays a key role in automatic attitude activation. The critical difference between this experiment and our others was the interpolation of a 2-day delay between the attitude assessment and automaticity tasks. In other words, having subjects think about their attitude toward the object just before the automaticity of that attitude is assessed seems to enhance moderation of the automaticity effect by attitude speed; removing this condition reduces it. Because of the potential importance of this finding, we conducted an experiment that explicitly manipulated the time interval between the attitude assessment and automaticity tasks.

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stated that "greater facilitation is expected on trials involving congruent valences than on trials involving incongruent valences. . . . for primes involving a strong evaluative association but not for primes involving a weak association" (p. 231). Introducing their Experiment 2, they state "if . . . the findings of Experiment 1 reflect automatic processing, then no such facilitation is to be expected for weak primes even at a longer SOA" (p. 233). For Experiment 3, the prediction was that "facilitation should be greater in the cases of congruency. . . . than in the cases of incongruency only for strong primes" (p. 235). It was from these predictions (and other articles, e.g., Fazio, 1986, 1989) that we understood the model's position regarding generality. Nevertheless, we are pleased that Fazio (1993) now appears to agree with us that automatic attitude activation is a quite general phenomenon.

[2] Across all experiments, however, the automaticity effect was reliably smaller for the slow versus midrange and slow versus fast primes. These differences conform to Fazio's (1993) assumption that the size of the automaticity effect increases with increased associative strength; less consistent is the nonsignificant difference we observed between the fast versus midrange attitude object primes (see Bargh et al., 1992, p. 907).

Half of the subjects in this new experiment ($n = 21$) participated in an exact replication of Bargh et al.'s (1992) Experiment 1: The attitude assessment phase of the study occurred immediately before the priming phase. The remaining subjects ($n = 24$) participated in an exact replication of Bargh et al.'s Experiment 2: There was a 2-day delay between the assessment and priming phases. This delay was the only difference in procedure between the two groups of subjects, just as it was the only difference between our original Experiments 1 and 2.

The facilitation scores for this experiment are shown in Figure 1. The Delay × Prime Valence × Target Valence × Attitude Speed analysis of variance (ANOVA) on these scores yielded a reliable automaticity effect (Prime Valence × Target Valence interaction), $F(1, 43) = 27.96$, $p < .001$. Indicating no overall moderation by attitude strength, this tendency did not interact with attitude speed (fast vs. midrange vs. slow), $F(2, 86) = 1.61$, $p = .21$. Yet consistent with expectations, the Delay × Attitude Speed × Prime Valence × Target Valence interaction attained marginal significance, $F(2, 86) = 2.24$, $p = .11$.

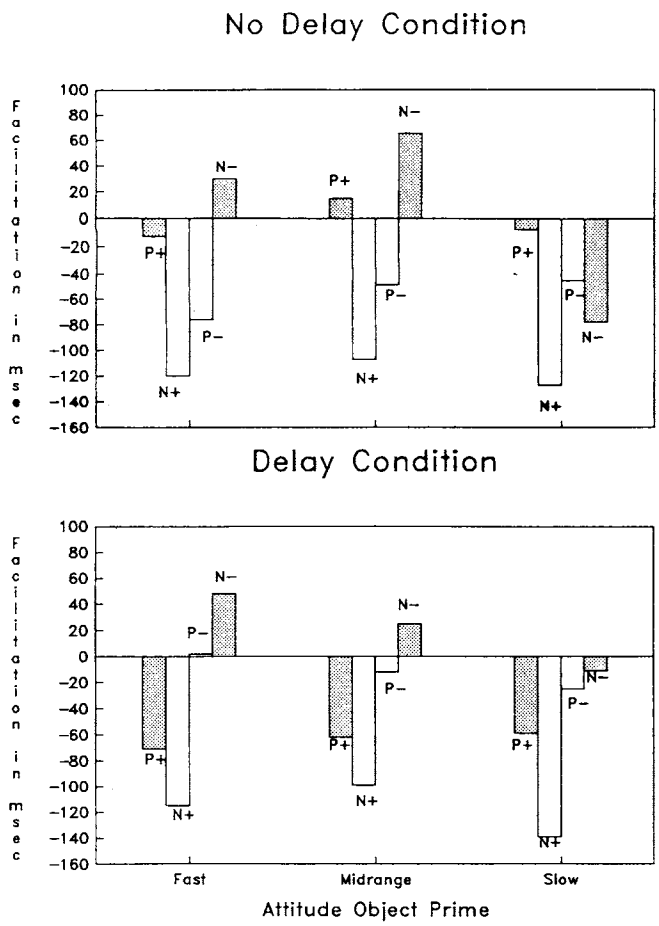

Figure 1. Mean target evaluation facilitation scores (in milliseconds) by prime type, prime valence (P = positive and N = negative), and target valence (+ = positive and − = negative), separately for the no delay (as in Bargh et al., 1992, Experiment 1) and delay (as in Bargh et al., 1992, Experiment 2) conditions of the replication experiment. (Shaded bars indicate conditions in which prime and target valence are congruent.)

Simple effects tests documented the importance of delay. Under no delay, the automaticity effect was reliable ($p < .001$), as was its moderation by attitude speed ($p < .01$). Figure 1 shows that the signature pattern of automaticity—faster responses to positive targets preceded by positive (vs. negative) primes and faster responses to negative targets preceded by negative (vs. positive) primes—was present and reliable only for the fast and midrange attitude object primes, Fs(1, 20) = 12.23 and 10.73, ps < .003 and .004; for slow primes, $F(1, 20) = 2.29$, $p = .15$, and this requisite pattern did not occur.

In the delay condition, by contrast, the automaticity effect was reliable ($p < .001$), but its moderation by attitude speed was not ($F < 1$). In this condition, the signature pattern of means was present for all three prime types, and the Prime Valence × Target Valence interaction was reliable for fast primes and slow primes and marginally reliable for midrange primes, Fs(1, 23) = 9.43, 8.98, and 3.77, ps < .006, < .007, and = .07.

As the new no-delay and delay conditions were exact replications of our original Experiments 1 and 2, combining these data-sets provides a more powerful test of whether moderation of the automaticity effect by attitude strength is itself moderated by the delay factor. The ANOVA on these aggregated data yielded a significant overall automaticity effect, $F(1, 88) = 63.81$, $p < .001$. It was reliably moderated by attitude speed, $F(2, 176) = 4.08$, $p < .05$. Most important, this moderation effect was itself reliably moderated by the delay factor: $F(2, 176) = 3.17$, $p < .05$ for the Delay × Attitude Speed × Prime Valence × Target Valence interaction.

Consistent with the analysis of our new dataset, the unmoderated automaticity effect was reliable within both the delay and no-delay conditions, $F(1, 46) = 26.89$, $p < .001$ (3.4% of total variance), and $F(1, 42) = 35.86$, $p < .001$ (6.6% of variance). Yet the moderated automaticity effect (i.e., Attitude Speed × Prime Valence × Target Valence) was reliable only in the no-delay condition, $F(2, 84) = 4.78$, $p < .001$ (1.1% of variance; for the delay condition, $F < 1$, 0.1% of variance).[3]

That the results of the new experiment closely replicated those of the original Experiments 1 and 2 is demonstrated by two facts: (a) The four-way interaction, indicating that moderation of the automaticity effect was more likely under no-delay conditions, was not qualified by the replication factor (i.e., original vs. new data; $F < 1$), and (b) the replication factor did not interact with either the unmoderated or the moderated automaticity effect within either the delay condition (both Fs < 1) or the no-delay condition ($p = .13$ and $F < 1$, respectively).

These results indicate that the dependence of automatic attitude activation on attitude speed is lessened when a theory-irrelevant aspect of the original Fazio et al. (1986) paradigm is removed, namely, that subjects think about the attitude object stimuli immediately before the test of the automaticity of their attitudes. This finding takes on theoretical importance because

[3] These results do not depend on the inclusion of the midrange prime type. When the midrange primes are dropped from the analyses the unmoderated automaticity effect remains reliable in both delay conditions (Fs > 24), and the moderated effect is marginally reliable in the no-delay condition ($p = .09$) and unreliable in the delay condition ($F < 1$).

the phenomenon of automatic attitude activation refers to the tendency for attitudes to become activated on mere observation of the attitude object in the environment. The delay conditions of our new study and the original Bargh et al. (1992) Experiment 2 more closely approximate these mere presence conditions than do the no-delay conditions that have characterized nearly all of the automatic attitude experiments that Fazio et al. and we have conducted thus far. Yet our comparisons of moderation within delay versus no-delay conditions clearly show the evidence for moderation becoming weaker, not stronger, as the paradigm moves closer to mere presence conditions (see also Bargh, in press).

At present, it is unclear exactly why having subjects think about their attitudes just before the automaticity task increases evidence of moderation. Consistent with Fazio's emphasis on the role of associative strength, it is possible that the recent conscious thought adds to the chronic activation level of the good or bad evaluation (see Bargh, Bond, Lombardi, & Tota, 1986) more for the fast and midrange than for the slow attitudes. This could be because the fast and midrange attitudes, being less ambivalent than the slows (see Bargh et al., 1992, Table 1), evoke conscious thought during the attitude evaluation task about only a single good or bad evaluation. In contrast, the slow (more ambivalent) attitudes may evoke both good and bad thoughts about the object and thus additional conscious activation of both evaluative links in memory (thus producing no additional activation advantage for one or the other). This explanation is consistent with the dual-evaluation model of attitudes we proposed in Bargh et al. (1992, pp. 896, 898, and 908; see also Kaplan, 1972; Katz, 1981, pp. 361–372; Osgood, Suci, & Tannenbaum, 1957, p. 71*ff*).

Regression Analyses

In emphasizing idiosyncratic evaluation latency as the key determinant of automatic attitude activation, Fazio (1993) took issue with the conclusions we drew from our auxiliary regression analyses, which failed to support the importance of this variable. In those regressions, we attempted to compare the abilities of various indicators of attitude strength to predict the likelihood of automatic attitude activation for each trial of the adjective assessment (automaticity) task, for each subject in our experiments. Because of its central importance to the associative strength model, we included as one of these predictors the subject's idiosyncratic evaluation latency for the attitude object prime. On the basis of our own analysis of which other attitude strength variables might be related to the automaticity effect, and for which we had collected normative data documenting their covariation with evaluation latency (see Bargh et al., 1992, pp. 895–896 and Table 1), we also included normative extremity, consistency, ambivalence, and polarity. These normative variables had to serve as proxies for individual-level measures of the same underlying constructs (see Bargh et al., 1992, p. 904), given that we did not have the latter available to us.

Normative evaluation latency was also included as a predictor to control for other features of the attitude object that we did not measure (e.g., word length) but that might also predict response latencies. Normative evaluation latency was not a variable that, on a priori theoretical grounds, we considered a potential moderator of automatic attitude activation (see Bargh et al., 1992, pp. 895–896).

The regressions were suggested to us as a way of making further use of our normative and experimental data (see Bargh et al., 1992, footnote 8). In the context of our emphasis on factors that influence the moderation of the automaticity effect by attitude strength, it is critical to note that the regression dataset is comprised overwhelmingly of data from subjects in our Experiments 1 and 3—that is, from subjects who had just thought about their attitudes before the automaticity task. Specifically, 81% of the 8,882 trials in the regression dataset came from such no-delay conditions (see Bargh et al., 1992, footnote 9). We performed the regression reported in our Table 3 and (in response to input from Russell H. Fazio) the two additional regressions reported in Bargh et al. (pp. 905–906). We interpreted the results of these analyses while cautioning readers of their limitations and the tentative nature of our conclusions (see Bargh et al., 1992, pp. 898, 904, 906, and 908).

The major outcome of the three regression analyses we reported was that of the several variables included simultaneously as potential moderators of automatic activation, only normative ambivalence and normative evaluation latency proved to be reliable or marginally reliable ($ps < .10$) predictors of the automaticity effect.

The finding that normative evaluation latency moderated the automaticity effect in our regressions, but idiosyncratic latency did not, required interpretation. As discussed earlier, one possible explanation was that normative evaluation latency was a stand-in for some feature (or features) of the attitude objects that was not included as a predictor in the regression. We tested whether it was the frequency or length of the attitude object name, but additional analyses ruled this out (Bargh et al., 1992, footnote 14). We then speculated that perhaps the normative latency measure represented commonalities in how people react to and feel about the attitude object and that such commonalities may matter more than individual differences in associative strength.

Fazio's (1993) Reanalysis of Our Regression Data

Fazio (1993) has shown that a reciprocal transformation of the idiosyncratic attitude object evaluation latency and the adjective evaluation latency distributions is sufficient to alter the outcome of the regression analyses Bargh et al. (1992) reported. Fazio noted that these latency distributions evidenced significant skewness, which is reduced by the reciprocal transformation. Our own recomputations using these transformed latency variables confirmed that in contrast to the (simultaneous entry) regression results we reported in our original article, the normative evaluation latency predictor no longer reliably moderated the automaticity effect, whereas the idiosyncratic evaluation latency predictor did. Had we only known that simply applying a reciprocal transformation to both the idiosyncratic evaluation latency predictor and the adjective evaluation latency criterion variable would be sufficient to show the superiority of the idiosyncratic over the normative latency predictor,

all of our *Sturm und Drang* concerning the meaning of the latter variable could have been avoided.[4]

Importance of the Reciprocal Transformation

Fazio (1993) applied the reciprocal transformation to the adjective evaluation latency variable as well as to the idiosyncratic attitude object evaluation latency variable because both were skewed. We therefore applied the reciprocal transformation to subjects' adjective evaluation latencies and recomputed the Bargh et al. (1992) Experiment 1–3 ANOVAs so that their results would be more comparable to those of the Fazio regressions. Instead of finding stronger evidence for moderation of the automaticity effect due to attitude speed, we found weaker moderation effects in all three experiments. Most notably, the significant moderation effect we reported for Experiment 1 ($p < .001$) would have been nonsignificant ($p = .15$) had our ANOVAs used the reciprocal transform.[5]

It might seem anomalous that the reciprocal transformation weakened evidence for moderation in the ANOVAs but revealed the importance of idiosyncratic prime evaluation latency in the regressions. However, the ANOVAs address whether attitude speed moderates the automaticity effect, whereas the regressions address the issue of which correlates of attitude speed best account for such moderation when it occurs.

Alternate Conceptions of Attitude Strength

A second important limitation of the regression dataset is that the only attitude strength variable that was measured idiosyncratically was attitude evaluation latency. Any superiority shown by idiosyncratic attitude evaluation latency relative to the other attitude strength variables in this dataset is confounded with level of measurement. We noted this limitation in our original article and called for further research using individual-level measures of these other variables.

On the issue of idiosyncratic measures, however, we disagree with Fazio's (1993) view that moderation of automaticity by variables such as ambivalence or consistency would necessarily support the assumption that the associative strength of an attitude is the key moderator of this phenomenon. These and other attitude strength variables correlate with Fazio's latency operationalization of associative strength (see Bargh et al., 1992, Table 1). However, as argued in our original article (Bargh et al., 1992, p. 908), it is premature to conclude that such variables are merely alternative operationalizations of this particular conception of attitude strength (e.g., Chaiken, Pomerantz, & Giner-Sorolla, in press; Doll & Ajzen, 1992; Downing, Judd, & Brauer, 1992; Eagly & Chaiken, 1993; Petty & Krosnick, in press).[6]

Conclusions

We do not dispute that reliable moderation of the automatic attitude activation effect by attitude strength is a replicable phenomenon. Indeed, our own research has found such moderation when subjects have just thought about their attitudes. However, this condition of recent thought is not required by the theory that attitudes become automatically active on the mere presence of the attitude object. In our studies, when subjects have not just recently thought about their attitudes—conditions that more closely approximate those of the mere presence of the attitude object in the environment—evidence for reliable moderation of the automatic attitude activation effect by attitude strength is quite weak. For this reason, we disagree with Fazio (1993) that "the key determinant of automatic attitude activation is idiosyncratic associative strength" (p. 758).

As we noted in our original article (Bargh et al., 1992, p. 908), an important implication of our findings is the potentially unconditional nature of an initial screening of everything in the environment in terms of whether it is good or bad, on the basis of the activation of stored evaluations in memory (see also Bargh, Litt, Pratto, & Spielman, 1989; Pratto, in press). This idea is not new; such an initial dichotomous classification of environmental objects and events in terms of harm or benefit has been an important feature of appraisal models of emotion, for example (e.g., Lazarus, 1991, chap. 4). Our research focus has been the occurrence of the phenomenon of automatic attitude activation on mere exposure to the attitude object, and occurrence may only require the existence of a stored evaluation in memory, regardless of its strength. It may well be the case, however, that attitude strength plays a critical role in the conscious, deliberate processing of the object that follows this initial automatic activation.

In closing, it is important to reiterate that the dataset that has been submitted to all too many regression analyses is based overwhelmingly on data from subjects who had participated under no-delay conditions. Regression analyses of this dataset, no matter what attitude strength predictor proves superior, cannot provide a general test of whether attitude strength moder-

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[4] However, the reciprocal transformation of the latency variables is the *only* modification to our regression procedure of the three Fazio (1993) discussed that produces any changes to the patterns of significance in the regressions Bargh et al. (1992) reported—that is, any changes that would result in different conclusions from those we drew from those regressions. We first recomputed Fazio's (1993) featured regression after first omitting the Step 2 covariate, and the pattern of clearly significant and clearly nonsignificant results was identical to that shown in his Table 2. The further deletion of the Step 6 mean-latency-to-evaluate-primes covariate (and its interactions) once again yielded the same pattern of significant and nonsignificant results. Finally, in light of Fazio's (1993, p. 755) assertion that this mean prime latency covariate is *sufficient by itself* to alter our original regression results, we recomputed our original regressions with this additional covariate (with and without its interactions). The t and p values obtained were virtually identical to those reported in our original article. Copies of these regression outputs are available on request.

[5] The size of the unmoderated automaticity effect, however, did not decline as a result of the reciprocal transformation. All three p values remained $< .001$.

[6] Fazio (1993) heavily emphasized that his correlational (i.e., regression) evidence for moderation of the automaticity effect by idiosyncratic associative strength is bolstered by the Fazio et al. (1986, Experiment 3) finding that the automaticity effect was reliably greater for subjects for whom associative strength was strengthened through a repeated expressions technique. The fact that associative strength was manipulated rather than measured using evaluation latencies, however, does not guarantee that other aspects of attitude strength are not also varied by the manipulation (Downing et al., 1992; Eagly & Chaiken, 1993).

ates the automaticity effect. We urge instead additional research to examine the minimal conditions needed to produce automatic activation, the conditions that favor its moderation by attitude strength, and the mechanisms that account for both the unmoderated and moderated automaticity effect.

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Addendum: Reply to Chaiken and Bargh by Russell H. Fazio

The model of attitudes that has formed the focus of my research program specifies that the likelihood of automatic attitude activation on an individual's encountering an attitude object depends on the strength of the association in memory between the object and the individual's summary evaluation of the object. My commentary on Bargh, Chaiken, Govender, and Pratto (1992) centered on the importance of associative strength as a predictor of automatic attitude activation. Contrary to the interpretation that Bargh et al. had offered, the reanalyses documented that an idiosyncratic measure of such strength—namely, an individual's latency of response to a direct attitudinal inquiry—was superior to the various normative variables that Bargh et al. considered.

Chaiken and Bargh (1993) evidently have accepted this conclusion.[1] However, they suggested that this moderating effect of associative strength is itself moderated by a procedural variable —the presence or absence of a time interval between the two phases of the experiment as conducted by Fazio, Sanbonmatsu, Powell, and Kardes (1986) and Bargh et al. (1992). This possibility received little attention in the Bargh et al. article. In the present article, Chaiken and Bargh asserted that the moderating effect of associative strength on attitude activation is greater when subjects have evaluated the attitude objects immediately before engaging in the priming task by which automatic activation is assessed. They maintain that idiosyncratic associative strength is less likely "when subjects have not just recently thought about their attitudes" (p. 763). As Chaiken and Bargh indicated, given that such conditions more closely approximate an individual's encountering the attitude object in the environment, this assertion is definitely contrary to my model. Thus, this exchange has succeeded in identifying what now appears to be the major difference between my theoretical position and that of Chaiken and Bargh.

[1] However, Chaiken and Bargh (1993) questioned the value of adjusting for individual differences in baseline speed of evaluating the attitude objects that served as primes. Specifically, when they included each subject's mean prime evaluation latency (and its interactions) in the regression equation, they apparently found little change in the outcome (see footnote 4 of their article). For reasons that have yet to be determined, my analyses and theirs disagree in this respect. In my regressions, inclusion of the covariate (a) revealed the idiosyncratic latency measure to be superior to the normative variables in predicting automatic attitude activation even when the latencies had not first been transformed so as to reduce their skewness, and (b) enhanced the significance of the idiosyncratic predictor when the latencies had first been transformed. Use of the covariate to partial out baseline differences, as in the analyses I reported, is only one of many approaches I have taken that revealed the value of addressing the baseline issue. Details pertaining to these other approaches, as well as the analyses involving the covariate, may be obtained from Russell H. Fazio.

Despite careful scrutiny, the conceptual basis for Chaiken and Bargh's (1993) reasoning about the effects of recent thought remains unclear to me. Although I can readily understand why recently indicating one's attitude might enhance automatic attitude activation when the object is presented in an immediately subsequent task, I have much more difficulty with Chaiken and Bargh's reasoning that the extent of such enhancement might vary as a function of associative strength. Regardless of the latency of the attitudinal expression, the subject has decided on and expressed a summary evaluation of the object. Why would the subject's decision not produce, in Chaiken and Bargh's words, an "additional activation advantage" (p. 762) for the expressed valence over the unexpressed valence? Moreover, it is unclear why preexisting associative strength would not matter when the very first presentation of the object is in the priming phase of the experimental session. Given that even the possibility of automatic activation requires the existence of some stored evaluative association in memory (a position that Chaiken and Bargh seemingly endorse), why would objects with strongly associated evaluations not evoke greater activation than ones with weakly associated evaluations? Certainly, much empirical work within the cognitive literature concerning word associations reveals associative strength to affect priming (e.g., deGroot, Thomassen, & Hudson, 1982; Warren, 1974).

The data that Chaiken and Bargh (1993) offered to support their reasoning are not very convincing to me. The significance level of the critical interaction involving the delay variable is .11. It is only when the questionable practice of aggregating the new Chaiken and Bargh study with two different experiments from Bargh et al. (1992) is pursued that the interaction attains significance.

The failure to observe a significant moderating effect of associative strength under the delay condition does not, of course, imply that the effect is nonexistent. (Such an implication would be tantamount to accepting the null hypothesis.) In fact, my colleagues and I recently conducted an experiment that obtained such an effect. For reasons that had nothing to do with the Chaiken and Bargh claim (the experiment was conducted before the preparation of their article), the experiment involved the passage of 3 months between subjects' participation in an experimental session devoted to attitude assessment and a second session devoted to the assessment of automatic activation. Furthermore, there was good reason to believe that our experiment might involve a substantially more sensitive and powerful assessment of automatic activation. The experiment used a new technology that the laboratory has been developing over the last 2 years—a technology that permits us to use, not words, but high-resolution, color images as primes. These images, which obviously are much more vivid and impactful than a word, are likely to produce much more activation from memory than a word. In fact, in our continuing series of tests of this technology, we have been observing stronger facilitation effects than we had obtained in our earlier work with words as primes.

The 38 subjects in this experiment were members of a paid subject pool that the laboratory had recruited. Early in the semester, they had participated in an initial session in which they had performed a variety of tasks, including one that involved collection of their attitudinal responses (as well as the response latencies) to each of 30 images (e.g., snakes, puppies, cats, hot fudge sundae, hunting, and boxing). The images were digitized from cards available in the board game Personal Preference™, each of which include a color photograph of an object or activity, as well as a printed name label. Late in the semester, these subjects participated in a test of our new technology that used these same 30 images as primes. On any given trial, the prime was followed by an evaluative adjective, and, just as in the past work, the subject's task was to identify the connotation of the adjective. Regression analyses used the first-session evaluation latencies (reciprocally transformed) as the critical predictor variable. We observed attitudinally congruent facilitation during the adjective connotation task to be moderated significantly by the latency variable. The faster the subject was to indicate an attitude toward the object during the first session, the greater the evidence of automatic attitude activation when that object was used as a prime 3 months later.

This finding suggests that, regardless of the effects that delay might have, the essential phenomenon and its dependency on associative strength are evident even given extreme delay. Thus, even under experimental conditions that more closely approximate an individual's encountering an attitude object in real life, the more strongly associated the object and the individual's evaluation of the object, the greater the automatic attitude activation.

In closing, let me reiterate that there exists a myriad of measures by which "attitude strength" can be indexed (see Fazio, in press, for a conceptual framework regarding such indices). However, I continue to believe that it is important to keep theoretical and operational levels of analysis distinct from one another. As noted in my earlier commentary, I fail to see how one can account for the memory processes by which automatic attitude activation occurs in terms of attitudinal ambivalence, consistency, extremity, or whatever—unless one makes reference to the covariation of such indices with the strength of the association in memory between the attitude object and the individual's evaluation.

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