The Effects of Minority/Majority Source Status on Attitude Certainty: A Matching Perspective

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The Effects of Minority/Majority Source Status on Attitude Certainty: A Matching Perspective

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Building on recent work exploring metacognitive factors in minority/majority influence, three studies tested the hypothesis that when people receive persuasive messages from sources in the minority or majority, their attitude certainty can be determined by the extent to which source status and perceived argument quality match or mismatch. In Study 1, participants were presented with strong or weak arguments from a minority or majority source. Minority condition participants reported greater attitude certainty when arguments were weak rather than strong. Majority condition participants showed the opposite effect. Study 2 replicated this interaction using a manipulation of perceived rather than actual argument quality. In Study 3, these effects only emerged when message recipients' processing motivation was high. Taken together, the results suggest that attitude certainty can be high or low following minority or majority messages, depending on processing motivation and message recipients' assessments of other persuasive evidence.

Keywords: *minority influence; attitudes; attitude strength; persuasion; elaboration*

The study of minority influence has a long tradition in social psychology (see Crano & Seyranian, 2007; Moscovici, 1980, 1985; Mugny & Perez, 1991; Wood, Lundgren, Ouelette, Busceme, & Blackstone, 1994). Much of the research on this topic has been conducted in the persuasion domain, where it has been revealed that sources representing numerical majorities tend to be more successful than sources representing numerical minorities at inducing immediate, direct, and public persuasion (e.g., Darke et al., 1998; De Dreu & De Vries, 1996; De Dreu, De Vries, Gordijn, & Schuurman, 1999; Erb, Bohner, Schmalzle, & Rank, 1998; Mackie, 1987; Trost, Maass, & Kenrick, 1992). Of importance, however, messages from minority sources sometimes exert a hidden impact (e.g., Crano & Chen, 1998; Moscovici, 1985).

Most relevant to the current concerns, Tormala, DeSensi, and Petty (2007) took a metacognitive perspective on hidden minority influence, suggesting that when people initially resist minority sources, they might sometimes lose attitude certainty. This perspective is based on the resistance appraisals hypothesis, which proposes that when people resist persuasion, they can perceive their resistance, appraise their resistance performance, and form attributional inferences about their attitudes that affect attitude certainty (Tormala, 2008; Tormala & Petty, 2004a). In general, people become more (less) certain of their attitudes when they form positive (negative) appraisals of their resistance (e.g., Tormala, Clarkson, & Petty, 2006; Tormala & Petty, 2002, 2004b, 2004c). These shifts in attitude certainty are important because certainty has implications for numerous other attitudinal outcomes. As attitude certainty increases, for example, attitudes become more predictive of behavior, more persistent over time, and more resistant to subsequent persuasive attack (for reviews see Gross, Holtz, & Miller, 1995; Tormala & Rucker, 2007).

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Tormala et al. (2007) posited that when people resist minority sources, they might form negative appraisals of their resistance if they perceive that they based their resistance on minority source status and believe that this is an illegitimate thing to do. In one study, Tormala and colleagues presented undergraduates with a persuasive message containing strong arguments in favor of a new campus policy. This message was attributed to a minority or majority source. Compared to a control condition, participants in the majority condition were persuaded, whereas those in the minority condition resisted persuasion. After resisting, however, participants in the minority condition showed evidence of reduced attitude certainty. Subsequent studies revealed that attitude certainty only decreased when participants both perceived that they had resisted *because* of the minority source and believed that this was an illegitimate basis for resistance. When participants believed that they did not base their resistance on the minority source, or they believed that they did but they also believed that this was perfectly legitimate, they did not lose attitude certainty. Also important, these effects had implications for attitude change: When participants lost certainty, they became more susceptible to later persuasion.

The Current Research

This research seeks to expand our understanding of the metacognitive factors that shape attitude certainty following persuasive messages from minority versus majority sources. We propose that when people receive messages from minority or majority sources, they reflect not only on the numerical status of the source, but also on whether other aspects of the persuasive message—in particular, message arguments—point to the same conclusion or a different conclusion. Our primary hypothesis is that people will be more certain of their postmessage attitudes when they receive weak arguments from minority sources or strong arguments from majority sources because in each case all of the persuasive evidence (i.e., source status and argument quality) is consistent. When people receive strong arguments from minority sources or weak arguments from majority sources, we expect them to hold their postmessage attitudes with less certainty because in these cases the persuasive evidence is inconsistent, making message recipients unsure of their assessment of the issue.

Consider the minority source situation. When people receive messages from minority sources, we predict that they will be more certain of their attitudes if they perceive that those messages contain weak rather than strong arguments. Indeed, even if one believes that it is illegitimate to be influenced by the minority status of a source, weak arguments imply that basing one's attitude on the message itself leads to the same ultimate conclusion. Thus, source status and perceived argument quality are consistent, which should foster relatively high attitude certainty. Receiving a minority message containing strong arguments, on the other hand, suggests that source status and perceived argument quality support different conclusions, which could undermine attitude certainty.

When people receive messages from majority sources, we predict that they will be more certain of their attitudes if they perceive that those messages contain strong rather than weak arguments. In this case, even if one thinks it is illegitimate to be influenced by a source's *majority* status, strong arguments imply that the message itself provides evidence that supports the same conclusion, which should foster high attitude certainty. When people receive weak arguments from majority sources, source status and perceived argument quality support different conclusions, which should result in lower attitude certainty.

Matching and Attitude Certainty

In essence, we apply a matching logic to minority and majority source situations, suggesting that attitude certainty will be higher when minority/majority source status matches rather than mismatches perceived argument quality. Although matching effects on attitude certainty have never been shown in the minority/majority influence domain, there is reason to suspect that these effects might be possible. The most direct evidence comes from Maheswaran and Chaiken (1991), who examined the effects of information congruence on message processing and attitude confidence. They presented participants with a persuasive message containing congruent (all positive or all negative) or incongruent (both positive and negative) information about a new product. They found that participants reported greater attitude confidence when they received congruent as opposed to incongruent persuasive information. In addition, this effect had implications for information processing: Participants engaged in greater processing when they reported low compared to high attitude confidence.

Additional indirect evidence has been uncovered in the minority/majority influence domain. Baker and Petty (1994), for instance, presented participants with pro- or counterattitudinal messages from minority or majority sources. They found that participants processed those messages more deeply under "imbalanced" (minority/pro, majority/counter) compared to "balanced" (minority/counter, majority/pro) conditions, as indicated by argument quality effects on attitudes (see also Martin & Hewstone, 2003). Given the

well-documented link between uncertainty and information processing (e.g., Edwards, 2003; Maheswaran & Chaiken, 1991; Tiedens & Linton, 2001; Weary & Jacobson, 1997; cf. Tormala, Rucker, & Seger, 2008), this finding hints at the idea that people might feel uncertain about their attitudes following mismatched compared to matched information in minority/majority source situations (for similar findings using different source manipulations, see Ziegler, Diehl, & Ruther, 2002; Ziegler, Diehl, Zigon, & Fett, 2004).

Overview

In summary, we explored the interactive effects of minority/majority source status and argument quality on attitude certainty. Although past research provides suggestive evidence for a matching hypothesis, this possibility has never been formally tested in the minority/majority influence domain. Moreover, our metacognitive perspective offers unique predictions in this domain that are unavailable from past research. For instance, one important aspect of our metacognitive perspective is that it emphasizes people's subjective perceptions of their attitudes and the information they have. Thus, even when individuals have received the exact same persuasive message, simply perceiving that this message is strong or weak should be sufficient to elicit the predicted matching effects.

In addition, although past minority/majority influence research has examined matching type effects on message processing (e.g., Baker & Petty, 1994), our emphasis on attitude certainty highlights potential consequences that reach far beyond differential processing. As noted, attitude certainty has implications not just for processing but also for resistance to persuasion, attitude persistence, and attitude-behavior correspondence (see Tormala & Rucker, 2007, for a review). Thus, our perspective uniquely predicts that when source status and perceived argument quality match (mismatch), message recipients' attitudes should be less (more) vulnerable to subsequent persuasion, less (more) persistent over time, and less (more) predictive of behavior. We tested the last of these possibilities in the current research.

Finally, our metacognitive perspective makes unique predictions for moderation. In particular, past research suggests that people engage in greater metacognitive reflection, with implications for attitude certainty, when they are highly motivated and able to think (e.g., Tormala & Petty, 2004b, 2004c). The current formulation is that when people receive messages from minority or majority sources, they reflect on their own attitudes and the information they believe they used as input to those attitudes and then arrive at a reasoned assessment of attitude certainty. If true, the predicted matching effects should emerge primarily when message recipients have ample motivation and ability to think carefully.

In short, we tested our matching hypothesis in three studies. In Study 1, we manipulated source status and actual argument quality. In Study 2, we manipulated source status and perceived argument quality, holding actual argument quality constant, and we assessed the implications of the attitude certainty effect for attitude-behavior correspondence. Finally, in Study 3, we examined the moderating role of individual differences in motivation to think.

STUDY 1

The first experiment provided an initial test of the effects of source status and argument quality on attitude certainty. Participants received a strong or weak persuasive message that was attributed to a minority or majority source. Because past research suggests that people are more sensitive to differences in argument quality when they are motivated to carefully process (Petty & Cacioppo, 1986), and that metacognitive reflection is more likely under high processing conditions (e.g., Tormala & Petty, 2004b, 2004c; see also Petty, Briñol, & Tormala, 2002), we designed the message to be of high personal relevance to all participants (see Petty & Cacioppo, 1979). We expected to find an interaction between source status and argument quality, such that participants would be more certain of their attitudes under matched (strong/majority, weak/minority) compared to mismatched (strong/minority, weak/majority) conditions.

Method

Participants and Design

A total of 74 Indiana University undergraduates participated in partial fulfillment of a course requirement. Participants were randomly assigned to conditions in a 2 (source status: majority or minority) × 2 (argument quality: strong or weak) between-participants factorial design. All sessions were conducted on computers using MediaLab software (Jarvis, 2004).

Procedure

Participants were seated in a room containing seven partitioned computer terminals. At the outset of the experiment, participants were led to believe they were taking part in a study designed to explore the relative effectiveness of different forms of communication (adapted from Baker & Petty, 1994; Crano & Chen, 1998). Participants were told that to examine this issue,

we were presenting people with information about a variety of topics in a variety of formats. All participants were led to believe that they had been assigned to the "written" condition and that they would review an excerpt from a newspaper editorial concerning the potential implementation of a new policy at their university. Specifically, participants were informed that their university was exploring the possibility of a service program requiring students to complete several hours per week of unpaid service. Participants were told that this obligation would involve 2 to 3 years of university service. To motivate careful attention to the message, we led participants to believe that the program would be initiated the following semester at their university (see Petty & Cacioppo, 1979). Following this information, participants were presented with a persuasive message advocating the service program. After the message, participants reported attitudes and attitude certainty and were thanked and debriefed.

Independent Variables

Source status. Following the introduction to the service program, but before receiving the persuasive message, participants were randomly assigned to minority or majority source conditions. Participants were informed that a recent survey of approximately 2,000 undergraduates at their university revealed that either a large majority (86%) or a small minority (14%) of students supported the policy. Participants were also told that the message they would read came from a member of this majority or minority. This manipulation was adopted from past research (e.g., Tormala et al., 2007).

Argument quality. Immediately after receiving the source manipulation, participants were presented with a persuasive message containing arguments in favor of the service program. Participants were randomly assigned to receive strong or weak arguments (adapted from Baker & Petty, 1994). In the strong argument condition, participants received several compelling reasons to implement the service program (e.g., it would improve the quality of education and increase job opportunities for graduating seniors). In the weak argument condition, participants received less compelling reasons to implement the program (e.g., it would reduce the amount of leisure time students have and consequently limit rowdiness on campus). Of importance, though they were intended to differ in strength, both messages argued unambiguously in favor of the service program.

To gauge the effectiveness of our manipulation, we conducted a posttest in which 30 participants received either the strong or the weak message and rated the arguments overall on a scale ranging from 1 (*very weak*) to 9 (*very strong*). As intended, participants viewed the strong message ($M = 5.57$, $SD = 2.03$) as considerably stronger than the weak message ($M = 2.75$, $SD = 1.44$), $F(1, 28) = 19.71$, $p < .001$.

Dependent Measures

Attitudes. After reading the message, participants reported their attitudes toward the service program on semantic differential scales ranging from 1 to 9 with the following anchors: *dislike-like*, *bad-good*, *negative-positive*, *harmful-beneficial*, *unfair-fair*, *unpleasant-pleasant*, *foolish-wise*. Responses were averaged to form a composite index ($\alpha = .96$). Higher ratings reflected more favorable attitudes.

Attitude certainty. Immediately after reporting attitudes, participants responded to a single global item assessing attitude certainty (adopted from Tormala et al., 2007): How certain are you of your opinion about the university service program? Responses were provided on a scale ranging from 1 (*not certain at all*) to 9 (*very certain*).

Results

Attitudes

We submitted the attitude data to a 2 × 2 analysis of variance (ANOVA) with source status and argument quality as the independent variables. As depicted in Table 1, this analysis revealed two main effects. First, replicating past research, there was a significant effect of source status, $F(1, 70) = 4.70$, $p < .04$, such that attitudes were more favorable in the majority than the minority condition. In addition, there was a significant effect for argument quality, $F(1, 70) = 22.40$, $p < .001$; attitudes were more favorable in the strong rather than weak argument condition. There was no interaction, $F < 1$.

Attitude Certainty

The attitude certainty data were submitted to the same 2 × 2 ANOVA. In this case, there were no main effects, Fs < 1, but there was a significant interaction, $F(1, 70) = 5.79$, $p < .02$. As shown in Table 1, the interaction assumed the predicted form. In the minority source condition, participants were more certain of their attitudes when message arguments were weak rather than strong, $F(1, 70) = 3.65$, $p < .06$. In the majority source condition, participants tended to be more certain of their attitudes when message arguments were strong rather than weak, $F(1, 70) = 2.21$, $p < .15$. Although neither simple effect was significant, both were in the predicted pattern.

TABLE 1: Attitudes and Attitude Certainty as a Function of Source Status and Argument Quality in Study 1

	Minority Source		*Majority Source*	
	Argument Quality			
Dependent Measure	*Weak*	*Strong*	*Weak*	*Strong*
Attitudes				
M	2.77	4.43	3.41	5.52
SE	0.39	0.42	0.40	0.38
Attitude certainty				
M	7.26	6.00	5.94	6.90
SE	0.45	0.48	0.48	0.44

NOTE: All scales ranged from 1 to 9.

Discussion

Study 1 revealed that source status and argument quality can interact to determine attitude certainty. When participants received a message from a minority source, they were more certain of their attitudes when that message contained weak rather than strong arguments. When participants received a message from a majority source, this pattern was reversed. These results are consistent with the notion that attitude certainty can be shaped by the match between argument and source factors in the minority/majority influence domain. When source status and argument quality match—that is, they point to the same conclusion—attitude certainty is high. When source status and argument quality mismatch—that is, they point to different conclusions—attitude certainty is low.

These results build on past research exploring the effects of strong versus weak arguments on the persuasiveness of minority and majority sources. For example, past research has shown that minority sources often (though not always) effect greater attitude change when they deliver strong as opposed to weak arguments (e.g., Baker & Petty, 1994; Gordijn, De Vries, & De Dreu, 2002; Martin & Hewstone, 2003). Study 1 replicated this finding, but also enriched our understanding of it by showing that greater persuasion under strong message conditions can be associated with less attitude certainty. It could be that reduced attitude certainty is what opens the attitude up to greater persuasion (see Tormala et al., 2006). Because our certainty measures (and primary interests) focused on postmessage or postpersuasion attitudes, however, this possibility remains speculative for now.

In contrast to the notion that changes in initial attitude certainty might have precipitated the attitude effects, one might wonder whether changes in attitudes precipitated the certainty effects. In other words, a potential alternative account for our findings would be that attitude certainty simply was higher when participants were most persuaded or most resistant. After all, the conditions under which attitude certainty was highest—the majority/strong and minority/weak conditions—also were the conditions under which attitudes were most and least favorable, respectively. To address the possible role of attitudes and attitude extremity (i.e., deviation from neutrality) in explaining the certainty results, we reanalyzed the certainty data controlling for each of these dimensions. The Source Status × Argument Quality interaction on certainty remained significant after controlling for attitudes, $F(1, 69) = 7.37$, $p < .01$, and after controlling for attitude extremity, $F(1, 69) = 4.30$, $p < .05$. Thus, differences in attitudes could not account for the attitude certainty results.

STUDY 2

We have proposed that the match between source status and argument quality shapes attitude certainty because of its implications for whether message recipients believe one or more conclusions are supported by the persuasive evidence. An important part of our metacognitive formulation is that message recipients could receive the exact same message, generate the same thoughts, and hold the same attitudes within the minority and majority source conditions but arrive at different assessments of attitude certainty depending on their perceptions of the message they received and whether it matched or mismatched the source's numerical status. In other words, even if all participants received the exact same arguments, simply believing that those arguments were strong or weak should suffice to produce the attitude certainty interaction.

We explored this possibility in Study 2 by giving all participants the same message. This message contained both strong and weak arguments to make it plausible that the arguments could have come from a majority or minority source. Of importance, though, after participants received the arguments, we manipulated their beliefs about whether those arguments as a whole were considered to be strong or weak (see Tormala & Petty, 2002). By presenting all participants with the exact same message, and only then manipulating their perceptions of argument quality, we expected to eliminate the significant effect of argument quality on attitudes. Replicating the interaction from Study 1 despite these changes would suggest that it is the match between source status and perceived argument quality per se that is key to the attitude certainty effect, rather than some other difference in message recipients' attitudes or thoughts.

Finally, in Study 2 we examined a potential consequence of attitude certainty. As reviewed earlier, attitude certainty is important primarily because it has implications

for other attitude-relevant outcomes. One such outcome is attitude-behavior correspondence. Attitudes held with high certainty tend to be more predictive of behavior than attitudes held with low certainty (e.g., Bizer, Tormala, Rucker, & Petty, 2006; Fazio & Zanna, 1978; see Tormala & Rucker, 2007, for a review). In Study 2, we examined the extent to which any certainty effects obtained also had implications for attitude-behavior correspondence. To assess attitude-behavior correspondence, we measured behavioral intentions, which have been shown to be effective predictors of actual behavior in past research (e.g., Fishbein & Ajzen, 1975). We expected to find greater correlations between attitudes and behavioral intentions under matched compared to mismatched conditions.

Method

Participants and Design

A total of 68 Indiana University undergraduates participated in partial fulfillment of a course requirement. Participants were randomly assigned to conditions in a 2 (source status: majority or minority) × 2 (perceived argument quality: strong or weak) between-participants factorial design.

Procedure

The procedure for Study 2 closely followed Study 1 except that all participants received the exact same message advocating the service program. This message was designed to be moderate in strength. As such, it contained two strong (e.g., student service gives students hands-on experience and training that is beneficial for their future careers) and two weak (e.g., student service prepares students for the real world where leisure time is limited) arguments in favor of the service program. After reading this message, participants completed dependent measures and were thanked and debriefed.

Independent Variables

Source status. The manipulation of source status was identical to Study 1.

Perceived argument quality. After participants read the message advocating the service program, we varied perceived argument quality using a manipulation adapted from past research (Tormala & Petty, 2002, 2004b). Specifically, participants were led to believe that an "independent panel" had rated the quality of each of the arguments in the message and had determined that the arguments were, on average, very strong or very weak. We manipulated perceived argument quality after the message, rather than before it, to prevent this manipulation from affecting attitudes or thoughts about the message as it was being received. Indeed, by the time participants received the manipulation they had already read the arguments and, presumably, formed their attitudes.

As in Study 1, however, it was important to demonstrate that this manipulation did successfully alter perceptions of the message. Therefore, we conducted a posttest to assess perceived argument quality. In this case, 34 participants received the exact same message that was described as strong or weak, just as in the current experiment, and they rated the strength of this message on a scale ranging from 1 (*very weak*) to 9 (*very strong*). As intended, participants rated the ostensibly strong message ($M = 5.17$, $SD = 1.62$) as significantly stronger than the ostensibly weak message ($M = 3.44$, $SD = 1.93$), $F(1, 32) = 8.07$, $p < .01$.

Dependent Measures

Attitudes. Participants reported attitudes on the same scales as in Study 1 ($\alpha = .96$).

Attitude certainty. After reporting attitudes, participants completed two attitude certainty items (adapted from Petrocelli, Tormala, & Rucker, 2007): To what extent would you say your opinion is valid? How certain are you that your opinion of the university service program is justified and rational? Responses, provided on scales ranging from 1 (*not valid at all*, *not certain at all*) to 9 (*extremely valid*, *very certain*), were significantly correlated ($r = .68$, $p < .001$), so we averaged them to form a composite index.

Behavioral intentions. Finally, at the end of the experiment we assessed behavioral intentions using four items adapted from past research (e.g., Tormala et al., 2006). For instance, participants were told that at some point in the future we would recruit students to help in a letter-writing campaign to promote the service program. Participants were asked to indicate how many letters they would be willing to write if we contacted them. The other behavioral items assessed voting intentions with respect to the service program, volunteering to make phone calls in favor of the program, and willingness to promote the program on campus. Participants responded to each of these items on scales ranging from 1 to 9, with higher values representing more favorable behavioral intentions. Responses to the four items were highly consistent ($\alpha = .83$), so we averaged them to form a composite index.

TABLE 2: Attitudes, Attitude Certainty, Behavioral Intentions, and Attitude-Intention Correlations as a Function of Source Status and Perceived Argument Quality in Study 2

	Minority Source		*Majority Source*	
	Perceived Argument Quality			
Dependent Measure	*Weak*	*Strong*	*Weak*	*Strong*
Attitudes				
M	4.31	4.56	4.83	5.95
SE	0.32	0.41	0.45	0.47
Attitude certainty				
M	6.75	5.74	5.53	6.67
SE	0.32	0.31	0.34	0.35
Behavioral intentions				
M	2.43	2.21	2.72	3.67
SE	0.43	0.42	0.45	0.47
Attitude-intention correlations				
r	0.83**	0.64*	0.69*	0.76**

NOTE: All scales ranged from 1 to 9.
*$p < .01$. **$p < .001$.

Results

Attitudes

We began by submitting the attitude data to a 2 × 2 ANOVA with source status and perceived argument quality as independent variables. As shown in Table 2, there was a significant effect of source status on attitudes, $F(1, 67) = 4.77$, $p < .04$, such that attitudes toward the service program were more favorable in the majority than the minority condition. The effect of perceived argument quality was not significant, $F(1, 67) = 2.43$, $p > .12$, and there was no interaction, $F < 1$.

Attitude Certainty

The attitude certainty data were submitted to the same 2 × 2 ANOVA. Replicating the findings from Study 1, there were no main effects, Fs < 1, but there was a significant interaction, $F(1, 64) = 10.56$, $p < .003$. As shown in Table 2, the interaction assumed the predicted form. In the minority condition, participants reported greater attitude certainty when message arguments were believed to be weak as opposed to strong, $F(1, 64) = 5.15$, $p < .03$. In the majority condition, participants reported greater attitude certainty when message arguments were believed to be strong as opposed to weak, $F(1, 64) = 5.42$, $p < .03$.

Behavioral Intentions

We submitted behavioral intentions to the same analysis. As shown in Table 2, the results of this analysis paralleled the attitude results. That is, there was a significant effect of source status on behavioral intentions, $F(1, 67) = 3.92$, $p = .05$, such that behavioral intentions were more favorable in the majority than the minority condition. Neither the main effect for perceived argument quality nor the interaction was significant, Fs < 1.

Of course, our primary interest was in attitude-behavioral intention correspondence. Simple attitude-intention correlations for each condition are reported in Table 2. For maximal power to compare the difference in correlations across conditions, we collapsed the source status and perceived argument quality manipulations to examine matched (minority/weak, majority/strong) versus mismatched (minority/strong, majority/weak) conditions. We then conducted a hierarchical regression analysis, predicting behavioral intentions, in which attitudes and match condition (dummy coded: 0 = *matched*, 1 = *mismatched*) were entered as main effect predictors in the first step and their interaction was entered in the second step. This analysis revealed that across conditions, attitudes and behavioral intentions were positively correlated ($\beta = .51$, $p < .001$). Behavioral intentions also were predicted by match condition ($\beta = -.52$, $p < .03$); in general, behavioral intentions were more favorable in the matched compared to the mismatched condition. Of greatest importance, there was a significant interaction between attitudes and match condition in determining behavioral intentions ($\beta = .69$, $p < .007$). As hypothesized, attitudes and behavioral intentions were more strongly correlated under matched ($\beta = .80$, $p < .001$) rather than mismatched ($\beta = .66$, $p < .001$) conditions.

Discussion

The findings from Study 2 extended those of Study 1. When participants received a message from a minority source, they were more certain of their postmessage attitudes when they believed the message was weak rather than strong. When participants received a message from a majority source, they were more certain of their postmessage attitudes when they believed the message was strong rather than weak. Thus, we obtained the predicted interaction even though there was no difference in the message received across conditions. This outcome helps isolate the role of perceived argument quality, rather than other differences that might correspond with an actual argument quality manipulation, in the present effects. Also important,

the behavioral intention data suggest that the attitude certainty effect was consequential. Indeed, we observed greater attitude-behavioral intention correspondence under matched conditions than under mismatched conditions. This finding suggests that participants were more willing to rely on their own attitudes in determining their behavior when the congruence between source status and perceived argument quality produced high rather than low attitude certainty.

STUDY 3

In Study 3 we aimed to shed further light on the nature of the present effects by exploring the conditions under which they do and do not emerge. In particular, we examined cognitive elaboration (i.e., extent of thinking; Petty & Cacioppo, 1986) as a potential moderator of the interaction between source status and perceived argument quality on attitude certainty. As noted earlier, our metacognitive perspective suggests that this interaction stems from a higher order reflection process whereby message recipients think about their own attitudes and the information that fed into those attitudes and then determine their attitude certainty. If true, these effects should require ample processing motivation and ability to emerge.

With this in mind, we created high elaboration conditions for all participants in the first two studies. Had elaboration been set at a lower level, participants might have neglected to engage in the kind of higher order metacognitive thought required to gauge and adjust attitude certainty. However, it could be that the current effects do not require extensive metacognitive thought. Perhaps a quick assessment of the match or mismatch between different pieces of information about an issue would suffice to make one more or less certain of one's attitude. Based on this view, elaboration would not be expected to moderate the interaction between source status and perceived argument quality.

We explored this issue in Study 3 by measuring need for cognition (NC; Cacioppo & Petty, 1982). NC is an individual difference variable that refers to the general tendency to enjoy and engage in effortful thinking. High NC individuals tend to engage in extensive elaboration when they receive persuasive messages or other information, whereas low NC individuals do not (Cacioppo, Petty, Feinstein, & Jarvis, 1996). Thus, we expected NC to moderate the results of Studies 1 and 2 such that the Source Status × Perceived Argument Quality interaction would be observed among those high but not low in NC. Such a finding would be compatible with the notion that the current effects stem from a thoughtful process of metacognitive reasoning.

Method

Participants and Design

A total of 81 Indiana University undergraduates participated in partial fulfillment of a course requirement. Participants were randomly assigned to source status (minority or majority) and perceived argument quality (strong or weak) conditions and completed the NC Scale (Cacioppo, Petty, & Kao, 1984).

Procedure

The procedure for Study 3 was very similar to that of Study 2, including the exact same message advocating the service program, but we made two important changes. First, all participants completed the NC Scale at the end of the study. Second, to accommodate this change and allow NC to pick up meaningful variance in processing activity, we reduced the personal relevance of the service program. Specifically, we led all participants to believe that the service program was being considered at Oklahoma State University for implementation in 2015 (see Petty & Cacioppo, 1979; Tormala & DeSensi, 2008). This modification was important because past research suggests that although low NC individuals generally think less deeply than high NC individuals, they can and do process extensively when motivated by some salient situational factor (e.g., Priester & Petty, 1995). Had we used a topic of high personal relevance, then even low NC participants might have engaged in considerable elaboration, which would undermine our test of moderation. Thus, we used a low relevance topic to allow NC to determine processing levels.

Independent Variables

Source status. The manipulation of source status was identical to the manipulation used in the first two studies.

Perceived argument quality. The manipulation of perceived argument quality was the same as in Study 2.

Need for cognition. At the end of the study, participants completed the NC Scale (Cacioppo et al., 1984). This measure consists of 18 items (e.g., "I find satisfaction in deliberating hard for long hours") accompanied by scales ranging from 1 (*extremely uncharacteristic of me*) to 5 (*extremely characteristic of me*). After reverse coding the appropriate items, responses were summed to form a composite NC index ($\alpha = .86$). Scores ranged from 35 to 82, with higher numbers reflecting greater NC.

Dependent Measures

Attitudes. Participants reported attitudes on the scales used in Studies 1 and 2 ($\alpha = .96$).

Attitude certainty. After reporting attitudes, participants completed the attitude certainty items used in Study 2. Responses were significantly correlated ($r = .50$, $p < .001$), so we averaged them to form a composite index.

Results

Attitudes

We began by submitting attitudes to a hierarchical regression analysis. Following the recommendation of Cohen, Cohen, West, and Aiken (2003), source status (dummy coded: *minority* = 0, *majority* = 1), perceived argument quality (dummy coded: *weak* = 0, *strong* = 1), and NC (continuous, mean-centered) were entered as predictors in the first step; all two-way interactions were entered in the second step; and the three-way interaction was entered in a third step. This analysis revealed a significant main effect for source status ($\beta = .41$, $p < .001$). Replicating our earlier findings, attitudes toward the service program were more favorable in the majority ($M = 5.69$, $SD = 1.65$) rather than minority ($M = 4.08$, $SD = 1.81$) condition. There also was a significant interaction between NC and perceived argument quality ($\beta = .28$, $p < .05$), indicating that perceived argument quality affected attitudes among high ($\beta = .39$, $p < .02$) but not low ($\beta = -.12$, $p > .47$) NC individuals, based on predicted means at +1 and –1 *SD* on the NC index, respectively. There were no other significant effects, ps > .11.

Attitude Certainty

We submitted the attitude certainty data to the same hierarchical regression analysis. The only significant effect to emerge in this case was the three-way interaction between source status, perceived argument quality, and NC ($\beta = .47$, $p < .05$). As illustrated in Figure 1 (which plots predicted means at +1 and –1 *SD* on the NC index), this interaction assumed the predicted form. That is, among high NC participants, there was a significant Source Status × Perceived Argument Quality interaction on attitude certainty ($\beta = .45$, $p < .01$); participants in the minority source condition were more certain of their attitudes when they believed they received weak rather than strong arguments ($\beta = -.48$, $p < .04$), whereas participants in the majority source condition tended to be more certain when they believed they received strong rather than weak arguments ($\beta = .43$, $p = .07$). Low NC individuals showed only a main effect of source status ($\beta = -.44$, $p < .02$), suggesting greater attitude certainty in the minority compared to the majority condition.

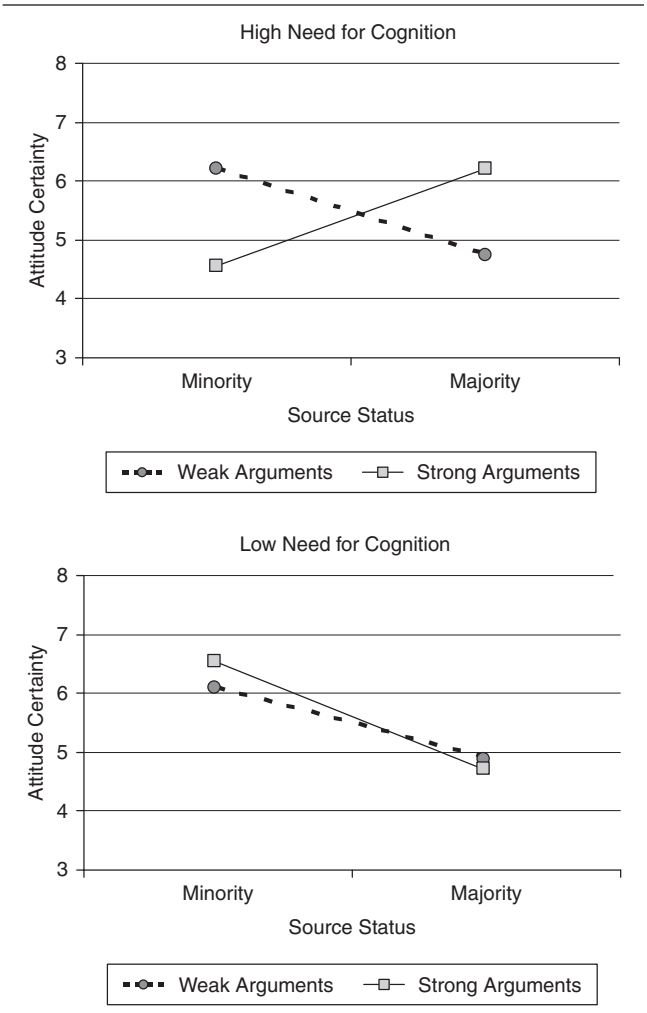

Figure 1 Attitude certainty as a function of source status, perceived argument quality, and need for cognition in Study 3.
NOTE: Plot depicts predicted means at +1 (high) and –1 (low) *SD* on the need for cognition index.

Discussion

Study 3 revealed that the key interaction between source status and perceived argument quality was moderated by processing motivation—specifically, need for cognition. As hypothesized, only when participants were high in processing motivation (high NC) did the interaction emerge. When participants were low in processing motivation (low NC), there was no interaction between source status and perceived argument quality. Among low NC participants, we found only a main effect of source status on attitude certainty. Interestingly, this main effect suggested that participants were more certain of their attitudes in the minority rather than majority condition. The direction of this effect is opposite to what was found by Tormala et al. (2007), though all participants in the Tormala et al.

studies were placed in a high elaboration context. Perhaps nonthinkers (e.g., low NC, low relevance) simply feel more certain when this seemingly unpleasant campus policy is endorsed by just a minority of their peers, whereas thinkers (e.g., high NC, high relevance) engage in the more complex metacognitive reasoning that we have outlined.

GENERAL DISCUSSION

Recent research has taken a metacognitive perspective on minority influence, suggesting that when people receive persuasive messages from minority sources, they can lose attitude certainty when they perceive that they have based their attitudes on the sources' minority status (Tormala et al., 2007). The present research sought to extend these findings. We explored the possibility that when people receive persuasive messages from minority or majority sources, they reflect not only on source status, but also on other aspects of the persuasive message—for example, the message arguments. We proposed a matching hypothesis, predicting that attitude certainty would be higher when source status and perceived argument quality matched rather than mismatched.

The results of three studies were consistent with this hypothesis. In Study 1, participants who received a persuasive message from a minority source tended to be more certain of their attitudes when that message contained weak rather than strong arguments. In contrast, participants who received a message from a majority source tended to be more certain of their attitudes when that message contained strong rather than weak arguments. In other words, participants reported greater certainty under matched than mismatched conditions, and this effect was independent of attitude valence and extremity. Study 2 replicated this interaction using a manipulation of perceived rather than actual argument quality. Even when actual message arguments were identical across conditions, participants' beliefs that the arguments were strong or weak interacted with source status to determine attitude certainty. Study 2 was also important in that it uncovered a consequence of the attitude certainty effect. In particular, participants' postmessage attitudes were more predictive of their behavioral intentions when source status and perceived argument quality matched (high certainty) rather than mismatched (low certainty). In Study 3, we found that the Source Status × Perceived Argument Quality interaction on attitude certainty was moderated by need for cognition. Specifically, the interaction only emerged among high NC individuals, consistent with the notion that it stemmed from a thoughtful process of metacognitive reasoning, as hypothesized.

By examining both source status and perceived argument quality, rather than just source status, the present studies painted a broader and more interactive picture of minority/majority source effects on attitude strength than was available from past research. Indeed, the Tormala et al. (2007) research focused primarily on identifying the circumstances under which attitude certainty was reduced following exposure to minority sources. Other research exploring attitude strength effects in minority/majority source settings suggests that attitudes are sometimes quite strong following exposure to minority sources (e.g., Martin, Hewstone, & Martin, 2003; Martin, Martin, Smith, & Hewstone, 2007). The current research, informed by our metacognitive perspective, takes a broader view in suggesting that attitude strength (e.g., attitude certainty, attitude-behavior correspondence) can be high or low following minority or majority messages, depending on one's perceptions of the arguments contained in the message.

The present research also extends prior findings by uncovering a new type of hidden influence following messages from minority sources. Classic research on minority influence suggested that although minority sources tended to be resisted on an immediate and direct level, they sometimes had a hidden influence by inducing delayed or indirect attitude change (for reviews see Crano & Seyranian, 2007; Wood et al., 1994). Tormala et al. (2007) extended the range of effects known to follow messages from minority sources by showing that these messages could undermine attitude certainty and thus make attitudes more susceptible to a subsequent persuasive message. Study 2 of the current research goes further still in demonstrating that minority messages can have influence by undermining attitude-behavior correspondence. Even when minority messages have failed to effect attitude change, then, they can exert influence by reducing the target attitude's likelihood of guiding subsequent behavior.

Of course, this influence for minority messages only emerged under some conditions—specifically, when message arguments were believed to be strong. Although our metacognitive perspective and findings are new, moderation of source status effects by perceived argument quality is compatible with past minority influence research. For example, the Tormala et al. (2007) studies exploring attitude certainty effects and responses to a subsequent persuasive attack largely focused on situations in which people received strong arguments from a minority source. Similarly, Crano and Chen (1998), who examined indirect attitude change and delayed focal change in response to minority messages, found that strong arguments (among other factors) played an important role in facilitating these effects. Furthermore, past research exploring source status effects on information processing (e.g., Baker & Petty, 1994; Gordijn

et al., 2002; Martin & Hewstone, 2003) has shown that minority sources sometimes gain immediate and direct persuasiveness by presenting strong arguments. Thus, the accumulated evidence points to strong argument conditions as one key to unlocking the influence of persuasive messages from minority sources. Provided that message recipients are at least somewhat motivated and able to process, it could be that weak arguments from minority sources simply do not exert the kind of hidden effects now known to be possible using strong arguments from the same sources.

New Directions

In future research, it would be useful to explore new potential moderators of the current effects in an effort to advance our understanding of when and why they occur. For instance, it could be that the matching effects we observed would be moderated by message recipients' preference for consistency (Cialdini, Trost, & Newsom, 1995) or need for structure (Neuberg & Newsom, 1993). Perhaps it is primarily those individuals who have a high preference for consistency or high need for structure who show greater attitude certainty following matched compared to mismatched source and message information. Among individuals low on these dimensions, source-message matching might have less effect on attitude certainty. Alternatively, to the extent that individuals low on these dimensions actively enjoy inconsistency or ambiguity, perhaps they would show a reverse effect such that they hold their attitudes with greater certainty following mismatched compared to matched information.

In addition, it might be useful to examine people's preferences for basing their attitudes on one type of information (e.g., message arguments) over another (e.g., source status). In a recent series of studies, Tormala and DeSensi (2008) found that when people receive persuasive messages, they can reflect on both the information on which they based their attitudes and the information on which they preferred to base their attitudes. When perceived and preferred attitude bases are congruent, people feel little attitude conflict. When perceived and preferred attitude bases are incongruent, however, attitude conflict can be quite high. In one study, Tormala and DeSensi presented individuals who were high or low in NC with a persuasive message from a minority source. After participants had read the message and reported their attitudes, they were led to believe that they had or had not based their attitudes on the source's minority status. Results indicated that high NCs felt more attitude conflict when they believed that they had rather than had not based their attitudes on source status. Interestingly, though, low NCs showed the exact opposite pattern, suggesting that they explicitly preferred to base their attitudes on source status. In future research, it would be useful to examine the extent to which attitude basis preferences, as determined by elaboration or other variables, might interact with source status–argument quality matching to determine attitude certainty and other strength-related outcomes.

Conclusion

The present research sought to extend recent work exploring the role of metacognitive factors in minority/majority influence. Across studies, we found that participants felt more certain of their attitudes when they received messages from majority sources that were (or were believed to be) strong as opposed to weak and when they received messages from minority sources that were (or were believed to be) weak as opposed to strong. Thus, attitude strength following messages from minority or majority sources depends on numerous assessments of the persuasive evidence and the extent to which these assessments are aligned. We hope that these findings will open the door to more dynamic explorations of the hidden effects of minority and majority sources on attitudes and other forms of social judgment.

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