

Source Credibility and Attitude Certainty: A Metacognitive Analysis of Resistance to Persuasion

Zakary L. Tormala
Indiana University

Richard E. Petty
Ohio State University

Recent research (Tormala & Petty, 2002) has demonstrated that when people resist persuasion, they can perceive this resistance and become more certain of their initial attitudes. This research explores the role of source credibility in determining when this effect occurs. In two experiments, participants received a counterattitudinal persuasive message. When participants counterargued this message, they became more certain of their attitudes, but only when it came from a source with high expertise. When the message came from a source with low expertise, resisting it had no impact on attitude certainty. This effect was shown using both a traditional measure of attitude certainty (Experiment 1) and a well-established consequence of certainty—the correspondence between attitudes and behavioral intentions (Experiment 2). In addition, the effect was confined to high elaboration conditions, and occurred even when participants were not explicitly instructed to counterargue. These results are consistent with a metacognitive framework proposed to understand resistance to persuasion.

Consider a typical advertising scenario in which a consumer is exposed to a commercial advertisement promoting Pepsi. In this ad, a high credibility source (e.g., a representative of *Consumer Reports*) describes Pepsi's many positive features. If the ad recipient is already a Pepsi drinker, the ad will likely seem appealing, and may even lead to more favorable attitudes toward Pepsi. However, if the person initially dislikes Pepsi (preferring Coke, for example) the outcome could be very different. Under these circumstances, the ad is incongruent with the initial attitude, so the ad recipient is more likely to resist persuasion, leaving the initial attitude unchanged in terms of valence (it is still negative toward Pepsi) and extremity (it did not become less negative). This research examines whether people who appear to have resisted persuasion might have had their attitudes impacted in other, more hidden ways. Specifically, we explore the possibility that when people successfully resist a message, their resistance can have implications for the certainty with which they hold their initial attitudes.

What is attitude certainty, and why do we care about it? In short, attitude certainty is a dimension of attitude strength (Petty & Krosnick, 1995) that refers to a person's sense of conviction about his or her attitude (Abelson, 1988), or the extent to which a person views his or her attitude as correct (Gross, Holtz, & Miller, 1995). In other words, the certainty, or confidence, with which an attitude is held can be a reflection of the perceived validity of that attitude. In past research, attitude certainty has been shown to derive from multiple sources, such as direct knowledge of or experience with an attitude object (Fazio & Zanna, 1978; Wu & Shaffer, 1987), perceived social consensus (Festinger, 1950, 1954), and the ease with which attitude-congruent information can be generated (Haddock, Rothman, Reber, & Schwarz, 1999). Although the precise mechanism for these effects has not always been clear, one intriguing possibility is that certainty sometimes increases as the distribution of acceptable beliefs and attitudes surrounding one's attitude (i.e., one's latitude of acceptance) narrows (see Wyer, 1973). Of course, such shrinking of one's latitude of acceptance could also be a function of the perceived validity or correctness of the attitude (Petty & Wegener, 1999) or the subjective weight placed on it (e.g., Anderson, 1971).

The primary reason researchers have been interested in attitude certainty over the years is that certainty has been shown to have a number of important consequences. For example, the more certain people are of their attitudes, the more these attitudes tend to guide behavior (e.g., Fazio & Zanna, 1978), resist persuasion (e.g., Babad, Ariav, Rosen, & Salomon, 1987; Bassili, 1996; Krosnick & Abelson, 1992; Swann, Pelham, & Chidester, 1988; Wu & Shaffer, 1987), and persist over time even when they are not under direct attack (e.g., Bassili, 1996). Although it is beyond the scope of this research to determine exactly why attitude certainty has these consequences, one plausible explanation is that because high-certainty attitudes are viewed as more correct, or valid, they serve as stronger guides for future judgments and behavior. In any case, given these consequences, it is no surprise that researchers have viewed attitude certainty as important to understanding social and consumer behavior.

RESISTANCE TO PERSUASION

Although attitude change and persuasion researchers over the years have given priority to the study of successful persuasion, they have also attempted to understand resistance to persuasion—the process of defending one’s attitude against persuasive attack. In this resistance research, much has been learned. For example, people tend to resist persuasion when they are forewarned of someone’s persuasive intent (Hass & Grady, 1975; Papageorgis, 1968; Petty & Cacioppo, 1979a), when they perceive that a message threatens their personal freedom (Brehm, 1966), and when their attitudes are particularly strong (Petty & Krosnick, 1995). Furthermore, past research has revealed that there are a number of very distinct mechanisms through which people resist persuasion (for reviews, see Jacks & Cameron, 2003; Petty, Tormala, & Rucker, 2004). Perhaps the most frequently studied mechanism is counterarguing, which is the act of generating unfavorable cognitive responses against a message (e.g., Brock, 1967; Killeya & Johnson, 1998; Petty, Ostrom, & Brock, 1981). In addition to counterarguing, people have been shown to resist persuasion by bolstering their initial attitudes (Lewan & Stotland, 1961; Lydon, Zanna, & Ross, 1988); derogating the source of a persuasive message (e.g., Tannenbaum, Macauley, & Norris, 1966); selectively avoiding attitude-incongruent information (Frey, 1986; Gilbert, 1993); or experiencing negative affect, such as anger or irritation, and attributing that affect to the persuasive message or its source (e.g., Cacioppo & Petty, 1979; Zuwerink & Devine, 1996). People sometimes use these strategies selectively, depending on how successful they are likely to be (e.g., Ahluwalia, 2000).

Interestingly, in all of this research, it has been assumed that when people are successful in resisting persuasion, their initial attitudes are completely unchanged. Accordingly, it has been assumed that when persuasion practitioners fail in their attempt to persuade, they have at least done no harm to

their cause. Recent research, however, suggests that this may not always be true. Tormala and Petty (2002) demonstrated that when people resist persuasive attacks, those attacks can sometimes backfire by making the target attitude stronger than it already was. Specifically, Tormala and Petty found that under some conditions, successfully resisting persuasion can boost the certainty with which the initial attitude is held, thus making that attitude more resistant to future persuasion and more predictive of behavioral intentions. Of course, the Tormala and Petty findings were in some ways consistent with McGuire’s (1964) classic work on inoculation theory, which demonstrated that exposure to initial attacks can increase resistance to subsequent attacks. However, there are a number of important distinctions between the two frameworks, as we discuss later.

How does resistance strengthen attitudes? Tormala and Petty (2002) proposed a metacognitive framework to account for these findings. In essence, *metacognition* refers to people’s thoughts about their thoughts, or their awareness of their own cognitive states and processes (for reviews, see Bless & Forgas, 2000; Jost, Kruglanski, & Nelson, 1998; Yzerbyt, Lories, & Dardenne, 1998). The Tormala and Petty framework proposes that when people resist persuasion, they can perceive this resistance, reflect on it, and form specifiable attribution-like inferences about their own attitudes. In a series of experiments, participants were presented with a counterattitudinal message and were instructed to counterargue it. When they perceived the message to be strong but successfully resisted being influenced by it, the certainty with which they held their initial attitudes increased (as did future resistance and attitude-behavioral intention correlations). When they perceived the message to be weak, however, the certainty with which they held their initial attitudes was unaffected by their success in resisting persuasion (as were future resistance and attitude-behavioral intention correlations). Importantly, Tormala and Petty found that changes in attitude certainty actually mediated subsequent consequences. Specifically, the more certain people became of their attitudes after resisting persuasion, the more these attitudes predicted behavioral intentions. Controlling for certainty, the impact of resisting on attitude-intention correspondence disappeared. These findings suggest at least two things. First, people sometimes think about their own resistance (i.e., engage in metacognition) and make inferences based on this reflection. Second, consistent with the logic of attribution theory (see Gilbert, 1998; Strack & Förster, 1998), resistance only increases certainty when situational factors suggest that the resistance is diagnostic (or informative) with respect to the validity of the initial attitude. Resisting a message believed to be strong presumably was considered diagnostic as to the attitude’s validity, or correctness. Resisting a message perceived to be weak, however, presumably was less diagnostic, because it left open the possibility that stronger arguments existed that might not have been resisted.

Tormala and Petty (2002) provided support for their metacognitive framework in several ways. First, in each of their experiments, the mere perception of message strength was varied. In other words, people resisted the exact same arguments across conditions, but made very different judgments of their attitudes (i.e., certainty) depending on their perceptions of those arguments. Second, Tormala and Petty found that the effects of resistance on certainty were limited to conditions in which participants perceived that they had resisted persuasion (i.e., that their attitudes had not changed), which is a metacognitive assessment. Third, Tormala and Petty found that increases in certainty were mediated by people's subjective assessments of how effective or successful their resistance was (e.g., how strong their counterarguments were, how effective their counterarguments had been). The more successfully people thought they had resisted, the more certain they became of their attitudes. This was perhaps the most compelling evidence for the intervening metacognitions posited to drive the certainty effects. Finally, participants' counterarguments were analyzed in terms of their quantity, quality, and general content or focus. There were no differences across conditions on any of these dimensions. In summary, then, participants resisted the same exact message in the same way and to the same degree, but reached different conclusions about their own attitudes depending on their perceptions of the strength of the attack and the strength of their own resistance.

In follow-up research, Tormala and Petty (in press) examined the role of elaboration, or extent of thinking (see Petty & Cacioppo, 1986; Petty & Wegener, 1999), in moderating the effects of resistance on certainty. In accord with prior metacognition research (Briñol, Petty, & Tormala, 2004; Petty, Briñol, & Tormala, 2002; Tormala, Petty, & Briñol, 2002), the effects of resistance on certainty were expected to be most likely to occur under relatively high elaboration conditions. Indeed, only when people have the motivation and ability to think should their thoughts about and perceptions of their own attitudes and cognitive processes matter. Using both self-reported situational elaboration (SE) and more stable individual differences in the need for cognition (NC; Cacioppo & Petty, 1982), Tormala and Petty found that elaboration moderated the original effects. When elaboration was high (high SE or high NC), participants became more certain of their attitudes after resisting a perceived strong (but not perceived weak) message. When elaboration was low (low SE or low NC), resisting persuasion had no such effects.

OVERVIEW

This research extended the Tormala and Petty (2002, in press) findings by exploring a new variable that might moderate the impact of resistance on attitude certainty. Specifically, we examined the role of source credibility. Credibility was selected because of its historic importance in the

psychological and marketing literatures on persuasion and because of its pervasiveness in everyday advertising. We also sought to extend prior research in other ways, which are outlined later.

Source Credibility

Source credibility refers to a message source's perceived ability or motivation to provide accurate and truthful information (e.g., Kelman & Hovland, 1953). That is, the source of a persuasive message can be deemed credible if he or she is an expert (e.g., Rhine & Severance, 1970) or is trustworthy (e.g., Mills & Jellison, 1967). Source credibility has been of long-standing interest to persuasion researchers (e.g., Hovland & Weiss, 1951; Rhine & Severance) with the general finding that high credibility sources elicit more persuasion than low credibility sources (see Petty & Wegener, 1998, for a review and exceptions).

In recent years, attention has been fixed less on the basic effect of source credibility on persuasion and more on the moderators and mediators of this effect. Consistent with the elaboration likelihood model (ELM; Petty & Cacioppo, 1986; Petty & Wegener, 1999), researchers have highlighted several mechanisms through which source credibility can influence persuasion, depending on situational or individual difference factors. Under low elaboration conditions, for example, expertise appears to invoke an "experts are correct" heuristic (e.g., Petty, Cacioppo, & Goldman, 1981). Under high elaboration conditions, however, credibility influences persuasion by biasing the nature of thoughts that come to mind (Chaiken & Maheswaran, 1994), affecting the confidence people have in their individual thoughts or cognitive responses (Briñol et al., 2004), or being evaluated as a piece of evidence relevant to the central merits of the issue under consideration (Kruglanski & Thompson, 1999). Finally, when elaboration is not constrained to be high or low, source credibility can influence the amount of processing that occurs (e.g., DeBono & Harnish, 1988; Heesacker, Petty, & Cacioppo, 1983).

As mentioned earlier, the primary aim of this research is to explore the possibility that source credibility can also moderate the effect of resistance on certainty. If source credibility is found to play a role in this regard, this finding would significantly advance our understanding of the impact source credibility can have in persuasion situations. As our brief review suggests, research has traditionally focused on the mechanisms through which increasing credibility increases persuasion. This research is the first to explore the impact of credibility on attitudes when attitude change has not occurred according to conventional standards (i.e., changes in the valence or extremity of an attitude rating). We postulate that even when source credibility does not lead to persuasion, it can have a specifiable and important impact on an attitude by altering the strength, or certainty, with which that attitude is held.

We hypothesized that people become more certain of their attitudes after resisting persuasion from a high credibility source, but not after resisting persuasion from a low credibility source. Following the logic of Tormala and Petty (2002), we submit that people should assume that their position is valid if it can withstand an attack from an expert. The same assumption cannot be made as confidently about an attitude than withstands an attack from a nonexpert, primarily because it remains a possibility that an expert would have been more persuasive or might have presented better arguments. Consistent with this reasoning, messages from high credibility sources have been shown to be perceived as more valid and persuasive than messages from low credibility sources, even when the information in the messages is objectively the same (Kaufman, Stasson, & Hart, 1999). Therefore, if people resist a message from a high credibility source, they might assume that they would also resist a message on the same topic from a low credibility source. The opposite, however, is not necessarily true. In short, resisting a message from a high rather than low credibility source should be viewed as more diagnostic, or informative, with respect to the validity of the target attitude.

Spontaneous Resistance

The second general objective of this research is to enhance the generalizability of the metacognitive perspective by examining situations in which people engage in spontaneous resistance of a message. In “real-world” persuasion contexts (e.g., advertising scenarios), people are not typically prompted for counterarguments. In each of our prior experiments on resistance and certainty (Tormala & Petty, 2002, 2003), however, resistance was induced by directly asking participants to list as many counterarguments as they could against a persuasive message. This procedure might have activated concerns with resistance that are not typically present. That is, people might be less likely to draw inferences about their attitudes from their resistance if they have spontaneously resisted. To address this issue, we present one study (Experiment 2) in which we induce counterarguing more naturally.

Manipulating Elaboration

The third and final objective of this research is to manipulate elaboration experimentally. Although the Tormala and Petty (in press) findings were clearly compatible with the notion that inferences of certainty following resistance are most likely to occur when elaboration is high, they relied exclusively on correlational measures (e.g., self-reported cognitive elaboration, need for cognition). These measures have proven reliable in past research (see Petty et al., 2002; Cacioppo, Petty, Feinstein, & Jarvis, 1996; respectively). Like all correlational measures, however, they are limited with respect to causal inference. For example, based on the

prior research alone it is not entirely clear if it is elaboration per se that moderates the effects, or if some other variable that happens to correlate with self-reported elaboration and need for cognition is the key. Thus, we experimentally manipulated elaboration in this research (Experiment 1) using a standard cognitive load paradigm (see Gilbert & Hixon, 1991). We hypothesized that the effects of source credibility on attitude certainty would be confined to low cognitive load (high elaboration) conditions. Only under these conditions should individuals have the ability to think about their own resistance and form inferences about their attitudes that would have implications for attitude certainty.

EXPERIMENT 1

In the first experiment, participants were asked to read an advertisement and generate counterarguments against it under high or low cognitive load. The advertisement contained persuasive arguments from a source that was either high or low in credibility. We predicted that when participants resisted the ad (because they counterargued it), source credibility and cognitive load would interact in determining attitude certainty. Specifically, we expected that under low cognitive load, participants would become more certain of their initial attitudes after resisting an ad from a high credibility source, but not after resisting an ad from a low credibility source. Participants may be too distracted to attend to their metacognitive experience of resistance when cognitive load is high. Under these conditions, therefore, resisting persuasion might have little impact on attitude certainty regardless of source credibility.

Method

Participants and Design

Ninety-three Ohio State University undergraduates participated in partial fulfillment of a requirement for their introductory psychology courses. Participants were randomly assigned to experimental conditions in a 2 (source credibility: high or low) \times 2 (cognitive load: high or low) + 1 (external control condition) between-participants design.

Procedure

All sessions were conducted on computers using MediaLab 2000 software (Jarvis, 2000). Participants were seated in a room containing 10 computer stations with partitions between them, and were asked to read the instructions on their monitors and begin the experiment. At the outset of the experiment, participants were led to believe they were taking part in a market research study investigating people's reactions to advertisements. Participants were then informed that we were particularly interested in the counterarguments,

or negative thoughts, they might have when they were exposed to different kinds of advertisements. To study such thoughts, we told participants we would present advertisements and ask them to list the arguments they could generate against them.

Following these general instructions, all participants learned that they would first be reading about a new aspirin product called *AspirinForte*, which had supposedly received recent attention in the news. In actuality, this was the only advertisement presented. Participants were told that we were especially interested in *AspirinForte* as it had been receiving negative press in the media. Specifically, participants read that “in preliminary trials, human test subjects complained that the pills were difficult to swallow and unpleasant tasting.” Furthermore, participants were led to believe the aspirin contained a chemical additive that was “harmless to humans who ingest it, but potentially damaging to the environment when produced in mass quantities.” This information was intended to make initial attitudes toward the product somewhat negative, which would then make the ad counterattitudinal.

Following the basic introduction and negative information about the aspirin, participants received the advertisement. The ad, like all other information in the experiment, was presented on the computer screen. At the top of the screen was the name *AspirinForte* in large letters and a picture of the product. Below this image appeared a series of bulleted arguments in favor of *AspirinForte*, as well as a salient note identifying the source of the arguments (see source manipulation description). In essence, the ad claimed that *AspirinForte* lasted as long as other aspirins, was safe, had a unique microcoating that made it gentle on the stomach, was free of caffeine and sodium, was affordable, and received a relatively high score (8 out of 10) in quality and efficiency testing. This information was designed to be moderate in strength, so it could be viewed as coming from an expert or inexperienced source.

After viewing the advertisement for as long as they wished, participants received the following instructions:

Now that you have seen the advertisement for the product, we would like to collect the arguments you can raise against it. Below is the first of several boxes you can use to list your arguments against the product and/or advertisement. Please do your best to list as many as you can, but enter only one argument per box. Press ‘enter’ after each one, and press ‘escape’ when you are done.

Counterarguments were then listed in a series of boxes that appeared on the computer screen one at a time. Following the counterargument task, participants completed dependent measures. Before leaving the session, participants were fully debriefed as to both the fictional nature of the materials presented and the purpose of the research.

Independent Variables

Cognitive load. Immediately before viewing the ad, participants were exposed to the cognitive load manipulation. The cognitive load induction began with text on the computer screen discussing the importance of making the experiment as realistic as possible. Participants were told that in their natural environments, people are often exposed to ads and other persuasive communications in busy or distracting contexts, and that it was important to simulate these conditions in the experiment. Participants were then told that we would like them to mentally rehearse a number while viewing the ad and listing counterarguments. Participants were told that this technique had been shown in prior research to effectively mimic real-world conditions. At the bottom of the same screen, participants were presented with the number they were to rehearse, which was ostensibly random. In the high-load condition, an 8-digit number (46732418) was displayed. In the low-load condition, a 3-digit number (321) was displayed. Participants were permitted to rehearse this number for as long as they wanted before continuing on to the ad and counterargument task, and reported it immediately after the counterargument procedure, thus relieving them of the load just prior to completion of the dependent measures. In other words, they were distracted as they read the ad and listed counterarguments, but not as they completed the critical measures.¹ This type of manipulation has been demonstrated in past research to be an effective way to influence the extent of processing (e.g., Gilbert & Hixon, 1991; Krull, 1993; Macrae, Hewstone, & Griffiths, 1993; Yost & Weary, 1996).

Source credibility. Participants were led to believe the information contained in each advertisement had been assembled by either an expert or an inexperienced source. Expertise information was plainly apparent at the top of the ad, placed immediately above the bulleted arguments in favor of *AspirinForte*. In the high-credibility (expert) condition, the ad reported that the information had been assembled by a research team from the American Medical Association. In the low-credibility (nonexpert) condition, the ad reported that the information had been assembled by a student at a local high school who “conducted research on *AspirinForte* for his freshman science project.”

Control condition. A subset of participants ($n = 17$) was randomly assigned to an external control condition. In

¹We maintained the cognitive load manipulation throughout the counterargument procedure to ensure that participants in the high-load condition would have a harder time elaborating for as long as possible without contaminating the attitude and attitude certainty data. If high load participants had not been distracted during the thought listing task, they might have been able to engage in memory-based thinking while counterarguing, which could have attenuated elaboration differences between the high- and low-load conditions by the time participants completed key measures.

this condition, participants were given the same basic introduction to the experiment as participants in the other conditions, and they were introduced to *AspirinForte* with the same initial negative information. Immediately after this information, however, control participants proceeded directly to the dependent measures, without receiving the advertisement or listing any counterarguments. Thus, the control condition provided a baseline for the attitude and attitude certainty measures. This baseline allowed us to determine not only whether persuasion or resistance occurred (resistance would be indicated by attitudes that did not differ from the control), but also whether attitude certainty increased relative to baseline.

Dependent Measures

Attitudes. Following the ad and counterarguing procedure (or immediately following the initial information in the control condition), participants reported their attitudes toward *AspirinForte*. Participants rated the product on a series of scales ranging from 1 to 9 with the following anchors: *dislike very much*–*like very much*, *very bad*–*very good*, *very unfavorable*–*very favorable*, *very negative*–*very positive*, and *very harmful*–*very beneficial*. On each scale, higher numbers reflected more favorable attitudes. Internal consistency was high ($\alpha = .84$), so responses were averaged to form a composite attitude index.

Attitude certainty. After reporting their attitudes toward *AspirinForte*, participants completed an attitude certainty measure, which contained a single question: “How certain are you of your attitude toward *AspirinForte*?” Responses to this item (adapted from Fazio & Zanna, 1978; Tormala & Petty, 2002) were provided on a scale ranging from 1 (*not at all certain*) to 9 (*extremely certain*).

Counterarguments. To examine potential differences in the extent or nature of people’s resistance, we also analyzed the number and quality of counterarguments generated by participants in the ad conditions. To assess quality, two judges, unaware of experimental conditions and hypotheses, rated each counterargument listed on a scale ranging from 1 (*not at all convincing*) to 9 (*extremely convincing*). Participants thus ended up with two quality scores, one representing the average of the individual ratings from one judge and the other representing the average of the individual ratings from the other judge. Mean quality ratings of the two judges were highly correlated ($r = .86, p < .001$), so we averaged them to form a single quality index.

Manipulation checks. At the end of the experiment, following the attitude and attitude certainty measures, manipulation check items were included. To assess perceived source credibility, one question asked participants to report how much expertise they thought the source of the informa-

tion in the advertisement had. Participants responded to this question on a scale ranging from 1 (*none at all*) to 9 (*very much*). As a check for the cognitive load manipulation, participants completed three items designed to assess differences in situational elaboration. Participants were asked to report the degree to which they paid attention to the information in the advertisement, the extent to which they thought about the product and the information in the advertisement, and the extent to which rehearsing the number took their attention away from reading the information in the ad (reverse scored). Participants answered these questions on scales ranging from 1 (*none at all*) to 9 (*very much*). Responses to these items had high internal consistency ($\alpha = .83$), so they were averaged to form a composite self-reported elaboration index. Because participants in the control condition were not exposed to the manipulations, they did not complete the manipulation checks.

Perceived difficulty of resistance. By manipulating cognitive load, we sought to affect participants’ ability to think, and there is clear precedent for this type of manipulation. Nevertheless, it is possible that in addition to varying elaboration, our load manipulation might have affected the perceived difficulty of resisting. Indeed, under high load it might have been considerably more difficult to generate counterarguments (or at least compelling ones), and this perception of difficulty, rather than elaboration, could conceivably have had an impact on attitude certainty. To address this issue, we included an item at the end of the experiment asking, “Overall, how difficult was it for you to come up with arguments against *AspirinForte*?” Responses to this item, which was adapted from prior research (e.g., Tormala et al., 2002), were given on a scale ranging from 1 (*not difficult at all*) to 9 (*very difficult*).

Results

Preliminary Analyses

Manipulation checks. Both the source credibility and cognitive load manipulations were successful. Participants perceived the source of the message to have more expertise in the high-credibility condition than in the low-credibility condition ($M_s = 5.19$ and 2.78 , respectively), $F(1, 72) = 40.15, p < .0001$, and this effect did not depend on cognitive load, $F < 1$. Similarly, participants reported a higher level of elaboration in the low-load condition than in the high-load condition ($M_s = 6.80$ and 5.72 , respectively), $F(1, 72) = 10.86, p < .01$, and this effect did not depend on source credibility, $p > .22$.

Perceived difficulty of resistance. Analysis of the perceived difficulty data indicated that there were no differences in the amount of difficulty participants experienced in generating counterarguments across conditions, $F_s < 1$. Of greatest importance, participants perceived it as equally diffi-

TABLE 1
Means for the Key Measures in Experiment 1

Cognitive Load	Source Expertise	
	Low	High
	Attitude	
Low load	4.74 _a	4.64 _a
High load	4.48 _a	5.08 _a
Control	4.25 _a	
	Attitude Certainty	
Low load	6.64 _{a,b}	7.72 _b
High load	6.72 _{a,b}	5.63 _a
Control	6.06 _a	
	Counterarguments	
Quality		
Low load	4.59 _a	4.71 _a
High load	4.36 _a	4.35 _a
Number		
Low load	2.64 _a	2.69 _a
High load	3.67 _a	3.16 _a

Note. Means with unlike subscripts within measure differ at $p < .05$.

cult to generate counterarguments in the high- and low-load conditions ($M_s = 4.70$ and 5.05 , respectively). Thus, perceived difficulty of resistance cannot provide a viable alternative explanation for any certainty effects obtained.

Attitudes

The primary objective of analyzing the attitude data was to determine if participants resisted or were persuaded by the ad. Given the design of this experiment (i.e., $2 \times 2 + 1$), we used a two-pronged approach to analyze these data, which are displayed in Table 1. We began by submitting attitudes to a 2 (source credibility) \times 2 (cognitive load) analysis of variance (ANOVA). This analysis uncovered no differences in attitudes across conditions, $F_s(1, 72) < 2.18$, $p_s > .14$. To determine whether resistance had actually occurred, however, it was necessary to test attitudes in the ad conditions against attitudes in the control condition, where no ad had been presented. Thus, we reinserted the control condition and submitted the attitude data to a one-way ANOVA, treating all five experimental conditions as separate levels of the same factor. In short, there were no differences in attitudes across any of these conditions, $F(4, 88) = 1.63$, $p > .17$, indicating that participants in the ad conditions resisted persuasion.

Attitude Certainty

The certainty data (see Table 1) were also analyzed in a two-pronged fashion. First, we conducted a 2 (source credibility) \times 2 (cognitive load) ANOVA. Consistent with past research on elaboration and attitude strength (see Petty, Haugtvedt, & Smith, 1995, for a review), participants were more certain of their attitudes in the low-load condition than in the high-load condition ($M_s = 7.10$ and 6.16 , re-

spectively), $F(1, 72) = 7.67$, $p < .01$. However, this effect was qualified by an interaction between source credibility and cognitive load, $F(1, 72) = 9.05$, $p < .01$. This interaction indicated that cognitive load influenced attitude certainty in the high-credibility condition, $F(1, 72) = 15.92$, $p < .001$, but not the low-credibility condition, $F < 1$. Viewed differently, when cognitive load was low, participants were more certain of their attitudes in the high-credibility condition than in the low-credibility condition, $F(1, 72) = 4.52$, $p < .04$. When cognitive load was high, the pattern assumed the opposite form, $F(1, 72) = 4.53$, $p < .04$.

Although there were no differences in attitudes across conditions, we also conducted the certainty analysis controlling (i.e., covarying) for attitudes to provide additional evidence that the certainty effects were independent of attitude extremity. Controlling for attitudes, the main effect of cognitive load, $F(1, 71) = 7.41$, $p < .01$, and the load \times expertise interaction, $F(1, 71) = 7.89$, $p < .01$, were still significant. Similarly, controlling for extremity per se (i.e., the difference in attitudes from the midpoint of the attitude scales [5]), the main effect of load, $F(1, 71) = 7.59$, $p < .01$, and the interaction, $F(1, 71) = 8.50$, $p < .01$, were again significant. Neither attitudes nor extremity predicted certainty in these analyses, $F_s < 1$.

It is also important to assess the direction of the certainty effects. Therefore, we reinserted the control condition and analyzed the certainty data separately for low-load and high-load participants. Selecting for low load (plus control), there was a significant effect of source credibility on attitude certainty, $F(2, 53) = 6.35$, $p < .01$. Participants were more certain of their attitudes in the high-credibility condition than in the low-credibility condition and control conditions, $F(1, 53) = 11.57$, $p < .001$, which did not differ from each other, $F(1, 53) = 1.70$, $p > .19$. Selecting for high load (plus control), there were no differences in certainty across conditions, $F(2, 51) = 2.34$, $p > .10$. Between-cell comparisons, using a pooled error term computed for all five conditions, indicated that the only condition in which certainty differed from the control was the low-load, high-credibility condition (see Table 1). In short, under high-elaboration conditions, participants became more certain of their attitudes after resisting persuasion from an expert, but not after resisting persuasion from a nonexpert. This effect did not occur under low-elaboration conditions.

Counterarguments

As noted earlier, we also examined the quality and number of counterarguments generated (means are displayed in Table 1). Because control participants did not list counterarguments, they were not included in this analysis. There were no differences in the quality of counterarguments across conditions, $F_s < 1$. Analysis of the number of counterarguments produced a similar outcome. There was a tendency for participants to list more counterarguments in the high-load condition than in the low-load condition ($M_s =$

3.41 and 2.66, respectively), but this difference was only marginally significant, $F(1, 72) = 3.57, p > .06$, and was not influenced by source credibility, $F_s < 1$. Another view of the persuasiveness of participants' counterarguments might be that it is a multiplicative function of the number and quality of counterarguments generated. To assess this possibility using an index that simultaneously accounted for both number and quality, we computed the sum (rather than mean) of the quality ratings for each participant. Analysis of this index also failed to reveal any differences in counterarguments across conditions, $p_s > .22$.

Intercorrelations

To shed additional light on the relation of attitude certainty with attitudes and participants' counterarguments, we also tested the intercorrelations between these measures. In short, attitude certainty was not correlated with attitudes, $r = -.05, p > .61$, or quality of counterarguments, $r = -.03, p > .78$, and was only marginally correlated with the number of counterarguments, $r = -.20, p < .09$. Certainty tended to increase as the number of counterarguments decreased, consistent with the marginal effect of load on counterarguments. Attitudes were marginally predicted by the number, $r = -.23, p < .06$, but not quality, $r = -.13, p > .28$, of counterarguments; the index based on the sum of quality scores did predict attitudes, $r = -.29, p < .02$. Finally, the number and quality of counterarguments were unrelated, $r = .17, p > .41$. Of importance, the general pattern of correlations was consistent across the high- and low-load conditions. In summary, then, extent of counterarguing was associated with the degree of attitude change (more counterarguments corresponded with less favorable attitudes), but both counterarguments and attitude ratings failed to provide a plausible explanation of the certainty effects.

Discussion

Overall, the data in Experiment 1 corresponded closely with our predictions. Despite comparable resistance across experimental conditions, participants became more certain of their attitudes when they resisted persuasion from an expert source, as long as they had sufficient cognitive resources available (presumably to reflect on the implications of their resistance). There were no differences in participants' counterarguments that could explain the certainty effects. As predicted, participants in the low-load conditions resisted the same persuasive message in the same way using the same number and quality of counterarguments, but made different inferences about their attitudes based on their perceptions of the expertise of the source of the information they resisted.

Interestingly, in the initial analysis of the certainty data (i.e., the 2×2), there was an unexpected decrease in certainty in the expert relative to inexpert source condition when cognitive load was high. Although certainty did not drop significantly below the level of the control, it is intriguing that this

tendency existed. It could be that cognitive load led some participants to perceive their resistance as less successful, causing them to lose confidence in their attitude, particularly when the message they were unsuccessful against came from a high credibility source. Indeed, although perceived difficulty was consistent across conditions, there might have been some other subjective perception of struggle that we did not measure, and perhaps by attributing this to an expert source, some participants also indirectly bolstered the validity of the opposing viewpoint (see Tormala & Petty, 2004, for a similar discussion).

As a caveat to our general findings, it is worth addressing some concern that might be raised over our manipulation of elaboration. To begin with, we manipulated cognitive load before message exposure, so participants were taxed as they read the advertisement and as they generated counterarguments. From our point of view, it was important to reduce processing during the message to limit the degree to which participants reflected on their resistance online—that is, as it was happening. However, by using that procedure, we risked limiting the high-load participants' ability even to perceive the expert or inexpert source information, which was embedded within the advertisement. If high-load participants did not perceive this information, the failure for their certainty to depend on source expertise might occur for reasons other than we have proposed. Although this is an intriguing possibility in general, the manipulation check data confirm that high load participants did perceive differences in source credibility, as reported at the end of the experiment.

Another concern that might be raised is that low-load participants did not list more counterarguments than high-load participants. In fact, the data trended in the opposite direction, which could be interpreted as suggesting a failed manipulation of elaboration. We point out, however, that the mere number of thoughts listed is not always the best measure of elaboration as even low-elaboration individuals can "gear up" to list thoughts when they are requested. Thus, a common measure of elaboration in the persuasion literature is the correspondence between thoughts and attitudes. High-elaboration individuals typically list thoughts that are more in line with their attitudes than do low-elaboration individuals (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). In any case, we do not find the number-of-counterarguments data to be problematic, particularly given that the self-reported elaboration measures, which have been used effectively in prior research (e.g., Petty et al., 2002), showed differences in the expected direction.

EXPERIMENT 2

As noted earlier, attitude certainty is associated with a number of important attitude-relevant outcomes. For example, high-certainty attitudes tend to be more resistant to influence and more predictive of behavior than low-certainty attitudes

(Gross et al, 1995). In Experiment 2, we sought to extend the certainty findings from the first experiment by demonstrating that they had implications for attitude-behavior correspondence. More specifically, we examined the correspondence between attitudes and behavioral intentions, which past research has shown to be the single best and most proximal predictor of actual behavior (e.g., Fishbein & Ajzen, 1975). Based on the findings from the low-load conditions in Experiment 1, we hypothesized that attitudes and behavioral intentions would be more highly correlated after participants resisted a message from an expert source, but not after participants resisted a message from an inexperienced source. This would be an important finding because it would suggest that under some conditions, a failed attempt at persuading can backfire by making people's initial attitudes even more predictive of behavior than they were prior to resistance. If a Pepsi ad with an expert source fails to persuade a Coke drinker, for example, favorable attitudes toward Coke may become even more directive of Coke purchases than before the Pepsi campaign.

It is important to emphasize that we did not expect to find differences in actual behavioral intention ratings across conditions. Just as we predicted no differences in attitudes (due to resistance), we predicted that behavioral intentions themselves would be unaffected by the expertise manipulation. Our primary interest was in the relation between attitudes and behavioral intentions. Past research on attitude certainty has demonstrated that as attitude certainty increases, attitude-behavior correspondence also increases (e.g., Fazio & Zanna, 1978; Tormala & Petty, 2002). Thus, we expected the attitude-behavior intention relation to be stronger under conditions in which people were shown to have greater certainty in Experiment 1—that is, when they resisted a message from an expert source. If true, this would be consistent with the findings from the first experiment given that both attitude certainty and attitude-behavior correspondence are well-established indicators of attitude strength (certainty being a metaperception of strength and attitude-behavior correspondence a consequence of strength). Also, because our primary interest was in attitude-behavior intention correspondence, we did not measure attitude certainty in this experiment. Although this measure was critical in Experiment 1, assessing certainty might create a demand for participants to act in accordance with their attitudes. If participants must be made aware of their certainty for these effects to obtain, this would limit the generalizability of these findings. By removing the measure of attitude certainty, Experiment 2 provided a more natural (and potentially generalizable) test of the consequences of successful resistance for the strength of people's attitudes.

Finally, in Experiment 2, we did not explicitly instruct participants to counterargue the persuasive message. Although directly instructing people to counterargue a message has proven to be an effective way to induce resistance (Killilea & Johnson, 1998; Tormala & Petty, 2002), it is possi-

ble that it creates a unique context that would not apply to conditions in which people react more naturally to advertisements without counterargument instructions. For example, it could be that explicit counterargument instructions activate or prime concerns with resistance and the meaning of resistance that are not normally present. If such concerns have to be explicitly activated for the resistance-certainty effect to emerge, this effect would have a much more limited range of applicability. With this issue in mind, we created conditions in Experiment 2 under which participants would be more spontaneously motivated to resist persuasion, without explicitly directing them to do so. In particular, we presented participants with a highly counterattitudinal message and forewarned them about both the nature and direction (i.e., position) of that message. Forewarning manipulations of this kind have been reliably demonstrated to increase resistance to persuasion in past research (e.g., Hass & Grady, 1975; Papageorgis, 1968; Petty & Cacioppo, 1979a; see Wood & Quinn, 2003, for a review).

In summary, Experiment 2 was designed to extend the findings from the first experiment. We presented participants with a persuasive message from an expert or inexperienced source on a counterattitudinal issue, and then assessed attitudes and behavioral intentions with respect to that issue. Immediately prior to the persuasive message, participants were forewarned about the message and the position it advocated. Given that prior research has revealed that forewarning is particularly likely to increase resistance under high-elaboration conditions (e.g., Petty & Cacioppo, 1979a; see Wood & Quinn, 2003, for a review), and having already established that the resistance-certainty effect is confined to high-elaboration conditions (Experiment 1), we did not investigate the role of elaboration in Experiment 2. Instead, all participants were placed in a high-elaboration situation to maximize power for our key analysis.

Method

Participants and Procedure

Fifty-three undergraduates from Indiana University participated in partial fulfillment of a requirement for their introductory psychology courses. They were randomly assigned to one of three experimental conditions: the high-credibility condition, the low-credibility condition, or the control condition. All sessions were conducted on computers using MediaLab 2004 software (Jarvis, 2004).

When participants arrived, they were seated in a room containing six partitioned computer work stations. The experimenter welcomed all participants to the session and asked them to read the instructions on their screens and begin the experiment. On the opening screen, participants were led to believe their university was considering a new policy requiring students to pass a series of comprehensive exams before they would be allowed to graduate. According to the

cover story, this policy would be implemented in 2 years, and would apply to any student currently enrolled at the university. Failure to pass these exams would mandate remedial coursework to be completed before a degree could be conferred. Because this topic was personally relevant for all participants, elaboration conditions presumably were high (Petty & Cacioppo, 1979b).

To bolster the personally relevant and counterattitudinal nature of the message, and establish consumer-relevant consequences for the comprehensive exam policy, participants also received the following information:

If implemented, the exam policy would require considerable sums of money, which would likely come from tuition increases or a substantial increase in academic book taxes. Essentially, then, you (as a student) would be paying for this policy. That is why we are particularly interested in your reactions.

Immediately following this information, participants received the forewarning induction. In essence, participants learned that they would momentarily receive a copy of a proposal that recommended implementing the comprehensive exam policy at Indiana University in 2 years. The source of the message was then identified, and participants were told that the source was "hoping to convince IU students that they should support comprehensive exams." Thus, participants were forewarned about the content of the message as well as the persuasive intent of its author.

After the forewarning, participants received the message advocating comprehensive exams. This message was presented over two computer screens, and contained four major arguments (adapted from the strong and weak arguments in Petty & Cacioppo, 1986): Grades would improve if the exam policy were adopted, implementing the exams would allow the university to take part in a national trend, the average starting salary of graduating students would increase, and implementing the exams would allow students to compare their scores with those of students at other universities. This message was designed to be moderate in strength, so it could be viewed as coming from an expert or inexpert source.

Immediately following the message, participants were asked to list their thoughts about comprehensive exams. The thought-listing procedure was preceded by the following instructions:

We are now interested in what you were thinking as you learned and read about the comprehensive exam policy. Below is the first of several boxes in which you can list the thoughts you had about comprehensive exams. Please list as many thoughts as you had, but enter only one thought per box. Press ENTER after each one, and press ESC when you are done. Please be completely honest and list any thoughts you had.

After listing their thoughts, participants completed dependent measures and were fully debriefed as to the purpose of the study and the artificial nature of the comprehensive exam policy.

Source Credibility Manipulation

The source credibility (expertise) manipulation was provided within the forewarning information, and then appeared again at the top of the persuasive message. In the high-credibility (expert) condition, participants were led to believe the comprehensive exam proposal was written by "The Faculty Committee on Academic Affairs at Indiana University, which is made up of six highly regarded professors from Educational Science and other related fields." In the low-credibility (nonexpert) condition, participants were led to believe the comprehensive exam proposal was written by "Cindy Ross, a part-time Instructor at Southern Appalachian State Community Technical College in Rosemont, West Virginia."

We also included a control condition in this experiment, which was intended to provide a baseline for the attitude data and the attitude-behavioral intention correlations. Control participants were introduced to the comprehensive exam policy, just as the other participants were, but they received no forewarning and no message about comprehensive exams. Instead, they read an irrelevant news article that was similar in appearance and length to the exam message. Following this article, control participants completed dependent measures.

Dependent Measures

Attitudes. Participants reported their attitudes toward comprehensive exams on a series of semantic differential scales, ranging from 1 to 9, with the following anchors: *bad-good*, *negative-positive*, *unfavorable-favorable*, *harmful-beneficial*, and *foolish-wise*. On each scale, higher numbers indicated more favorable attitudes. Internal consistency was high ($\alpha = .94$), so responses were averaged to form a composite index of attitudes.

Behavioral intentions. Following the attitude items, we assessed behavioral intentions. Two items were used to this end. On the first item, we told participants that in the near future we would be attempting to find people who would be willing to volunteer some time to make telephone calls to students to tell them about the benefits of the exam policy. We then asked participants to indicate how much time they would be willing to volunteer if we contacted them. Responses were provided on a 10-point scale, anchored at 0 (*no time at all*) and 9 (*9 minutes*). A second behavioral intention item immediately followed the first. This item asked participants to indicate how many letters they would be willing to write to students to tell them about the benefits of the exam policy. Responses were again provided on a 10-point scale,

anchored at 0 (0 letters) and 9 (9 letters).² Responses to these items were consistent ($\alpha = .76$), so we averaged them to form a single index of behavioral intentions.

Perceived expertise. After participants reported their attitudes and behavioral intentions, they also completed a measure assessing perceptions of source expertise. This item asked, "To what extent did you think the source of the information about comprehensive exams was an expert?" Participants responded on a scale ranging from 1 (*not at all*) to 9 (*very much*). Control participants did not complete this measure.

Cognitive responses. As mentioned earlier, participants who received the persuasive message listed their thoughts about comprehensive exams. Participants later rated their own thoughts one by one as positive, negative, or neutral toward comprehensive exams. Examples of the positive and negative thoughts people listed include the following: "Larger salaries are good," and "This may cause even more stress," respectively. To create an overall index of thought valence, we subtracted the number of negative thoughts from the number of positive thoughts generated (see Mackie, 1987; Tormala & Petty, 2001). Thus, negative numbers indicated a greater presence of negative thoughts than positive thoughts.

Results

Preliminary Analyses

Perceived expertise. The source manipulation was successful. Source expertise was perceived to be higher in the high-credibility condition than the low-credibility condition ($M_s = 6.56$ and 5.50 , respectively), $F(1, 36) = 4.78$, $p < .04$.

Attitudes. The attitude data were submitted to a one-way ANOVA with the three-level source credibility factor (high credibility, low credibility, control) as the independent variable. There were no differences in attitudes across these conditions ($M_s = 4.48$, 4.67 , and 3.83 , respectively), $F < 1$. Thus, participants who received the exam message resisted persuasion, as intended.

Behavioral intentions. Consistent with expectations, there were no differences in behavioral intentions across conditions. Participants were equally (un)likely to volunteer to help promote the exam policy in the high-credibility, low-credibility, and control conditions ($M_s = .92$, $.85$, and $.83$, respectively), $F < 1$.

Cognitive responses. We also submitted participants' cognitive responses to analysis. Because control participants did not list their thoughts, they were not included. To begin with, there was no difference in the valence of thoughts generated in the high- and low-credibility conditions ($M_s = -1.44$ and -1.85 , respectively), $F < 1$. Across conditions, participants generally listed more negative thoughts than positive thoughts ($M_s = 2.71$ and 1.05 , respectively), $F(1, 37) = 16.62$, $p < .001$, consistent with our expectations that they would spontaneously counterargue following the forewarning induction. There was no difference in the number of thoughts generated in the high- and low-credibility conditions ($M_s = 3.78$ and 3.75 , respectively), $F < 1$.

Attitude-Behavioral Intention Correspondence

As described earlier, the focal analysis of Experiment 2 involved attitude-behavioral intention correspondence. To explore these correlations, it was necessary to conduct a hierarchical regression analysis, predicting behavioral intentions, in which attitudes and the three-level source credibility variable (high, low, control) were entered as predictors. Evidence for the predicted moderation of attitude-intention consistency would be reflected in an interaction between source credibility and attitudes, such that attitudes were more predictive of intentions in the high-credibility condition than the other two conditions.

Prior to analysis, we followed the recommendation of West, Aiken, and Krull (1996) by centering the attitude data (i.e., setting the mean to zero) and contrast coding source credibility (see also Aiken & West, 1991). Because there were three levels to the source credibility manipulation, we coded it using two new variables: C1 (control = -1 , low credibility = -1 , high credibility = 2) and C2 (control = -1 , low credibility = 1 , high credibility = 0). Thus, the significance test for source credibility was an omnibus test of whether both C1 and C2 added significantly to the overall prediction of behavioral intentions, above and beyond attitudes. More pertinent to the primary focus of the research, the interaction between source credibility and attitudes was also represented by two (interaction) terms: C1*attitudes and C2*attitudes. In a hierarchical regression, then, we entered attitudes as the sole predictor of behavioral intentions in the first step, source credibility (C1 and C2) in the second step, and the source credibility \times attitude interaction (C1*attitudes and C2*attitudes) in the third step. The critical test in this analysis involved whether the variables included at each step contributed overall to significantly greater prediction of behavioral intentions than the variable(s) from the prior step. Thus, the focus was on F statistics, although the interaction contrasts also allowed us to examine our more specific contrast hypotheses (see West et al. for more details on this approach).

To begin with, this analysis revealed that people tended to be more willing to volunteer to help promote comprehensive exams when their attitudes were more favorable, $\beta = .23$, al-

²In prior research, we have found participants to be very unwilling to volunteer time to help promote such a counterattitudinal topic as comprehensive exams. We constrained the scale values to be low to permit sufficient variance to test our attitude-intention consistency hypotheses.

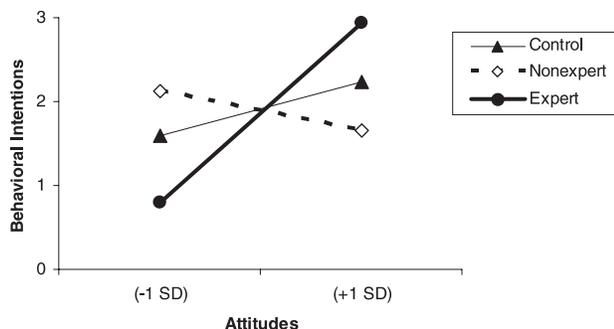


FIGURE 1 Attitude-behavioral intention correspondence across conditions in Experiment 2. Predicted means for behavioral intentions are plotted at +1 and -1 SD of the attitude index.

though this relation was not significant $F(1, 51) = 2.81, p = .10$. Replicating our earlier analysis, source credibility did not contribute to the prediction of behavioral intentions above and beyond attitudes, $F < 1$. Of primary interest, however, the interaction between source credibility and attitudes was significant, $F(2, 47) = 4.03, p < .03$. As illustrated in Figure 1 and indicated by the interaction contrasts, attitude-behavioral intention correspondence was greater in the high-credibility (expert) condition than in the low-credibility (nonexpert) and control conditions, $\beta = .32, p < .02$, which did not differ from each other, $\beta = -.15, p > .27$. In fact, the attitude-intention relation was significant in the high-credibility condition, $r = .69, p < .003$, but not in the low-credibility, $r = -.16, p > .48$, or control, $r = .21, p > .46$, conditions.

Discussion

In summary, participants' attitudes became more predictive of behavioral intentions after they resisted a persuasive attack from an expert source. When participants resisted an attack from an inexpert source, their attitudes did not become any more predictive of behavioral intentions. Given that all participants in Experiment 2 were placed in a high elaboration context, these findings extend the outcome of the first experiment, focusing on a well-established consequence of attitude certainty. It is also important to highlight that we obtained this effect even in the absence of a certainty measure, which perhaps provided a more naturalistic test of attitude strength following resistance given that people are not often confronted with attitude certainty questions in real-life persuasion scenarios.

Experiment 2 was also important in that resistance was induced in a different manner. Rather than explicitly instructing participants to counterargue, as in Experiment 1, we forewarned participants of the persuasive message, and allowed them to respond more naturally in an open-ended thought listing procedure. This modification was important, revealing that even when participants spontaneously counterargue persuasive attacks, their initial attitudes can become stronger than

they already were (see Petty & Krosnick, 1995). Experiment 2 is the first study to examine this effect of resistance on people's initial attitudes in the absence of explicit instructions to counterargue. As such, it represents a finding that is potentially more generalizable to real-life consumer contexts in which people are often motivated to resist but rarely receive direct instructions on whether or how to do so. Thus, we think the findings of this experiment are of particular relevance to those interested in the applications of our framework.

GENERAL DISCUSSION

As described earlier, attitude change researchers have traditionally assumed that when people resisted persuasion, their initial attitudes were completely unchanged. This research, along with other recent work (Tormala & Petty, 2002, in press), challenges this view. It appears that when people resist, their attitudes can actually be changed in potentially important ways. We found that by resisting persuasive attacks, people's attitudes became stronger (i.e., more certain and more predictive of behavioral intentions), but only when specific conditions were met. To review, the effects occurred when the resisted attack came from an expert source, but not when it came from an inexpert source. These findings have obvious relevance to the consumer domain and real-life advertising contexts, in which source expertise is commonly manipulated in an attempt to make persuasive messages more successful. Ironically, these findings suggest that if people resist persuasion, having an expert source may actually hurt the would-be persuader's cause by making people more confident in their existing attitude than they already were.

This research also enhanced our understanding of the basic resistance-certainty effect in other ways. For example, Experiment 1 revealed that source credibility conferred greater certainty under low- but not high-cognitive load conditions. Therefore, only when individuals had sufficient cognitive resources at their disposal did they appear to attend to their own resistance and form correspondent inferences about their initial attitudes. This finding fits with past research on the role of metacognition in persuasion and resistance (e.g., Petty et al., 2002; Tormala & Petty, in press; Tormala et al., 2002). Another useful extension of the basic effect was provided by Experiment 2, in which we induced resistance using a classic forewarning manipulation. With this manipulation, we were able to demonstrate that people make the specified inferences about their attitudes even when they resist persuasion spontaneously. Accordingly, we have gained confidence in the notion that this phenomenon occurs naturally, and that people might spontaneously attend to their own resistance, even without researchers "activating" resistance concerns on their behalf.

Experiment 2's focus on attitude-behavioral intention correspondence was also important. As discussed earlier, in-

creasing attitude-behavior correspondence is one of the hallmark consequences of attitude certainty. By demonstrating that people's attitudes became more predictive of behavioral intentions after they resist persuasion from an expert source, Experiment 2 revealed that the metacognitive perspective has potentially important implications for consumer behavior. To return to the earlier example, imagine that the person who likes Coke resists an advertisement in which a high-credibility source promotes Pepsi products. These findings suggest that in addition to becoming more certain of the pro-Coke attitude, the ad recipient will now become more likely than he or she was before to use that attitude as a basis for future behavior (e.g., purchasing Coke products).

Of course, we did not find that the actual level of behavioral intentions differed across conditions. Based on prior research in the attitude strength domain, we did not predict such differences. However, it is intriguing to consider the possibility that resistance might sometimes be used by persuasion practitioners to increase (or decrease) a message recipient's absolute level of behavioral intentions. If a person likes Coke, for example, an advertisement (e.g., a Pepsi commercial) from an expert source designed to change that attitude could ultimately strengthen it, and thus maintain or even boost the person's intentions to buy Coke in the future. If a person dislikes Coke, on the other hand, an advertisement (e.g., a Coke commercial) from an expert source could strengthen that attitude, which might ultimately undermine a person's intentions to buy Coke in the future. In short, there might be some conditions under which resistance affects not only the attitude-behavior relation, but also the absolute level of some behavior. Again, we did not find any differences in actual intentions in Experiment 2, probably because attitudes were more or less equivalent across conditions, but we think this is an interesting potential application of our findings that warrants attention in future work.

Historical Context

Prior to the current metacognitive perspective on resistance, no research had examined the strengthening effect of resisting persuasion on the certainty, or confidence, with which people hold their initial attitudes. There is some prior work, however, that hinted at the notion that resistance *might* strengthen attitudes. Specifically, McGuire's classic work on inoculation theory (1964) suggested that attitudes and beliefs could be inoculated against persuasive attacks through exposure to an initial attack that was refuted easily. In an early test of this theory, McGuire and Papageorgis (1961) exposed people to messages attacking cultural truisms—beliefs that are widely accepted and rarely, if ever, contradicted (e.g., "It is a good idea to brush your teeth after every meal."). They found that when people were first presented with mild attacks on these beliefs, they became more resistant to later stronger attacks. The logic behind this effect was that the initial attack heightened the perceived vulnerability of the belief, which

motivated people to build defenses. Furthermore, the initial attack gave people practice generating and using counterarguments, which enhanced their actual ability to resist subsequent persuasion.

At a superficial level, inoculation theory and the current perspective make a similar prediction—that is, resisting an initial persuasive attempt can increase an attitude's tendency to withstand later attacks. However, there are several core distinctions between the two frameworks. To begin with, whereas the metacognitive perspective focuses on the notion that confidence can increase following initial resistance, inoculation theory implied that confidence actually decreased following an initial attack, because people realized for the first time that their belief (the truism) was vulnerable in some way. This was the motivating factor, according to inoculation theory. Second, inoculation theory also focused on the message recipient's actual ability to resist subsequent persuasion, which presumably was enhanced through practice generating and using counterarguments against an initial attack. The metacognitive approach makes no such assumption. In this research, resistance increased certainty when the source was perceived to be high but not low in expertise, although the same exact message was presented across conditions. Given the identical content of the message, and the finding that participants' counterarguments were essentially equivalent (see also Tormala & Petty, 2002), it is unlikely that there were any differences in the ability to resist across expertise conditions. Thus, although differences in the ability to refute new attacks may have played a role in inoculation effects, they do not provide a plausible explanation of our findings. Third, inoculation theory focused exclusively on explaining subsequent resistance following an initial attack, which was sensible given the proposed mechanism. Given our emphasis on certainty, we predict a greater variety of potential outcomes following initial resistance—for example, future resistance, attitude-behavior correspondence, and attitudinal persistence.

Another intriguing issue that stems from McGuire's (1964) work relates to the precise role of confidence in this framework. We argue that resistance affects the confidence with which the target attitude is held. Based on McGuire's formulation, however, one might suspect that after confidence in a cultural truism was initially shaken by a persuasive attack (i.e., perceived vulnerability increased), and people became more motivated and able to resist subsequent attacks (due to practice with counterarguments), they might also have become more confident in their ability to refute new messages. In other words, McGuire's work may have pointed to confidence in the ability to resist, rather than confidence in the validity of the attitude per se. Moreover, one might question whether the certainty effect we obtained ultimately pertains to the attitude itself or the ability to refute attacks.

In response to this issue, we suggest that these two forms of confidence are likely related. For example, people might be confident that they can refute an attack because they are confident in the validity of their attitude, or they might be

come confident in their attitude because they are confident in their ability to refute an attack. Both forms of confidence presumably could be affected by resistance, and they might mutually influence one another. Nevertheless, we still submit that confidence in the attitude per se is a key part of these effects. To begin with, we measured the certainty with which the attitude itself was held. Furthermore, in Experiment 2, we found that resisting persuasion can increase the correspondence between attitudes and behavioral intentions. If the critical aspect of confidence is confidence in the ability to refute attacks, we would not expect it to moderate attitude-behavior correspondence. If the critical aspect is confidence in the attitude, however, we would expect such moderation. That is, the conceptualization of attitude confidence as an indicator of attitude strength, and prior work showing that increasing confidence increases attitude-behavior consistency, lends credence to our emphasis on confidence in the attitude itself. Of course, ruling in attitude confidence does not rule out the possibility that confidence in ability to refute attacks might also be affected, or even that the latter confidence occurs earlier in the causal chain, and then contributes to confidence in the attitude more generally. This is an intriguing possibility. For now, we simply submit that confidence in the attitude is involved and is the most proximal mediator of other consequences. Future research disentangling the two forms of confidence would be warranted.

In short, McGuire's (1964) research was an elegant and innovative approach to the study of resistance, and our intention is not to challenge it. We simply note that although the two frameworks appear similar at a superficial level, there are in fact many important distinctions (for further discussion, see Tormala & Petty, 2002). In the future, we intend to explore more systematically the two frameworks in relation to one another to gain a more complete understanding of the processes and consequences of resistance to persuasion.

Expanding Our Understanding of Source Credibility

In this research, we have discovered a new effect of source credibility—that is, its effect on attitude certainty rather than attitude valence or extremity. In other words, these findings suggest that source credibility can have an impact on people's attitudes even when those attitudes have not changed according to conventional standards. In discovering this effect, we have also highlighted a new role for source credibility effects in persuasion situations. This role, although quite different from the kinds of source effects examined in prior research, is potentially important given the consequences of attitude certainty for other outcomes, as reviewed earlier.

But what is the mechanism through which source credibility impacts certainty? Based on the cognitive response data, we know that participants did not generate more or more compelling counterarguments against the high-credibility source. Instead, it appears that the process is metacognitive in

nature. One possible mechanism, as discussed already, is that participants become more confident in their ability to refute new attacks when they have resisted a credible source. This confidence, in turn, could influence attitude confidence more generally. Another possibility is that people simply perceive resistance as more impressive when they resist an attack from a high-credibility source, because that source's message is potentially stronger (Kaufman et al., 1999). When people resist an attack from a low-credibility source, they might reason that a message from a more credible source would have been more impressive, and potentially successful in eliciting some degree of attitude change. Consequently, there may be lingering doubt as to the validity of the target attitude, effectively preventing any boost in certainty. In future research, we hope to clarify the specific mechanism through which source credibility moderates the resistance-certainty link.

Expertise Versus Trustworthiness

In past research on source credibility, investigators have explored both expertise and trustworthiness. In these experiments, our focus was on source expertise. As noted earlier, we suspected that expertise information would be readily translated into inferences about message cogency. That is, we believed source expertise had a more straightforward application to these concerns. It would be interesting to examine trustworthiness in future research to determine if it produces similar or different effects. It could be that if trustworthiness also affects perceptions of message validity (Kaufman et al., 1999), it would have the same basic impact on certainty following resistance to persuasion. However, it could also be that trustworthiness would have a very different impact. For example, when we resist messages from trustworthy sources such as friends or parents, some ambivalence or conflict may result as these sources presumably are viewed as having our best interest in mind. Consequently, perhaps people become less certain of their attitudes after resisting trustworthy sources. Conversely, perhaps when people resist untrustworthy sources, they gain confidence, knowing that they withstood an attack from someone who was attempting to manipulate them. In any case, the question remains open for empirical consideration, and merits attention in future work.

CONCLUSION

Previously, it has been assumed that when a would-be persuader is unsuccessful in an attempt to change a target attitude, he or she has at least done no harm to the cause. Our findings undermine this assumption, suggesting instead that when a would-be persuader appears to have been unsuccessful at changing a target attitude, he or she may actually have been even less successful than previously realized. Specifically, when an ad recipient resists a persuasive attack, and

has the motivation and ability to perceive and reflect on this resistance, he or she can, under some circumstances, become even more certain of the target attitude. In other words, failed persuasion attempts can backfire by making people more committed than ever to their original attitudes. Ironically, the probability of this result increases as the persuasive message and source have more of the trappings of persuasiveness (e.g., strong arguments, expert sources). This finding highlights the importance of considering the role of metacognitive factors in persuasion and resistance.

ACKNOWLEDGMENTS

We thank members of the 2002 to 2003 Group for Attitudes and Persuasion at Ohio State University for insightful feedback and commentary regarding Experiment 1. We are also grateful for the help we received collecting the data reported herein: Jim Bennett and Courtney Hall helped with Experiment 1, and Sara Dietrich and David Jordan helped with Experiment 2.

REFERENCES

- Abelson, R. P. (1988). Conviction. *American Psychologist*, *43*, 267–275.
- Ahluwalia, R. (2000). Examination of psychological processes underlying resistance to persuasion. *Journal of Consumer Research*, *27*, 217–232.
- Aiken, L. S., & West, S. G. (1991). *Multiple regression: Testing and interpreting interactions*. Newbury Park, CA: Sage.
- Anderson, N. H. (1971). Integration theory and attitude change. *Psychological Review*, *78*, 171–206.
- Babad, E. Y., Ariav, A., Rosen, I., & Salomon, G. (1987). Perseverance of bias as a function of debriefing conditions and subjects' confidence. *Social Behaviour*, *2*, 185–193.
- Bassili, J. N. (1996). Meta-judgmental versus operative indexes of psychological attributes: The case of measures of attitude strength. *Journal of Personality and Social Psychology*, *71*, 637–653.
- Bless, H., & Forgas, J. P. (Eds.). (2000). *The message within: The role of subjective experience in social cognition and behavior*. Philadelphia: Psychology Press.
- Brehm, J. W. (1966). *A theory of psychological reactance*. San Diego, CA: Academic.
- Briñol, P., Petty, R. E., & Tormala, Z. L. (2004). The self-validation of cognitive responses to advertisements. *Journal of Consumer Research*, *30*, 559–573.
- Brock, T. C. (1967). Communication discrepancy and intent to persuade as determinants of counterargument production. *Journal of Experimental Social Psychology*, *3*, 296–309.
- Cacioppo, J. T., & Petty, R. E. (1979). The effects of message repetition and position on cognitive responses, recall, and persuasion. *Journal of Personality and Social Psychology*, *37*, 97–109.
- Cacioppo, J. T., & Petty, R. E. (1982). The need for cognition. *Journal of Personality and Social Psychology*, *42*, 116–131.
- Cacioppo, J. T., Petty, R. E., Feinstein, J., & Jarvis, W. B. G. (1996). Individual differences in cognitive motivation: The life and times of people varying in need for cognition. *Psychological Bulletin*, *119*, 197–253.
- Chaiken, S., & Maheswaran, D. (1994). Heuristic processing can bias systematic processing: Effects of source credibility, argument ambiguity, and task importance on attitude judgment. *Journal of Personality and Social Psychology*, *66*, 460–473.
- DeBono, K. G., & Harnish, R. J. (1988). Source expertise, source attractiveness, and the processing of persuasive information: A functional approach. *Journal of Personality and Social Psychology*, *55*, 541–546.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Orlando, FL: Harcourt Brace Jovanovich.
- Fazio, R. H., & Zanna, M. P. (1978). Attitudinal qualities relating to the strength of the attitude-behavior relationship. *Journal of Experimental Social Psychology*, *14*, 398–408.
- Festinger, L. (1950). Informal social communication. *Psychological Review*, *57*, 271–282.
- Festinger, L. (1954). A theory of social comparison processes. *Human Relations*, *7*, 117–140.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior*. Reading, MA: Addison-Wesley.
- Frey, D. (1986). Recent research on selective exposure to information. *Advances in Experimental Social Psychology*, *19*, 41–80.
- Gilbert, D. T. (1993). The assent of man: Mental representation and the control of belief. In D. M. Wegner & J. W. Pennebaker (Eds.), *Handbook of mental control* (pp. 57–87). Englewood Cliffs, NJ: Prentice Hall.
- Gilbert, D. T. (1998). Ordinary personology. In D. Gilbert, S. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (Vol. 2, pp. 89–150). Boston: McGraw-Hill.
- Gilbert, D. T., & Hixon, J. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology*, *60*, 509–517.
- Gross, S., Holtz, R., & Miller, N. (1995). Attitude certainty. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 215–245). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Haddock, G., Rothman, A. J., Reber, R., & Schwarz, N. (1999). Forming judgments of attitude certainty, intensity, and importance: The role of subjective experience. *Personality and Social Psychology Bulletin*, *25*, 771–782.
- Hass, R. G., & Grady, K. (1975). Temporal delay, type of forewarning, and resistance to influence. *Journal of Experimental Social Psychology*, *11*, 459–469.
- Heesacker, M. H., Petty, R. E., & Cacioppo, J. T. (1983). Field dependence and attitude change: Source credibility can alter persuasion by affecting message-relevant thinking. *Journal of Personality*, *51*, 653–666.
- Hovland, C. I., & Weiss, W. (1951). The influence of source credibility on communication effectiveness. *Public Opinion Quarterly*, *15*, 635–650.
- Jacks, J. Z., & Cameron, K. A. (2003). Strategies for resisting persuasion. *Basic and Applied Social Psychology*, *25*, 145–161.
- Jarvis, W. B. G. (2000). MediaLab [Computer software]. Columbus, OH: Empirisoft.
- Jarvis, W. B. G. (2004). MediaLab [Computer software]. Columbus, OH: Empirisoft.
- Jost, J. T., Kruglanski, A. W., & Nelson, T. O. (1998). Social metacognition: An expansionist review. *Personality and Social Psychology Review*, *2*, 137–154.
- Kaufman, D. Q., Stasson, M. F., & Hart, J. W. (1999). Are the tabloids always wrong or is that just what we think? Need for cognition and perceptions of articles in print media. *Journal of Applied Social Psychology*, *29*, 1984–1997.
- Kelman, H. C., & Hovland, C. I. (1953). “Reinstatement” of the communicator in delayed measurement of opinion change. *Journal of Abnormal and Social Psychology*, *48*, 327–335.
- Killea, L. A., & Johnson, B. T. (1998). Experimental induction of biased systematic processing: The directed-thought technique. *Personality and Social Psychology Bulletin*, *24*, 17–33.
- Krosnick, J. A., & Abelson, R. P. (1992). The case for measuring attitude strength in surveys. In J. Tanur (Ed.), *Questions about questions* (pp. 177–203). New York: Russell Sage Foundation.
- Kruglanski, A. W., & Thompson, E. P. (1999). Persuasion by a single route: A view from the unimodel. *Psychological Inquiry*, *10*, 83–109.
- Krull, D. S. (1993). Does the grist change the mill? The effect of the perceiver's inferential goal on the process of social inference. *Personality and Social Psychology Bulletin*, *19*, 340–348.

- Lewan, P. C., & Stotland, E. (1961). The effects of prior information on susceptibility to an emotional appeal. *Journal of Abnormal and Social Psychology*, 62, 450–453.
- Lydon, J., Zanna, M. P., & Ross, M. (1988). Bolstering attitudes by autobiographical recall: Attitude persistence and selective memory. *Personality and Social Psychology Bulletin*, 14, 78–86.
- Mackie, D. M. (1987). Systematic and nonsystematic processing of majority and minority persuasive communication. *Journal of Personality and Social Psychology*, 37, 180–194.
- Macrae, C. N., Hewstone, M., & Griffiths, R. J. (1993). Processing load and memory for stereotype-based information. *European Journal of Social Psychology*, 23, 77–87.
- McGuire, W. J. (1964). Inducing resistance to persuasion: Some contemporary approaches. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 1, pp. 191–229). New York: Academic.
- McGuire, W. J., & Papageorgis, D. (1961). The relative efficacy of various types of prior belief-defense in producing immunity against persuasion. *Journal of Abnormal and Social Psychology*, 62, 327–337.
- Mills, J., & Jellison, J. M. (1967). Effect on opinion change of how desirable the communication is to the audience the communicator addressed. *Journal of Personality and Social Psychology*, 6, 98–101.
- Papageorgis, D. (1968). Warning and persuasion. *Psychological Bulletin*, 70, 271–282.
- Petty, R. E., Briñol, P., & Tormala, Z. L. (2002). Thought confidence as a determinant of persuasion: The self-validation hypothesis. *Journal of Personality and Social Psychology*, 82, 722–741.
- Petty, R. E., & Cacioppo, J. T. (1979a). Effects of forewarning of persuasive intent and involvement on cognitive responses. *Personality and Social Psychology Bulletin*, 5, 173–176.
- Petty, R. E., & Cacioppo, J. T. (1979b). Issue-involvement can increase or decrease persuasion by enhancing message-relevant cognitive responses. *Journal of Personality and Social Psychology*, 37, 1915–1926.
- Petty, R. E., & Cacioppo, J. T. (1986). The Elaboration Likelihood Model of persuasion. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 19, pp. 123–205). New York: Academic.
- Petty, R. E., Cacioppo, J. T., & Goldman, R. (1981). Personal involvement as a determinant of argument-based persuasion. *Journal of Personality and Social Psychology*, 41, 847–855.
- Petty, R. E., Haugtvedt, C. P., & Smith, S. M. (1995). Elaboration as a determinant of attitude strength. In R. E. Petty & J. A. Krosnick (Eds.), *Attitude strength: Antecedents and consequences* (pp. 93–130). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Petty, R. E., & Krosnick, J. A. (Eds.). (1995). *Attitude strength: Antecedents and consequences*. Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Petty, R. E., Ostrom, T. M., & Brock, T. C. (Eds.). (1981). *Cognitive responses in persuasion*. Hillsdale, NJ: Lawrence Erlbaum Associates, Inc.
- Petty, R. E., Tormala, Z. L., & Rucker, D. D. (2004). Resistance to persuasion: An attitude strength perspective. In J. T. Jost, M. R. Banaji, & D. Prentice (Eds.), *Perspectivism in social psychology: The yin and yang of scientific progress* (pp. 37–51). Washington, DC: American Psychological Association.
- Petty, R. E., & Wegener, D. T. (1998). Attitude change: Multiple roles for persuasion variables. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (Vol. 1, pp. 323–390). New York: McGraw-Hill.
- Petty, R. E., & Wegener, D. T. (1999). The elaboration likelihood model: Current status and controversies. In S. Chaiken & Y. Trope (Eds.), *Dual-process theories in social psychology* (pp. 37–72). New York: Guilford.
- Rhine, R., & Severance, L. (1970). Ego-involvement, discrepancy, source credibility, and attitude change. *Journal of Personality and Social Psychology*, 16, 175–190.
- Strack, F., & Förster, J. (1998). Self-reflection and recognition: The role of metacognitive knowledge in the attribution of recollective experience. *Personality and Social Psychology Review*, 2, 111–123.
- Swann, W. B., Pelham, B. W., & Chidester, T. R. (1988). Change through paradox: Using self-verification to alter beliefs. *Journal of Personality and Social Psychology*, 54, 268–273.
- Tannenbaum, P. H., Macauley, J. R., & Norris, E. L. (1966). Principle of congruity and reduction of persuasion. *Journal of Personality and Social Psychology*, 3, 233–238.
- Tormala, Z. L., & Petty, R. E. (2001). On-line versus memory-based processing: The role of 'need to evaluate' in person perception. *Personality and Social Psychology Bulletin*, 27, 1599–1612.
- Tormala, Z. L., & Petty, R. E. (2002). What doesn't kill me makes me stronger: The effects of resisting persuasion on attitude certainty. *Journal of Personality and Social Psychology*, 83, 1298–1313.
- Tormala, Z. L., & Petty, R. E. (in press). *Resistance to persuasion and attitude certainty: The moderating role of elaboration*. *Personality and Social Psychology Bulletin*.
- Tormala, Z. L., & Petty, R. E. (2004). Resistance to persuasion and attitude certainty: A meta-cognitive analysis. In E. S. Knowles & J. A. Linn (Eds.), *Resistance and persuasion* (pp. 65–82). Mahwah, NJ: Lawrence Erlbaum Associates, Inc.
- Tormala, Z. L., Petty, R. E., & Briñol, P. (2002). Ease of retrieval effects in persuasion: A self-validation analysis. *Personality and Social Psychology Bulletin*, 28, 1700–1712.
- West, S. G., Aiken, L. S., & Krull, J. L. (1996). Experimental personality designs: Analyzing categorical by continuous variable interactions. *Journal of Personality*, 64, 1–48.
- Wood, W., & Quinn, J. M. (2003). Forewarned and forearmed? Two meta-analysis syntheses of forewarnings of influence appeals. *Psychological Bulletin*, 129, 119–138.
- Wu, C., & Shaffer, D. R. (1987). Susceptibility to persuasive appeals as a function of source credibility and prior experience with the attitude object. *Journal of Personality and Social Psychology*, 52, 677–688.
- Wyer, R. S. (1973). Category ratings as "subjective expected values": Implications for attitude formation and change. *Psychological Review*, 80, 446–467.
- Yost, J. H., & Weary, G. (1996). Depression and the correspondent inference bias: Evidence for more effortful cognitive processing. *Personality and Social Psychology Bulletin*, 22, 192–200.
- Yzerbyt, V. Y., Lories, G., & Dardenne, B. (1998). *Metacognition: Cognitive and social dimensions*. Thousand Oaks, CA: Sage.
- Zuwerink, J. R., & Devine, P. G. (1996). Attitude importance and resistance to persuasion: It's not just the thought that counts. *Journal of Personality and Social Psychology*, 70, 931–944.

Received: July 8, 2003

Accepted: December 17, 2003