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Assimilation and Contrast in Persuasion: The Effects of Source Credibility in Multiple Message Situations

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The present research explores a contextual perspective on persuasion in multiple message situations. It is proposed that when people receive persuasive messages, the effects of those messages are influenced by other messages to which people recently have been exposed. In two experiments, participants received a target persuasive message from a moderately credible source. Immediately before this message, participants received another message, on a different topic, from a source with high or low credibility. In Experiment 1, participants' attitudes toward the target issue were more favorable after they had first been exposed to a different message from a low rather than high credibility source (contrast). In Experiment 2, this effect only emerged when a priming manipulation gave participants a dissimilarity mindset. When participants were primed with a similarity mindset, their attitudes toward the target issue were more favorable following a different message from a high rather than low credibility source (assimilation).

Keywords: attitudes; persuasion; source credibility; assimilation; contrast

In persuasion research over the years, there has been an overwhelming emphasis on studying persuasive messages in isolation. The typical persuasion paradigm presents participants with a single persuasive message about a specific object or issue, manipulates some aspect of that message or its delivery, and then asks participants to complete a number of dependent measures with respect to the target object or issue. This kind of paradigm has been extremely beneficial in helping to understand the effects of numerous variables on persuasion outcomes and processes.

Nevertheless, persuasive messages are rarely received in isolation in the real world. On the contrary, persuasive messages are typically received in the context of other messages. Whether watching television, reading the newspaper, or surfing the Internet, people often become submerged in streams of persuasion wherein numerous persuasive messages are presented one after another. These messages may refer to the same topic (e.g., when political candidates square off in a televised debate) or they may refer to different topics (e.g., when a car advertisement directly follows an ad for a sports drink during the commercial break from a television show). From past research, little is known about the persuasive impact of prior messages on subsequent messages when those messages refer to different topics. A great deal is known about the relative effects of prior and subsequent messages when those messages present opposing viewpoints on the *same* topic (e.g., primacy versus recency; Miller & Campbell, 1959; Petty, Tormala, Hawkins, & Wegener, 2001) but not when they present arguments on different topics. It stands to reason that prior messages might create a context that affects perceptions of, and the resulting persuasiveness of, subsequent (target) messages even when those messages refer to different issues. In the present research,

we explore this possibility. That is, we examine multiple message situations to better understand the context of persuasion.

CONTEXT EFFECTS

It is well-documented that the context plays an important role in social judgment. In general, context effects can be assimilative or contrastive in nature (e.g., Mussweiler, 2003; Schwarz & Bless, 1992; Stapel & Koomen, 2001a). *Assimilation* effects refer to situations in which one's judgment of a target stimulus shifts toward the context—for example, one's judgment of an earlier stimulus. *Contrast* effects refer to situations in which one's judgment of a target stimulus shifts away from the context. For instance, one might judge a target individual to be more (contrast) or less (assimilation) trustworthy after exposure to another individual who is very untrustworthy (Bless, Igou, Schwarz, & Wänke, 2000; Schwarz & Bless, 1992).

Most of the research on context effects in the past few decades has been devoted to understanding the determinants of assimilation versus contrast. From this research, much has been learned. For example, contrast is more likely than assimilation to occur when the standard of comparison (i.e., the context) is extreme as opposed to moderate (e.g., Herr, 1986; Moskowitz & Skurnik, 1999; Mussweiler, Rüter, & Epstude, 2004a; Sherif & Hovland, 1961), when the standard is an exemplar as opposed to a category (e.g., Dijksterhuis et al., 1998; Schwarz & Bless, 1992; Stapel, Koomen, & Van der Plight, 1997), when the representation of the target stimulus excludes rather than includes the standard (e.g., Schwarz & Bless, 1992; see also Stapel & Koomen, 2000), when the target is unambiguous as opposed to ambiguous (e.g., Herr, Sherman, & Fazio, 1983), when the target is perceived to be different from as opposed to similar to the standard or when people are generally focused on finding differences rather than similarities (e.g., Markman & McMullen, 2003; Mussweiler, 2003; Sherif & Hovland, 1961), when comparison rather than interpretation mindsets are activated (Stapel & Koomen, 2001a, 2001b), and when people expect assimilation effects on their judgment and overcorrect when attempting to remove this influence (e.g., Martin, Seta, & Crelia, 1990; Petty & Wegener, 1993).

THE PERSUASIVE CONTEXT

Despite the voluminous body of research investigating context effects in the social judgment literature more generally, assimilation and contrast have received scant attention in traditional persuasion research. Recently,

however, Tormala and Petty (2007) amassed some initial evidence suggesting that contextual factors can influence persuasive outcomes in multiple message situations. In particular, Tormala and Petty examined the role of prior persuasive messages in influencing people's perceptions of the amount of information contained in target persuasive messages. In a series of experiments, Tormala and Petty presented participants with a target message containing a moderate amount of information promoting a new store. Preceding this message, another message was presented containing either less or more information about another topic (e.g., a car, a person). Tormala and Petty found that participants reported more favorable attitudes toward the target stimulus (the store) when the prior message contained less as opposed to more information. Moreover, target attitudes were mediated by participants' perceptions of how much information the target message contained. The less information the prior message contained, the more information participants perceived the target message to have, and the more persuaded they were by that message. In other words, perceptions of the target message shifted away from perceptions of the prior message, producing a contrast effect on target attitudes.

In short, Tormala and Petty (2007) provided initial evidence for the notion that the persuasive impact of a given message can be determined by other messages to which people have recently been exposed. The Tormala and Petty findings were particularly informative in this regard, because all participants in their studies received the exact same target message. Participants did not differ in their elaboration of this message or in their recall of its arguments. Only the prior message—specifically, the amount of information in that message—differed. Also important, across experiments the prior stimulus varied in its relevance to the target stimulus. In some cases the prior and target stimuli were somewhat related (i.e., both were stores), whereas in other cases they were completely unrelated (e.g., one was a store and one was a person). A contrast effect was obtained in each experiment, regardless of the relevance of the prior stimulus to the target stimulus.

THE PRESENT RESEARCH

The Tormala and Petty (2007) research made initial headway in understanding context effects in multiple persuasive message situations. However, that research also left two important issues to be addressed. First, although the amount of information in a message has been an important variable in persuasion research (e.g., Chaiken, 1980), there are numerous other variables that are commonly manipulated in persuasion experiments and real life influence settings (see Petty, Wheeler, &

Tormala, 2003, for a review). Although we would expect many persuasion variables to be susceptible to context effects, new research is needed to determine what those variables are and how they behave in multiple message situations. Second, the Tormala and Petty research focused exclusively on contrast effects. We have yet to establish that assimilation is a possible outcome in multiple message situations. Addressing these two issues is the primary objective of the current research.

Source Credibility

To begin with, the Tormala and Petty (2007) work focused solely on perceptions of the amount of information in a persuasive message. In the present research, we apply the contextual perspective to another variable of classic import in persuasion research—source credibility. Source credibility refers to the perceived expertise and trustworthiness of the source of a persuasive message (e.g., Kelman & Hovland, 1953). In general, the more expert and trustworthy the source of a message is perceived to be, the greater persuasive impact his or her message will exert (for reviews see Petty & Wegener, 1998; Pornpitakpan, 2004; see Tormala, Briñol, & Petty, 2006, for an exception).

Building on this basic finding, research has focus on understanding the processes underlying source credibility effects in persuasion. Consistent with dual processing theories of persuasion such as the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and the Heuristic-Systematic Model (Chaiken, Liberman, & Eagly, 1989), source-credibility effects have been shown to occur through different mechanisms depending on message recipients' level of elaboration or extent of thinking. Under low elaboration, source credibility can provide a simple heuristic or cue to persuasion (e.g., Petty, Cacioppo, & Goldman, 1981). Under high elaboration, source credibility has been shown to influence the favorability of the thoughts people generate in response to persuasive messages (Chaiken & Maheswaran, 1994). Thus, increasing source credibility can increase persuasion at both high and low levels of cognitive elaboration, but the mechanism for this effect varies.

In short, past research clearly indicates that source credibility can influence persuasion in many diverse settings. Interestingly, though, the origin of perceived source credibility remains less clear. That is, what determines whether a given source is perceived to be credible and, thus, worth relying on? We suggest that the perceived credibility of a target source might stem, at least in part, from the perceived credibility of other recently encountered sources. That is, we posit that the credibility of the source of a target message might be judged on the basis of the credibility of sources associated with prior messages, even when those messages relate to different issues. In essence, prior sources might provide standards of comparison that people use in evaluating target sources. If true, manipulating the credibility of the source of a prior message should influence the persuasive impact of the source of a target message. We addressed this possibility in Experiment 1.

Contrast and Assimilation

Also important, although the Tormala and Petty (2007) research shed initial light on context effects in multiple message situations, the studies were somewhat limited in that they focused exclusively on contrast. This focus stemmed from the observation that contrast effects tend to occur under conditions that resemble many common persuasion situations—for example, when the stimuli in question are clear rather than ambiguous (e.g., Herr et al., 1983) or exemplars rather than categories (e.g., Dijksterhuis et al., 1998; Schwarz & Bless, 1992; Stapel et al., 1997). However, it is important to reiterate that in general, context effects can be contrastive or assimilative in nature. In persuasion research as well, it should be possible to uncover assimilation when multiple persuasive messages are presented in sequence. For instance, when people perceive the prior and target message to be similar in some way, or when they are otherwise motivated to seek out similarities rather than differences, assimilation may be a more likely outcome (see Mussweiler, 2003). Thus, a second key goal of the current research was to provide evidence for both assimilation and contrast in multiple persuasive message situations. We explored this issue in Experiment 2.

EXPERIMENT 1

Experiment 1 was designed to provide an initial assessment of source credibility effects in a multiple message situation. Undergraduate participants were presented with a persuasive message attributed to a specific source moderate in credibility, and then they reported their attitudes toward the issue raised in the message. Preceding the persuasive message from the target source, however, participants were exposed to another message on a different topic to create a persuasive context. This prior message was attributed to a source of either high or low credibility. To ensure that adequate attention was paid to both the prior and target sources and messages, and that participants would be able to recall both message sources and topics, we induced a high level of elaboration across conditions. Specifically, both messages advocated counterattitudinal policies ostensibly under consideration at participants' own university. Thus,

these messages were personally relevant to all participants (Petty & Cacioppo, 1979).

Also important, both the prior and target messages were designed to be moderate in strength and, as such, they both contained a mixture of strong and weak arguments. The purpose of using mixed messages was twofold. First, we wanted to hold message strength constant across the prior and target messages to focus participants' attention on the variation in *source credibility* from the prior to the target message. Second, it was important to use messages that could plausibly be interpreted as coming from either high or low credibility sources. If the target message was exceedingly strong (weak), for instance, it might be difficult for participants to perceive its source as low (high) in credibility (see Bohner, Ruder, & Erb, 2002). Because it was critical that participants be able to view the target source as either high or low in credibility, depending on the prior source, we used a mixture of strong and weak arguments.

In this initial experiment, we expected to find evidence of contextual contrast on target source persuasiveness. That is, we hypothesized that attitudes toward the target issue would be more favorable when the target message followed another message about a different issue attributed to a source of low rather than high credibility. This prediction was based on the fact that persuasion experiments, including the present one, and real-world persuasion situations typically feature exemplar (rather than category) sources that are unambiguous in nature. According to numerous theories of assimilation and contrast, unambiguous exemplar sources in multiple message situations generally should lend themselves to contrast rather than assimilation. The inclusion/exclusion model (Schwarz & Bless, 1992, in press; Stapel & Schwarz, 1998), for instance, suggests that when people think about two specific exemplar individuals, their representations of these individuals are mutually exclusive (see also Stapel et al., 1997). For example, if people think about George W. Bush (an exemplar of the politician category) and then are asked to judge John Kerry (another exemplar of this category), Bush is not included in the representation of Kerry (or vice versa) because Bush is not Kerry. Bush can be included in the *politician* category, as can Kerry, but neither individual can be included in the representation of the other because both are exemplars. Thus, Bush is excluded from the representation of Kerry, serving instead as a standard against which Kerry is compared. The comparison process under these conditions tends to yield contrast rather than assimilation.

In fact, numerous studies have suggested that when comparison processes are invoked, contrast is the most likely result. For example, Herr et al. (1983) found that when people judged unambiguous stimuli—which message sources tend to be in persuasion settings—and when they were primed with extreme exemplars—which prior sources often are—contrast was more likely than assimilation to emerge. Herr et al. argued that unambiguous and extreme stimuli serve as standards of comparison against which other stimuli will be judged. Stapel and Koomen (2001a) directly examined comparison processes by priming participants with interpretation versus comparison mindsets. They found that assimilation and contrast were more likely to occur under interpretation and comparison mindsets, respectively.

One possible reason that comparison processes tend to induce contrast could be that comparison mindsets lead people to focus on differences rather than similarities. In fact, some recent models of context effects suggest that assimilation and contrast may ultimately depend on the extent to which people are focused on similarities or differences between the target and standard stimuli (see Markman & McMullen, 2003; Mussweiler, 2003). When differences between the target and standard stimuli are salient, contrast is more likely than assimilation to occur. It follows that if people perceive prior and target sources to be at least somewhat different from each other, their perception of the target source should be contrasted away from their perception of the prior source.

In short, based on past research we assumed that in a common multiple message situation in which people receive consecutive persuasive messages from different (unambiguous exemplar) sources, the target source would be excluded from the representation of the prior source. If true, the two sources should seem different from each other and, thus, facilitate contrast as a likely outcome. This is not to say that assimilation is impossible in multiple message situations, but rather that when two messages are delivered back-to-back from different, unambiguous, exemplar sources, contrast may tend to be the more common outcome. Therefore, we predicted a contrast effect on target source persuasion in Experiment 1.

METHOD

Participants and Design

A total of 31 Indiana University (IU) undergraduates participated in partial fulfillment of a requirement for their introductory psychology courses. Participants were randomly assigned to one of two experimental conditions—the high prior source credibility condition or the low prior source credibility condition.

Procedure

When participants arrived, they were welcomed by an experimenter and seated in a room containing seven

partitioned computer terminals. All experimental materials were presented on computer. Once they were seated, participants were asked to read the instructions on their monitors and begin the experiment. On the opening screen, participants were led to believe that the purpose of the study was to assess students' perceptions of several policies under consideration at their university. Participants were told that they would read messages about two different policies, after which we would assess their reactions. Of importance, we manipulated the credibility of the source of the first message and held constant the credibility of the source of the second message (see description below).

The first issue participants read about was a mandatory service program. All participants were led to believe their university was considering implementing a new policy requiring students to complete several hours of campus service per week to be eligible for graduation (see Baker & Petty, 1994). A persuasive message in favor of the service policy was then presented. As noted, this message was designed to be moderate in strength overall, so it included an equal number of strong (e.g., the service program would reduce administrative costs and free money up for other important goals) and weak (e.g., the service program would prepare students for the real world by reducing leisure time) arguments.

Immediately after the service program message, participants were introduced to a second issue. Specifically, participants were led to believe their university was considering a policy requiring all students to pass a series of comprehensive exams in their major areas prior to graduation (see Petty & Cacioppo, 1986). After a brief introduction to this issue, all participants received a persuasive message in favor of the comprehensive exam policy. Like the service program message, this message was designed to be moderate in strength, so it contained an equal number of strong (e.g., the exam policy would increase undergraduate GPAs by motivating students to study harder) and weak (e.g., the exam policy would help the university join a national trend) arguments.

Following the comprehensive exam message, all participants reported their attitudes toward comprehensive exams. Thus, comprehensive exams were the target issue and the service program was the prior issue. Participants did not report their attitudes toward the service program. After reporting their attitudes toward comprehensive exams, participants were thanked and debriefed.

Source Manipulation

Source credibility was operationalized in terms of expertise. All participants were led to believe that the target message (i.e., the comprehensive exam proposal) was written by the same source: "Cindy Ross, a part-time

Instructor at Southern Appalachian State Community College." Participants were told that they would be reading "an essay submitted by Professor Ross to the campus newsletter." This source was intended to be viewed as moderate in expertise. To make the target source salient to participants, and increase the likelihood that it would be the focus of any context effects observed, target source information was presented on a separate screen immediately preceding the comprehensive exam message.

To manipulate the context, we varied the expertise of the source associated with the *prior* message (i.e., the mandatory service proposal). In the *high prior credibility* condition, participants received the following information:

> The passage you are about to read was taken from a message written by Professor Kenneth Sturreck, Ph.D. Dr. Sturreck is a Distinguished Professor of Education Sciences at Princeton University and is world renowned for his work in this area. The passage you will read is an editorial excerpt submitted by Dr. Sturreck to the *Chronicle of Higher Education*.

In the *low prior credibility* condition, participants received different information:

> The passage you are about to read was taken from a message written by Kenneth Sturreck. Kenneth (age 14) is a freshman at Maude Johnson High School in Rosemont, West Virginia. The passage you will read is an editorial excerpt submitted by Kenneth to his high school newspaper.

Like the target source information, the prior source information appeared on a screen immediately preceding the message about the service program. Again, this information was presented on a separate screen to make it salient to participants. Of importance, we pretested the sources to ensure that in the absence of persuasive messages or any other information, the target source ($M = 6.00$, $SD = 1.76$) fell in between the high ($M = 7.60$, $SD = 1.35$) and low ($M = 3.10$, $SD = 1.60$) credibility prior sources in perceived expertise, $F(2, 27) = 20.88$, $p < .001$.[1]

Attitude Measure

Immediately following the second persuasive message, about comprehensive exams, participants rated comprehensive exams on a series of semantic differential scales ranging from 1 to 9 with the following anchors: *bad-good*, *negative-positive*, *against-in favor*, *harmful-beneficial*, *foolish-wise*. Responses to these items were averaged to form a composite attitude index ($\alpha = .95$). Higher scores indicated more favorable target attitudes.

RESULTS AND DISCUSSION

We submitted the attitude data to analysis with prior source credibility as the independent variable. This analysis revealed that attitudes toward the target issue (comprehensive exams) were more favorable in the low ($M = 6.21$, $SD = 1.23$) than in the high ($M = 4.65$, $SD = 2.58$) prior credibility condition, $t(29) = 2.18$, $p < .04$. As predicted, then, we found a contrast effect on target attitudes, such that individuals who were exposed to a low credibility prior source responded more favorably to the target issue than did individuals who were exposed to a high credibility prior source. Of importance, all participants received the exact same target source and message; the only difference was the source associated with a prior message on another topic.

As discussed earlier, we predicted contrast in this initial experiment because, in keeping with traditional persuasion paradigms, we presented participants with persuasive messages from sources that were unambiguous exemplars. Furthermore, pilot testing revealed that the prior sources were somewhat extreme in their perceived credibility and participants viewed them as being somewhat different from the target source (see Note 1). Again, these are precisely the circumstances under which we would expect contrast to emerge.

It is worth reiterating that unlike the sources, the persuasive messages employed in this experiment were ambiguous in nature, containing both strong and weak arguments. We used a mixture of strong and weak arguments to make the messages seem moderately compelling overall and, thus, plausible as coming from either high or low credibility sources. Interestingly though, ambiguity in target stimuli can foster assimilation effects (Herr et al., 1983). We did not obtain evidence for assimilation in this experiment, presumably because our source information was particularly salient, which led participants to compare sources and not message arguments when making their judgments. If participants had been comparing message arguments rather than sources, we assume that we would have obtained null effects on attitudes as both messages were just moderately (and equally) cogent.

EXPERIMENT 2

Experiment 2 had several objectives. First, we sought to determine whether the direction of effect in Experiment 1 was malleable. Some recent attempts to integrate the diverse array of moderators of assimilation and contrast suggest that the direction of effect may ultimately depend on the extent to which people are focused on similarities or differences between the target and standard stimuli (e.g., Mussweiler, 2003; see also Markman & McMullen, 2003). When similarities between the target and standard

are salient, individuals are thought to selectively generate or attend to information in support of similarity, leading to assimilation. When differences between the target and standard are salient, individuals are thought to selectively generate or attend to information in support of difference, leading to contrast. In short, recent evidence suggests that assimilation and contrast effects may be fostered by similarity and dissimilarity mindsets, respectively, which determine the information or thoughts that get activated and then feed into judgment (cf. Ruys, Spears, Gordijn, & De Vries, 2006).

In Experiment 2, we applied this notion to the study of source credibility in multiple message situations. Our hypothesis was that prior source credibility could lead to assimilation or contrast effects on target source persuasion depending on whether people had similarity or dissimilarity mindsets, respectively. Experiment 2 explored this possibility using a priming procedure to directly manipulate participants' mindset at the beginning of the experiment. We expected to find an interaction between participant mindset and prior source credibility on target persuasion. Under a dissimilarity mindset, we expected to replicate the contrast effect from Experiment 1, which, again, was obtained under conditions in which participants saw the prior and target sources as somewhat different (see Note 1). Under a similarity mindset, we expected to reverse this effect and find evidence for assimilation. That is, we expected the persuasiveness of the target message to be greater when that message was preceded by another message attributed to a source high rather than low in credibility.

A secondary objective of Experiment 2 was to identify the mechanism through which the current source effects were operating. As noted earlier, source information can affect persuasion through different processes at different levels of cognitive elaboration. When elaboration is low, source credibility affects attitudes by serving as a simple cue to persuasion (e.g., Petty et al., 1981). When elaboration is high, source credibility affects attitudes by other means, such as biasing the valence of thoughts people have in response to a persuasive message (e.g., Chaiken & Maheswaran, 1994). In Experiment 1 and Experiment 2, we created high elaboration conditions by leading all participants to believe important new policies were under consideration at their university for the near future (see Petty & Cacioppo, 1979). Thus, we expected the target attitude effects to be mediated by the favorability of participants' thoughts about the target issue. To assess this mechanism in Experiment 2, we included a measure of cognitive responses and computed an index of thought favorability.

Finally, although the attitude data from Experiment 1 were consistent with the notion that participants' perceptions of the target source varied across prior source conditions, no direct evidence was provided for this

assumption. Thus, an additional goal of Experiment 2 was to establish that the perceived credibility of the target source was influenced by the credibility of the prior source. We predicted that under difference focus, participants would view the target source as having greater credibility when the prior source was low rather than high in credibility. Under similarity focus, we expected to observe the opposite pattern. Of importance, because our primary interests remained with the attitude data, and because we sought to avoid a demand interpretation for the attitude effects, we measured perceptions of target source credibility near the end of the experiment.

METHOD

Participants and Design

A total of 86 IU undergraduates participated in partial fulfillment of a requirement for their introductory psychology courses. Participants were randomly assigned to conditions in a 2 (prime: similarity or dissimilarity) × 2 (prior source credibility: high or low) between-participants factorial design.

Procedure

Overall, this experiment was very similar to Experiment 1, including the use of computers for all experimental sessions, but there were a few key modifications. To begin with, at the outset of the experiment, participants were informed that the purpose of the study was to create a profile of the IU student body. Along these lines, participants were instructed that we would be assessing their views of the student body at their university, and then asking them to report their thoughts and opinions about several policies under consideration at IU. Following these instructions, participants were exposed to a priming manipulation (see description below). After the priming task, the procedure was essentially the same as in Experiment 1. That is, participants were presented with two messages in sequence. The first message argued in favor of a university service program. The second message argued in favor of a new comprehensive exam policy. These messages were identical to the messages used in Experiment 1. After reading the second message—that is, the target message about comprehensive exams—participants completed a series of dependent measures and were thanked and debriefed.

Independent Variables

Prime. At the beginning of the experiment, participants were randomly assigned to one of two priming conditions—the similarity condition or the dissimilarity condition. This manipulation was based on similar manipulations used in past research to induce assimilation and contrast effects, respectively (e.g., Mussweiler, 2001; Mussweiler, Rüter, & Epstude, 2004b). In the *similarity* condition, participants received the following instructions:

> The first part of this study involves your input in the development of a profile of the student body here at Indiana University. At the bottom of the screen, we would like you to list four similarities between you and other IU students. In other words, try to think of several ways in which you are similar to most other IU students, and list 4 of these similarities. Please list one entry (i.e., similarity) per screen and click continue to enter the next item. Also, for each entry, please make your observation clear by explaining the similarity.

In the *dissimilarity* condition, the instructions varied only in that participants were asked to think of several ways in which they were different from most other IU students and to list four of those differences. All other aspects of the instructions were identical. Following these instructions, participants recorded their similarities or differences by typing them into a series of boxes that appeared one at a time on the computer screen.[2]

Prior source credibility. We again operationalized source credibility in terms of expertise. As in Experiment 1, all participants were led to believe the target source was Cindy Ross, part-time Instructor at Southern Appalachian State Community College. Participants were randomly assigned to receive information that the source of the prior persuasive message was high or low in credibility. This manipulation was identical in both content and delivery to the manipulation used in the first experiment.

Dependent Measures

Attitudes. Immediately following the target message about comprehensive exams, participants rated comprehensive exam on the same items as in Experiment 1. Responses were averaged to form a composite attitude index ($\alpha = .94$).

Thought favorability. After reporting their attitudes toward the target issue, participants were asked to list the thoughts they had as they read the comprehensive exam message. They were instructed to type these thoughts into a series of boxes appearing on the screen. Participants were told not to worry about spelling or grammar as long as they effectively captured the main idea of each thought. At the end of the experiment, we presented participants with the thoughts they had listed and asked them to indicate whether each thought was favorable, unfavorable, or neutral with respect to comprehensive exams or the exam

message. A thought valence index was computed for each participant by subtracting the number of negative thoughts from the number of positive thoughts, and dividing this difference by the total number of thoughts listed. Higher values thus reflected a greater frequency of positive relative to negative thoughts. This index was adopted from past work on cognitive responses and persuasion (e.g., Petty, Briñol, & Tormala, 2002).

Perceived credibility. Immediately after listing their thoughts, participants reported their perceptions of the source of the comprehensive exam message. Specifically, participants rated the credibility of the source on two scales ranging from 1 to 9 with the following anchors: *not credible at all* to *very credible* and *not expert at all* to *very expert.* Responses to these items were averaged to form a composite index of perceived credibility (α = .77). Higher scores indicated greater perceived credibility.

## RESULTS

Attitudes

We began by submitting the attitude data to a 2 × 2 analysis of variance (ANOVA) with prime (similarity or dissimilarity) and prior source credibility (high or low) as the independent variables. There were no main effects for either prime or prior source credibility, $Fs < 1$. As shown in the top panel of Figure 1, however, there was a significant Prime × Prior Source Interaction, $F(1, 82) = 10.83$, $p = .001$. In the dissimilarity prime condition, we replicated the findings from Experiment 1—that is, attitudes toward the target issue (comprehensive exams) were more favorable when individuals had been exposed to a prior source low rather than high in credibility, $F(1, 82) = 4.88$, $p < .04$. In the similarity prime condition, this effect was reversed. In this case, attitudes toward comprehensive exams were more favorable when individuals had been exposed to a prior source high rather than low in credibility, $F(1, 82) = 5.96$, $p < .03$.

Thought Favorability

The thought favorability index was submitted to the same 2 × 2 ANOVA. This analysis produced the same pattern of effects as the analysis of the attitude data. That is, there were no main effects, $Fs < 1$, but there was a significant interaction between prime and prior source credibility, $F(1, 82) = 8.89$, $p < .01$. As depicted in the middle panel of Figure 1, participants in the dissimilarity prime condition listed relatively more favorable thoughts in the low rather than high prior source credibility condition, $F(1, 82) = 5.18$, $p < .03$. In the similarity prime condition,
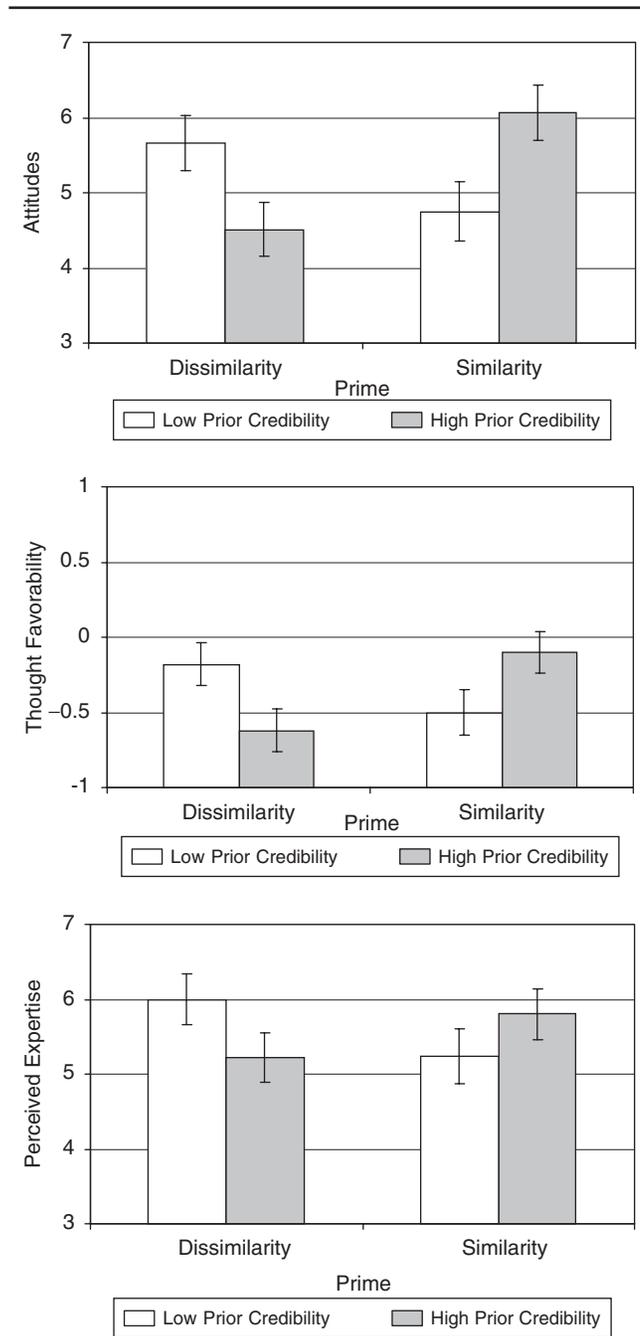
Figure 1   Attitudes (top panel), thought favorability (middle panel), and perceived source expertise (bottom panel) as a function of prime and prior source credibility in Experiment 2.
NOTE: Error bars show standard errors.

participants listed relatively more favorable thoughts in the high rather than low prior source credibility condition, $F(1, 82) = 3.80$, $p = .05$. Participants listed more negative than positive thoughts on average, which is to be expected given the counterattitudinal nature of the comprehensive exam issue.

Perceived Credibility

Finally, we submitted the perceived expertise ratings to the same analysis. Again, there were no main effects, Fs < 1, but there was a significant interaction, $F(1, 82) =$ 3.88, $p = .05$. As indicated in the bottom panel of Figure 1, although neither of the simple effects reached conventional levels of significance, the pattern of means replicated that of the attitude and thought favorability data. That is, participants in the dissimilarity prime condition tended to rate the target source as more credible when the prior source was low rather than high in credibility, $F(1, 82) = 2.78$, $p < .10$. In the similarity prime condition, participants tended to rate the target source as more credible when the prior source was high rather than low in credibility, $F(1, 82) = 1.28$, $p = .26$. Perhaps because this measure came last, the simple effects were somewhat weaker than with the other measures. Nevertheless, the key interaction was still obtained and it assumed the predicted form.

Mediation

To test the mediating role of thought favorability in the attitude interaction, we conducted a series of regression analyses, following the recommendation of Baron and Kenny (1986), treating the Prime × Prior Source Interaction Term (controlling for the prime and prior source main effect terms) as the primary predictor variable. To begin with, as already established, there was a significant Prime × Prior Source Interaction on both attitudes, $\beta = -.60$, $t(82) = -3.29$, $p = .001$, and thought favorability, $\beta = -.55$, $t(82) = -2.98$, $p < .01$. In addition, thought favorability predicted attitudes, $\beta = .71$, $t(84) = 9.12$, $p < .001$. When the Prime × Prior Source Interaction (along with the prime and prior source main effect terms) and thought favorability were entered into a simultaneous regression model predicting attitudes, thought favorability continued to predict attitudes, $\beta = .66$, $t(81) = 8.09$, $p < .001$, whereas the Prime × Prior Source Interaction did not, $\beta = -.24$, $t(81) = -1.64$, $p > .10$. This mediational pathway from the Prime × Prior Source Interaction to attitudes through thought favorability was significant ($z = 2.79$, $p < .01$).

DISCUSSION

The primary purpose of this experiment was to assess the possibility that prior source credibility could lead to both assimilation and contrast with respect to target persuasion. The results were consistent with this prediction. Although all participants received the same target message attributed to the same source, the persuasiveness of that message varied depending on the source of the prior message and participants' focus on similarities or dissimilarities. Participants primed to focus on dissimilarities were more persuaded by the target message following a different message attributed to a source of low rather than high credibility (contrast). Participants primed to focus on similarities showed the opposite effect. That is, they were more persuaded by the target message following a different message attributed to a source of high rather than low credibility (assimilation). These findings extend the findings of Experiment 1, which uncovered only a contrast effect on attitudes.

One important outcome in Experiment 2 was that the attitude effect was mediated by differences in thought favorability across conditions. As predicted, the prime and prior source manipulations interacted to influence the thoughts participants generated in response to the target message. These thoughts, in turn, determined target attitudes. In essence, when participants perceived the target source to be high rather than low in expertise, based on the prime and prior source manipulations, they generated relatively more positive thoughts in response to the target message, and thus formed more positive attitudes toward the target issue. This effect is consonant with past research showing that source credibility can affect attitudes by biasing thoughts under high elaboration conditions (Chaiken & Maheswaran, 1994). As in the Chaiken and Maheswaran (1994) research, the target message in this experiment was ambiguous in nature, containing both strong and weak arguments. It is possible that had we used only strong or weak arguments, thought favorability might not have mediated the attitude effects (Chaiken & Maheswaran, 1994), or perhaps we would have obtained a different pattern of context effects altogether (see Bohner et al., 2002). Target messages with unambiguously strong or weak arguments would be useful to include in future studies.

Finally, it is worth noting that in Experiment 2 the perceived credibility data were slightly weaker overall than the attitude or thought favorability data. Although the Prime × Prior Source Interaction on perceived credibility was reliable and in the predicted form, neither of the simple effects reached significance. Not surprisingly, then, additional analyses revealed that the perceived credibility index did not mediate the attitude or thought favorability effects. As mentioned already, we suspect that the perceived credibility index did not perform as well as the other measures because it was assessed near the very end of the experiment, after participants had reported their attitudes and listed their thoughts. We placed it at the end of the study to eliminate potential demand interpretations of the attitude effects and to more closely parallel real-world persuasion settings, in which people typically are not prompted to evaluate the

source immediately before evaluating the message itself. In future multiple-message studies, it may be worthwhile to assess source perceptions immediately following the target message to better assess its mediating potential with respect to the attitude and cognitive response effects.

GENERAL DISCUSSION

Persuasion researchers have typically studied persuasive messages delivered in isolation. We do not contest the value of studying persuasion in this fashion. We simply suggest that it is also important to study persuasive messages delivered in the context of other messages. After all, this is often how we receive persuasive messages in our daily lives, and the present experiments attest to the importance of prior messages in guiding the impact of subsequent messages. In two experiments, we found that the persuasive effect of a target message (attributed to a source of moderate expertise) was determined by whether that message followed another message on a different issue attributed to a source high or low in expertise.

In Experiment 1, we obtained a contrast effect such that target attitudes were more favorable when the source of a prior message was low rather than high in expertise. As described earlier, we view contrast in Experiment 1 as consistent with prior theories of context effects. The inclusion/exclusion model (Schwarz & Bless, 1992), for instance, suggests that contrast is more likely than assimilation to occur when the standard and target stimuli are exemplars rather than categories (see also Stapel et al., 1997). The sources used in Experiment 1 fit this criterion. Moreover, the *prior* sources we used were unambiguous and extreme in their high and low expertise, which can further foster contrast over assimilation (e.g., Herr et al., 1983). Finally, recent work by Mussweiler (2003) suggests that contrast is more likely than assimilation to occur when people perceive standard and target stimuli as relatively different rather than similar. As indicated in Note 1, this too was a characteristic of the prior and target sources in Experiment 1. Thus, the result of the first experiment was consistent with past research on context effects.

In Experiment 2, we obtained both assimilation and contrast, depending on the mindset with which participants had been primed. When participants had been primed with a difference mindset, we replicated the contrast effect from Experiment 1. When participants had been primed with a similarity mindset, an assimilation effect emerged such that target attitudes were more favorable when the source of a prior message was high rather than low in expertise. These results were compatible with recent models of assimilation and contrast in social judgment (e.g., Markman & McMullen, 2003; Mussweiler,

2003). Moreover, as predicted, the attitude effects in Experiment 2 were mediated by the favorability of participants' cognitive responses, as would be predicted by dual process theories of attitude change when elaboration is high (e.g., Chaiken & Maheswaran, 1994).

The overall pattern of evidence is particularly striking given that in both experiments all participants received the exact same target message attributed to the exact same source. Only the source associated with the prior message was varied. Thus, prior messages and the features associated with those messages appear to create a persuasive context that guides the impact of the target message. In conjunction with the Tormala and Petty (2007) research, then, the present research suggests that persuasion depends not only on one's perceptions of the target message (e.g., the source of that message or the amount of information contained in that message) but also on one's perceptions of other messages to which one recently has been exposed. In future research it would be useful to expand the current contextual framework by examining other persuasion variables (e.g., argument quality) in the multiple-message context.

Ultimately, we suspect that there are boundary conditions determining when and which variables will be susceptible to assimilation and contrast in multiple message situations. For example, the present effects may be moderated by the salience of a given variable in both the prior and target messages. As noted, we took steps in the present experiments to make the source of each message highly salient. Had the sources been less salient, we assume they would have drawn less attention and, thus, been less likely to serve as the focus of context effects. In addition to moderating the effects of a given variable, it could be that some persuasion variables generally are induced in salient ways (e.g., source credibility), whereas others tend to be induced more subtly (e.g., message framing). If true, we would expect salient manipulations to prove more amenable to multimessage context effects than more subtle manipulations. Exploring the role of variable salience in future work could usefully expand the current theoretical framework.

Contrast Versus Assimilation

To permit a carefully controlled test of assimilation versus contrast in Experiment 2—one that did not affect the content, source, or personal relevance of the prior or target messages in any way—we used an explicit prime to manipulate participants' focus on either similarities or dissimilarities. This approach was adapted from past research (e.g., Mussweiler, 2001). In Experiment 1, in which no prime was included, we found evidence only of contrast. Similarly, Tormala and Petty (2007), who

did not include a prime or other manipulation to examine moderation of assimilation and contrast, found evidence only of contrast in multiple message situations. Collectively, these findings suggest that contrast might be the more common context effect in many multiple message situations. As reviewed already, the notion that contrast may frequently emerge in these situations fits within the general framework of past research on context effects. For example, persuasive messages often feature extreme and exemplar-based stimuli (e.g., sources), which are well-known for producing contrast (e.g., Dijksterhuis et al., 1998; Herr et al., 1983; Schwarz & Bless, 1992; Stapel et al., 1997). When advertisers link their products to specific sources, for instance, they often capitalize on those sources' unique or exaggerated characteristics on such dimensions as fame, credibility, attractiveness, or humor. When sources with these characteristics endorse messages preceding a target persuasive communication, contrast may often emerge.

In theory, though, assimilation could also be a common outcome in many multiple message situations even when it is not directly induced with a prime. For example, in an effort to relate their products and messages to the common viewer, television advertisers sometimes feature sources that are moderate or ambiguous on dimensions such as attractiveness, expertise, or ethnicity. Moderate or ambiguous characteristics in *prior* sources could increase the likelihood of assimilation effects on target sources (e.g., Herr, 1986; Herr et al., 1983). Ultimately, we suspect that both assimilation and contrast can emerge in multiple persuasive message situations even when no similarity-dissimilarity prime has been manipulated. Further research is needed to identify the precise conditions under which these effects might occur.

Remaining Questions

Relation between the prior and target issues. At the outset of this article, we submitted that prior messages (and sources) can affect perceptions of target messages (and sources) even when the two messages have little to do with one another. As a caveat to this point, we acknowledge that the issues used in the current experiments, although clearly different in their specific content, might have been perceived as somewhat related by some participants. Both involved ostensible proposals under consideration at participants' university and, if enacted, both would have significant and potentially unpleasant consequences for students. It is possible that this general categorical connection between the issues raised in the two messages was sufficient to boost the perceived relevance of one to the other, thus increasing the extent to which participants relied on their perceptions of the first message and source to interpret the second message and source.

Although we did not systematically address the relevance issue in either of the current experiments, Tormala and Petty (2007) looked at the possible effects of related versus unrelated stimuli in multiple message situations. Tormala and Petty found that the relatedness of the stimuli had no effect on the outcome. Regardless of the content of the prior message, it consistently produced a contrast effect on perceptions of the target message. Nevertheless, the question remains important for the current research, in which the prior and target issues might be viewed as more related to one another. It would be useful to manipulate the relatedness of the prior and target issues in future work to determine if it moderates the impact of prior sources on perceptions of target sources. For example, if the prior message were about a new car and the target message were about comprehensive exams, would the present effects still obtain? Ultimately, it could be that relatedness affects assimilation and contrast very differently. For example, perhaps making prior and target issues less related would have no effect on contrast, which is increased by perceived differences between stimuli but makes assimilation less likely as people presumably must perceive some degree of similarity between two stimuli to assimilate perceptions of one to the other (Mussweiler, 2003; see also Ruys et al., 2006).

Multiple roles in multiple message situations. It is also worth considering the role of elaboration, or extent of thinking, in the present effects. As discussed earlier, we created high elaboration conditions in the current experiments to ensure that all participants would attend to and recall the information about both sources and messages. Consistent with the notion that participants were engaged in a relatively high degree of thought, the attitude effects in Experiment 2 were mediated by the favorability of participants' cognitive responses (Chaiken & Maheswaran, 1994; Petty & Cacioppo, 1986). Thus, the present research suggests that assimilation and contrast can occur in multiple message situations when people are at the high end of the elaboration continuum.

The question is what would happen at the low end of the elaboration continuum. Although our experiments were not designed to answer this particular question, we surmise that prior messages (and sources) also can guide the impact of subsequent messages (and sources) at lower levels of elaboration. As reviewed already, source credibility affects attitudes through different mechanisms at different levels of elaboration. When elaboration is low, credibility can serve as a simple cue or heuristic to persuasion (e.g., Petty et al., 1981). Thus, we assume that under low elaboration conditions we could obtain the same pattern of attitude effects as observed in present experiments, but these effects would operate through a

different, less thoughtful mechanism. For instance, people receiving multiple messages under low elaboration circumstances might simply attend to the relative credibility of the message sources, without processing the messages at all. On the other hand, it is also possible that a higher level of cognitive elaboration is required for people to attend to, remember, and base their judgments on the features associated with multiple persuasive messages simultaneously, which could mean context effects would disappear at lower levels of thought. Exploring these issues would be a useful direction for future research.

CONCLUSION

Persuasive messages are typically received within the context of other persuasive messages. Nevertheless, traditional persuasion research largely has overlooked the role of prior messages in determining the impact of target messages. The current research demonstrates that prior messages can have a potentially important impact on target messages, making them more or less effective depending on situational factors. Again, in both of the current studies, all participants received the exact same target message and source. However, their perceptions of the target source, their thoughts about the target message, and their attitudes toward the target issue all depended on the source of a message on a different topic, which they received prior to the target information. Our hope is that other researchers will be encouraged by these findings to consider the role of the context—specifically, the presence of prior messages and the features associated with those messages—in future persuasion research.

NOTES

1. We also sought to establish that participants viewed the prior and target sources as being different rather than similar, which presumably would foster a contrast effect on target source persuasiveness (e.g., Mussweiler, 2003). To test perceived source similarity in this paradigm, we conducted a second pilot study ($n = 22$) using the exact same design as Experiment 1 (with the same prior and target sources and messages). Immediately after receiving the second message, participants were asked the following question: "You just read about two issues, one from Kenneth Sturreck and one from Cindy Ross. In general, how similar do you think these sources are?" Participants responded to this question on a scale ranging from 1 to 9, anchored at *very different* and *very similar*. Perceived similarity did not differ as a function of participants' receiving a high credibility ($M = 4.08$, $SD = 1.61$) or low credibility ($M = 3.89$, $SD = 1.69$) prior source, $t(20) = -.26$, $p > .79$. However, the grand mean on the perceived similarity index ($M = 4.00$, $SD = 1.60$) was significantly lower than the scale midpoint (5), $t(21) = -2.93$, $p < .01$. Thus, participants viewed the prior and target sources as being dissimilar.

2. We asked participants to list only four observations to keep the task relatively easy. Had participants been asked to list a larger number of similarities or differences, they might have experienced the priming task as more difficult, thus attenuating the effect of the manipulation (see Schwarz, Bless, Strack, Klumpp, Rittenauer-Schatka, & Simons, 1991).

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