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MULTIPLE ROLES FOR SOURCE CREDIBILITY UNDER HIGH ELABORATION: IT'S ALL IN THE TIMING

Zakary L. Tormala
Stanford University

Pablo Briñol
Universidad Autónoma de Madrid

Richard E. Petty
Ohio State University

Past research suggests that under high elaboration conditions, source credibility can play more than one role in persuasion. In particular, source credibility can affect the valence of people's thoughts generated in response to persuasive messages or it can affect the confidence with which people hold those thoughts. In the present research, two experiments explore the conditions under which these conceptually distinct effects occur. It is demonstrated that the effect of source credibility on thought confidence is dominant when source information follows, rather than precedes, a persuasive message. When source information precedes a message, it affects the valence of issue–relevant thinking.

Considerable research attention has been devoted to understanding the effects of source credibility (expertise and trustworthiness) on persuasion (Petty & Wegener, 1998; Pornpitakpan, 2004). Consistent with the predictions of multi–process theories such as the elaboration likelihood (Petty & Cacioppo, 1986) and heuristic–systematic (Chaiken, Liberman, & Eagly, 1989) models, it has been discovered that source credibility can affect persuasion through a variety of dis-

Address correspondence to Zakary L. Tormala, Ph.D., Graduate School of Business, Stanford University, 518 Memorial Way, Stanford, CA, 94305-5015: E-mail: tormala_zakary@gsb.stanford.edu.

tinct mechanisms, depending on message recipients' level of elaboration, or processing. When elaboration is low, source credibility operates as a heuristic or cue to persuasion (e.g., Hovland & Weiss, 1951; Petty, Cacioppo, & Goldman, 1981). When elaboration is moderate, source credibility can determine the amount of processing that occurs (e.g., Heesacker, Petty, & Cacioppo, 1983).

Most germane to the current concerns, source credibility has been found to play multiple roles in persuasion when elaboration is high. For example, under high elaboration conditions, source credibility can affect attitudes by biasing thoughts (Chaiken & Maheswaran, 1994; Tormala & Clarkson, 2007). This finding fits with a host of prior studies demonstrating that persuasion under high elaboration often depends on the valence of issue–relevant thinking (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). Chaiken and Maheswaran (1994) argued that the biased–thought role for source credibility stems from the effect of credibility on expectancies for message validity. People expect expert sources to have more valid arguments than inexpert sources, leading them to process experts' messages with a positive bias. This bias can lead people to perceive message arguments as stronger, eliciting more favorable message–relevant thoughts and, in turn, more favorable attitudes. Because this process involves biased perception of message arguments, however, it only occurs when those arguments are ambiguous in strength and, thus, open to interpretation. When very strong or weak arguments are presented, Chaiken and Maheswaran found no effect of source credibility under high elaboration.

Other research highlights a different mechanism for source credibility effects when elaboration is high. Consistent with the self–validation hypothesis (Briñol & Petty, 2003; Petty, Briñol, & Tormala, 2002; Tormala, Petty, & Briñol, 2002), it has been shown that under high elaboration conditions, source credibility can influence persuasion by affecting the confidence with which people hold their message–relevant thoughts without affecting the valence of those thoughts (Briñol, Petty, & Tormala, 2004; Tormala, Briñol, & Petty, 2006). The logic behind this effect is that if one receives a message and generates thoughts in response to it, those *thoughts* can be validated or invalidated when one learns that the source of the message is high or low in credibility, respectively. In

one demonstration, Tormala et al. (2006) presented participants with a persuasive message under high elaboration conditions and measured their thoughts about that message. After listing thoughts, participants were led to believe the message came from a high or low credibility source. Participants had greater confidence in their thoughts after learning that the source was high rather than low in credibility, and this effect determined persuasion. When thoughts were favorable, more thought confidence produced more persuasion.

The present research aims to bridge the thought favorability and thought confidence accounts for source credibility effects under high elaboration. Both effects are fostered by high elaboration, because the more motivated and able people are to process, the more thoughts they have that can be biased by source credibility and the more interest they have in thinking about their own thoughts and gauging thought confidence. Although it could be that source credibility affects both thought favorability and thought confidence in some instances, past research suggests that these dimensions of thought often have separable antecedents and unique consequences (Briñol et al., 2004; Petty et al., 2002; Tormala et al., 2006). Furthermore, even if both processes operate at some level, one process could dominate the other in affecting attitudes (Petty, 1994). Thus, identifying the conditions under which each process is primarily responsible for persuasion is an important undertaking.

Interestingly, one methodological difference between the biased–processing and thought–confidence research is that source credibility was manipulated before the message in the former case and after the message in the latter case. It could be that this difference in timing determines which process is primarily responsible for source credibility effects under high elaboration. Indeed, when one receives source information *before* a message, it is capable of affecting the direction of issue–relevant thinking without prompting any metacognitive assessment of one's thoughts. One would generate positive thoughts when one perceives the message as valid (high credibility) and negative thoughts when one perceives the message as invalid (low credibility). There is no a priori reason to expect either type of thought to be held with more or less confidence. When one receives

source information *after* the message, it cannot affect the direction of thinking that has already occurred. It can, however, spark a metacognitive assessment of thoughts generated. One should have more confidence in one's thoughts when one thinks those thoughts are based on valid (high credibility) rather than invalid (low credibility) information. If one's message–relevant thoughts are at least somewhat positive, increasing thought confidence would boost persuasion.

OVERVIEW

In two experiments, participants were presented with a persuasive message from a high or low credibility source under high elaboration conditions. We varied whether the credibility manipulation came before or after the message. Our hypothesis was that regardless of source timing, attitudes would be more favorable in the high compared to low credibility condition. However, we expected the mechanism for this effect to vary with timing. When the source preceded the message, we predicted that source credibility would affect attitudes by influencing thought favorability. When the source followed the message, we predicted that source credibility would affect attitudes by influencing thought confidence. In each experiment, we present the results for attitudes, thought favorability, and thought confidence. Following the second experiment, we combine the data for maximal power and conduct mediational tests for thought favorability and thought confidence. The results of this analysis are presented in the General Discussion.

EXPERIMENT 1

METHOD

Participants and Design

Ninety Ohio State University undergraduates participated in partial fulfillment of a course requirement. They were randomly assigned to conditions in a 2 (source credibility: high or low) × 2 (timing of credibility: pre–message or post–message) between–participants factorial design.

Procedure

Participants were seated at personal computers. The opening screen led participants to believe the study concerned consumer evaluations. To motivate high elaboration, all participants were told they were part of a small group of people participating in this research, so their responses were very important (Chaiken & Maheswaran, 1994; Petty, Harkins, & Williams, 1980). Participants then received a persuasive message in favor of phosphate–based laundry detergents (see Pratkanis, Greenwald, Leippe, & Baumgardner, 1988). As explained earlier, past research suggests that source credibility effects on thought favorability are attenuated when very strong or weak arguments are presented (Chaiken & Maheswaran, 1994). However, to permit self–validation effects to occur, there must be a general pattern of thoughts in one direction or another (Briñol et al., 2004). Thus, we presented participants with a persuasive message pretested to be *moderately* strong, meaning it elicited slightly more positive than negative thoughts. This message claimed that phosphate detergents were affordable, effective, gentle on clothes, light in weight, easy to carry home, and favored by 6 out of 10 people at a local market.

Following the message, participants were instructed to list the thoughts they had about phosphate detergents while they were reading the message. Ten boxes were provided for individual thoughts, appearing one at a time on the computer screen (for instructions see Cacioppo, Harkins, & Petty, 1981). After this task, participants completed measures of attitudes, thought confidence, and perceived source credibility.

INDEPENDENT VARIABLES

Source Credibility. Participants were randomly assigned to the high or low credibility condition, using a manipulation adapted from past research (Pratkanis et al., 1988). In the *high credibility* condition, participants were told the information came from a government agency that investigates consumer products to help consumers make sound decisions. In the *low credibility* condition, participants were told the information came from a major soap and detergent manufacturer that sells phosphate detergents. Given its vested interest in the product, the latter source was expected to be viewed skeptically.

Timing. Participants were randomly assigned to receive source information either before or after the message. In the *pre–message* condition, the source was identified before the message ("The information you are about to read . . ."). In the *post–message* condition, the source was identified after the message and thought–listing procedure ("The information you just read . . .").

Dependent Measures

Attitudes. Attitudes toward phosphate detergents were assessed using semantic differential scales ranging from 1 to 9 with the following anchors: *bad–good*, *unfavorable–favorable*, *negative–positive*, *beneficial–harmful*. Responses were averaged to create a composite index ($\alpha = .92$).

Confidence in Thoughts. After reporting attitudes, participants were asked to think back to the thoughts they had during the message and rate how confident they were in those thoughts, how certain they were about those thoughts, and how valid they believed those thoughts were. Scales ranged from 1 to 9, anchored at *not at all* and *extremely*. Responses were averaged to form a composite index ($\alpha = .83$).

Perceived Trustworthiness. Finally, participants rated how much they trusted that the information about phosphate detergents was objective and fair, and how honest they perceived the source of the message to be. Scales ranged from 1 to 9, anchored at *not at all* and *very much*. These items were highly correlated, $r = .87$, $p < .001$, so we averaged them to form a composite index.

Thought Favorability. After all experimental sessions had been completed, a judge who was blind to experimental conditions and hypotheses coded thoughts for favorability. Each thought was coded as favorable, unfavorable, or neutral toward phosphate detergents. To form an index of favorability we subtracted the number of unfavorable thoughts from the number of favorable thoughts and divided the difference by the total number of thoughts (see Petty et al., 2002). A second judge coded the thoughts of 25 randomly selected participants. The favorability indices of the two judges were highly correlated, $r = .80$, $p < .001$, so the first judge's ratings were deemed reliable.

RESULTS

We submitted all measures to 2 × 2 ANOVAs with source credibility and timing as the independent variables.

Trustworthiness

The source of the message was rated as more trustworthy in the high (M = 5.11, SD = 1.97) rather than low (M = 3.41, SD = 1.65) credibility condition, F (1, 86) = 19.89, $p < .001$. No other effects approached significance, Fs < 1.

Attitudes

Attitudes were more favorable in the high (M = 6.14, SD = 1.57) rather than low (M = 5.17, SD = 1.45) credibility condition, F (1, 86) = 9.69, $p < .004$. There was neither a main effect for the timing manipulation, F (1, 86) = 2.73, $p > .10$, nor a credibility × timing interaction, $F < 1$.

Thought Favorability

Analysis of the thought favorability index revealed main effects for neither credibility, F (1, 86) = 1.52, $p = .22$, nor timing, $F < 1$. As illustrated in the top panel of Figure 1, however, we found a significant credibility × timing interaction, F (1, 86) = 8.58, $p < .005$. Credibility influenced thought favorability when it preceded, F (1, 86) = 9.45, $p < .01$, but not when it followed, F (1, 86) = 1.33, $p > .25$, the message.

Confidence in Thoughts

Finally, on thought confidence there were no main effects for credibility, $F < 1$, or timing, F (1, 86) = 1.98, $p > .16$, but there was a significant interaction, F (1, 86) = 3.94, $p = .05$. As illustrated in the bottom panel of Figure 1, credibility tended to influence thought confidence when it followed, F (1, 86) = 3.32, $p < .08$, but not when it preceded, $F < 1$, the message.

DISCUSSION

Experiment 1 provided initial evidence that under high elaboration conditions, source credibility affects thoughts differently de-

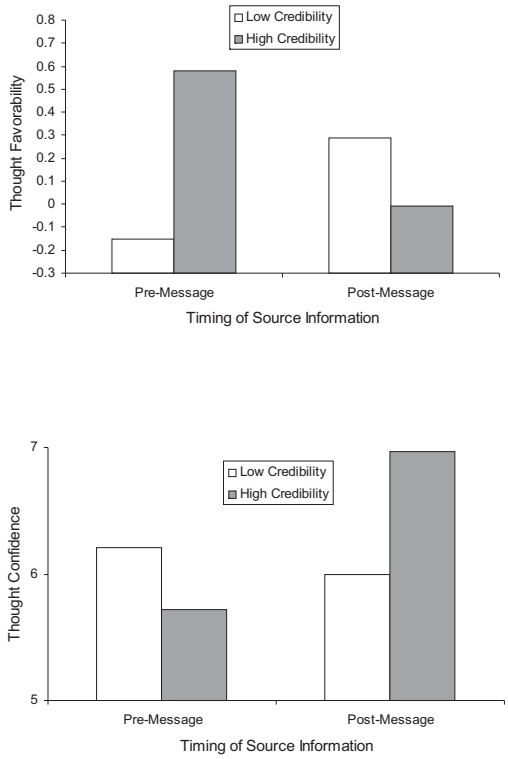

FIGURE 1. Thought favorability (top panel) and thought confidence (bottom panel) as a function of source credibility and timing in Experiment 1.

pending on timing. Yet two caveats should be noted. First, the design of Experiment 1 essentially assured that thought favorability would not be affected by credibility in the post–message condition. In this condition, thoughts were listed before the source manipulation, making it impossible for that manipulation to influence recorded thought favorability. It is possible that source information in this condition prompted new thoughts about the message or issue and, if so, these thoughts could have affected attitudes.

This caveat does not affect interpretation of the thought confidence data, however. Thought confidence was assessed after the source credibility manipulation in both the pre–message and the

post–message condition and yet credibility only affected thought confidence in the post–message condition. Nevertheless, one could argue that our thought confidence outcome also was open to alternative explanation given that the thought confidence measure followed the attitude items. It is possible that rather than *affecting* participants' attitudes, thought confidence was reported in a way that would justify the attitudes already formed and reported. This account would not explain why thought confidence was unaffected by source credibility in the pre–message condition, but it might have played some role in the post–message condition.

To provide stronger evidence for the current hypotheses, we modified the sequence of events in Experiment 2. First, we presented source credibility information in the post–message condition immediately after the message and before the thought listing procedure. Thus, all participants received the source information prior to listing thoughts, which would allow the thought listing task to reveal any effects of credibility on thought favorability. Second, across conditions we assessed thought confidence immediately after the thought listing procedure and before attitudes. Despite these changes, we expected to replicate our key findings.

EXPERIMENT 2

METHOD

Participants and Design

Eighty-two Ohio State University undergraduates participated in partial fulfillment of a course requirement. The design and procedure for this experiment were almost identical to that of the first study (including the use of high elaboration conditions), but there were a few key modifications. Of greatest importance, all participants received source information before listing thoughts or completing any other measures. To accommodate this change, we also modified the thought listing instructions. When participants received the source information, it appeared on a computer screen with a heading reading "Important Background Information." Then, for the thought listing task, participants were in-

structed to list the thoughts they had while they were receiving "the information." Thus, the instructions made no explicit reference to the persuasive message. Instead, the instructions were ambiguous so participants could interpret them as referring to the message, the source information, or both. Also important, immediately after listing thoughts, and before reporting attitudes, all participants completed a measure of thought confidence. Finally, having already demonstrated the effect of source credibility on perceived source trustworthiness, we dropped this measure.

Independent Variables

Source Credibility. The credibility manipulation was essentially identical to that from Experiment 1.

Timing. The timing manipulation was modified slightly from that of Experiment 1. In the *pre–message* condition, participants again received source information immediately before the message. In the *post–message* condition, the source information was presented immediately after the message and before the thought–listing procedure.

Dependent Measures

Confidence in Thoughts. Directly following the thought–listing task, participants were asked to indicate their overall confidence in their thoughts on a single scale ranging from 1 (*none at all*) to 9 (*very much*).

Attitudes. After the thought confidence item, attitudes were assessed using semantic differential scales ranging from 1 to 9 with the following anchors: *bad–good*, *unfavorable–favorable*, *negative–positive*, *beneficial–harmful*, *against–in favor*, *foolish–wise* (α = .94).

Thought Favorability. In this experiment, participants rated their own thoughts for favorability. At the end of the experiment, participants were presented with the thoughts they had listed and they classified each one as positive, negative, or neutral toward phosphate detergents. Prior research has shown that participant ratings of thoughts are highly correlated with the ratings of independent judges (e.g., Cacioppo et al., 1981). Based on participants'

ratings, an index of thought favorability was computed in the same manner as in Experiment 1.

RESULTS

We submitted all measures to 2 (source credibility) × 2 (timing) ANOVAs.

Attitudes

Attitudes were more favorable in the high ($M = 6.21$, $SD = 1.37$) rather than low ($M = 5.62$, $SD = .96$) credibility condition, $F(1, 78) = 4.85$, $p < .04$. No other effects approached significance, Fs < 1.

Thought Favorability

There was no effect of timing on thought favorability, $F < 1$, but there was a marginal effect for source credibility, $F(1, 78) = 3.35$, $p < .08$. This effect was qualified, however, by the predicted interaction, $F(1, 78) = 6.63$, $p < .02$. As illustrated in the top panel of Figure 2, credibility influenced thought favorability when it preceded, $F(1, 78) = 9.42$, $p < .01$, but not when it followed, $F < 1$, the message.

Confidence in Thoughts

Finally, on thought confidence there was no main effect for timing, $F < 1$, but there was a significant effect of source credibility, $F(1, 78) = 5.81$, $p < .02$. As predicted, though, this too was qualified by a significant interaction, $F(1, 78) = 6.23$, $p < .02$. As depicted in the bottom panel of Figure 2, credibility affected thought confidence when it followed, $F(1, 78) = 12.40$, $p < .001$, but not when it preceded, $F < 1$, the message.

DISCUSSION

Experiment 2 replicated the findings from Experiment 1 using stronger tests of our key hypotheses. In short, under high elaboration conditions, source credibility affected attitudes regardless of whether it preceded or followed the persuasive message. As predicted, though, credibility affected thoughts and thought confi-

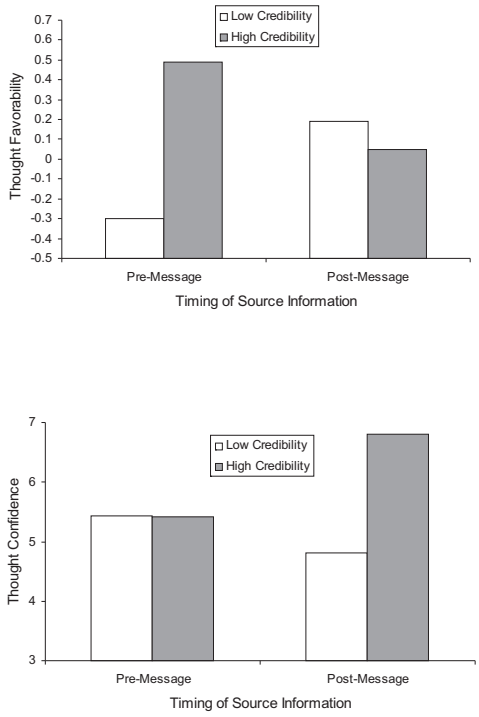

FIGURE 2. Thought favorability (top panel) and thought confidence (bottom panel) as a function of source credibility and timing in Experiment 2.

dence differently depending on timing. When the source was identified after the message, but before participants listed their thoughts, it appeared to prompt metacognitive reflection such that participants assessed their thoughts for validity or confidence. Of importance, this effect emerged despite placing the thought confidence measure before the attitude items. When participants had the source information all along, it affected the valence of thoughts that came to mind but did not appear to spark any critical assessment of those thoughts. We found no evidence to support the notion that participants in the post–message condition had different thoughts after receiving the source information.

GENERAL DISCUSSION

The present experiments sought to connect prior findings with respect to the processes underlying source credibility effects in persuasion under high elaboration conditions. As reviewed earlier, past research suggests that when elaboration is high, source credibility can influence attitudes by affecting either thought favorability or thought confidence. In two experiments, we found that the timing of the source information determined which effect dominated. When source credibility was manipulated before the message, it affected thought favorability, but had no measurable impact on thought confidence. When source credibility was manipulated after the message, it affected thought confidence, but no impact on thought favorability was evident. This pattern of effects was obtained in both experiments despite important methodological changes.

Thus, the results were consistent with the notion that source credibility affects attitudes by different means depending upon whether it precedes or follows a message. To conduct a formal test of mediation, we pooled the data from each experiment to attain maximal power, and we conducted two separate mediational analyses—one for the pre–message condition and one for the post–message condition (see Wegener & Fabrigar, 2000).[1]

We first assessed mediation in the pre–message condition. The results in each experiment were consistent with the notion that thought favorability mediated the attitude effect under these conditions. To test this idea, we conducted a series of regression analyses (Baron & Kenny, 1986). Source credibility affected both attitudes, $\beta = .29$, $t(85) = 2.84$, $p < .01$, and thought favorability, $\beta = .43$, $t(85) = 4.36$, $p < .001$. There was also a significant relation between thought favorability and attitudes, $\beta = .39$, $t(85) = 3.86$, $p < .001$. When source credibility and thought favorability were both entered as predictors in the regression equation, thought favorability continued to predict attitudes, $\beta = .32$, $t(84) = 2.89$, $p < .01$, whereas source credibility did not, $\beta = .16$, $t(84) = 1.44$, $p > .15$. A Sobel test indicated that this mediational pathway through

1. In a separate analysis we also included "experiment" as a factor. There were no significant effects involving this factor.

thought favorability was significant, $z = 2.37$, $p < .02$. Thought confidence could not be a mediator in the pre–message source condition, because credibility had no impact on thought confidence in this condition.

For the post–message source condition, the results from each experiment suggested alternative mediation. In this case, thought favorability could not be a mediator as it was not affected by credibility, but thought confidence could. We tested this possibility using the same strategy, this time selecting for the post–message condition. We found a significant effect of source credibility on both attitudes, $\beta = .27$, $t(83) = 2.60$, $p < .02$, and thought confidence, $\beta = .38$, $t(83) = 3.74$, $p < .001$. There was also a significant relation between thought confidence and attitudes, $\beta = .46$, $t(83) = 4.67$, $p < .001$. When both source credibility and thought confidence were entered as predictors, thought confidence remained a significant predictor of attitudes, $\beta = .41$, $t(82) = 3.90$, $p < .001$, whereas source credibility did not, $\beta = .12$, $t(82) = 1.12$, $p > .26$. This mediational pathway through thought confidence was significant, $z = 2.57$, $p < .02$.

Across studies, then, the data matched the predicted pattern of mediation. These findings expand our understanding of the multiple roles source credibility can play in persuasion. Although it has been established for some time that source credibility can play different roles in persuasion depending on message recipients' level of elaboration, the present research advances past research by highlighting the conditions under which credibility can play different roles under high elaboration. That is, even *within* levels of elaboration, source credibility can affect attitudes through different mechanisms.

This is a potentially important finding given that the thought favorability and thought confidence perspectives can make different predictions under some conditions. When elaboration is high and message arguments are unambiguously weak, for example, the thought favorability perspective generally has suggested that source credibility has either no effect (because it is hard to bias perceptions of clearly weak arguments; Chaiken & Maheswaran, 1994; Petty & Cacioppo, 1986) or a positive effect (because if any biasing occurs, high credibility would still create more favorable thoughts) on attitudes. In contrast, the thought

confidence perspective predicts that when elaboration is high and message arguments are weak, source credibility will have a reverse effect on attitudes such that increasing credibility undermines persuasion. Indeed, to the extent that thoughts are negative due to the weak arguments and high credibility increases thought confidence, increasing credibility should produce more negative attitudes (see Tormala et al., 2006). Interestingly, though, this reversal might not only stem from thought confidence effects. Recent studies by Bohner, Ruder, and Erb (2002) suggest that high source expertise can backfire when weak arguments are presented, because weak arguments violate people's expectancies for expert sources, leading to more negative thoughts and less persuasion. Thus, future research should explore the role of source timing in determining when and why increasing source credibility might undermine persuasion.

Finally, it is worth noting that in addition to source credibility, a number of other variables have been explored from a multiple roles perspective. For example, mood has been found to bias thinking under high elaboration conditions and serve as a simple persuasion cue under low elaboration conditions (Petty, Schumann, Richman, & Strathman, 1993). Perhaps the timing of mood inductions can determine the specific role that mood plays when elaboration is high. It could be that mood inductions that occur prior to a message bias thoughts (Petty et al., 1993), whereas mood inductions that occur after a message affect thought confidence. This and other domains in which the multiple roles notion has been advanced (see Tormala, Petty, & DeSensi, in press) may benefit from considering the timing of the key manipulations.

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