

# The Effects of Majority Versus Minority Source Status on Persuasion: A Self-Validation Analysis

Javier Horcajo  
Universidad Autónoma de Madrid

Richard E. Petty  
The Ohio State University

Pablo Briñol  
Universidad Autónoma de Madrid

The present research proposes that sources in the numerical majority (vs. minority) can affect persuasion by influencing the confidence with which people hold their thoughts in response to the persuasive message. Participants received a persuasive message composed of either strong or weak arguments that was presented by a majority or a minority source. Consistent with the self-validation hypothesis, we predicted and found that the majority (vs. minority) status of the source increased the confidence with which recipients held their thoughts. As a consequence, majority (vs. minority) sources increased argument quality effects in persuasion when source status information followed message processing (Experiment 1). In contrast, when the information regarding source status preceded (rather than followed) the persuasive message, it validated the perception of the position advocated, reducing message processing. As a consequence of having more confidence in the position advocated before receiving the message, majority (vs. minority) sources reduced argument quality effects in persuasion (Experiment 2). Finally, Experiment 3 isolated the timing of the source status manipulation, revealing that sources in the numerical majority (vs. minority) can increase or decrease persuasion to strong arguments depending on whether source status is introduced before or after processing the message.

*Keywords:* attitudes, persuasion, minority status, validation, metacognition

One of the most examined source variables in the persuasion literature is whether the persuasive proposal is said to be endorsed by a majority or a minority of other people (see reviews by Crano & Seyranian, 2007; De Dreu, 2007; De Dreu & De Vries, 2001; Martin & Hewstone, 2008; Tormala, Petty, & De Sensi, in press). Research on minority influence over the years has revealed a variety of effects that sources in the numerical minority versus majority can have on persuasion. Typically, numerical majorities exert greater influence than numerical minorities do (see Wood, Lundgren, Ouellette, Busceme, & Blackstone, 1994), although sometimes minorities can be more effective (see Baker & Petty, 1994; Crano & Chen, 1998; Martin, Hewstone, & Martin, 2007; Moscovici, 1980; Mugny & Pérez, 1991).

As was the case for most persuasion variables (see Petty, 1997), the first intuitive and empirical approaches to minority versus majority source status were guided by relatively simple questions such as “Are majority sources more persuasive than minority sources?” These early approaches also focused on just one process

by which majority (vs. minority) sources produced their main-effect impact. For example, Moscovici’s (1980, 1985) *conversion theory* proposed that a majority source is more influential on a public or direct level because individuals desire to belong to the majority group. Since the goal is to attain majority group membership and to avoid being categorized as a deviant minority, people are motivated to accept the majority position. Yet Moscovici also held that minority sources could be persuasive at an indirect or private level. In his view, this is because people resist directly identifying with minorities. On the other hand, because of the enhanced thought minority messages receive, attitudes would sometimes change to minority sources on issues related to the focal topic if not the focal topic itself (e.g., change would occur on birth control if the topic was abortion; e.g., Crano & Chen, 1998).

## Multiple Processes of Majority/Minority Impact

In the years since Moscovici’s classic analysis of minority influence, there has been an explosion of interest in the topic, and numerous mechanisms by which majority and minority sources can affect attitudes have been identified. Notably, in accord with contemporary multiprocess theories of persuasion such as the elaboration likelihood model (ELM; Petty & Cacioppo, 1986) and the heuristic-systematic model (Chaiken, Liberman, & Eagly, 1989), the majority or minority status of the message source has been shown to serve in different roles depending on the overall likelihood of thinking. Thus, source status has served as a simple cue to acceptance when thinking about the message has been constrained to be low (e.g., Darke et al., 1998; Giner-Sorolla &

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Javier Horcajo and Pablo Briñol, Department of Psychology, Universidad Autónoma de Madrid, Madrid, Spain; Richard E. Petty, Department of Psychology, The Ohio State University.

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Correspondence concerning this article should be addressed to Javier Horcajo, Department of Psychology, Universidad Autónoma de Madrid, Campus de Cantoblanco (Crta. Colmenar, Km. 15), Madrid 28049, Spain. E-mail: javier.horcajo@uam.es

Chaiken, 1997; Mackie, 1987). In one study, for instance, Martin et al. (2007) manipulated the level of elaboration and found that when either motivational or cognitive factors encouraged low message elaboration, there was heuristic acceptance of the majority position without detailed message processing.

When thinking has been high, however, source status has biased the thoughts generated. Specifically, minority sources have been shown to foster resistance by negatively biasing message recipients' thoughts about the persuasive message or attitude object (e.g., Erb, Bohner, Schmalzle, & Rank, 1998), whereas majority sources have prompted a positive bias, fostering greater persuasion (e.g., Mackie, 1987). In one study, for instance, Trost, Maass, and Kenrick (1992) manipulated the extent of thinking with a personal relevance induction and found greater evidence of biased processing of minority messages when participants found the message to be high rather than low in personal relevance (see also Martin et al., 2007).<sup>1</sup>

Finally, when thinking has not been constrained by other variables to be high or low, source status has affected how much thinking people have done about the message (e.g., Baker & Petty, 1994; De Dreu, 2007; Mackie, 1987; Martin et al., 2007) or what type of thinking has been done (e.g., Butera, Mugny, Legrenzi, & Pérez, 1996; Kenworthy, Hewstone, Levine, Martin, & Willis, 2008; Mucchi-Faina & Pagliaro, 2008; Nemeth, 1986, 1995; Smith, 2008). As noted earlier, Moscovici (1980, 1985) was the first to advance the notion that minority influence can involve greater message processing than does majority influence, and numerous researchers have provided some evidence for this view (e.g., Crano & Chen, 1998; Maass & Clark, 1983; Martin, Hewstone, & Martin, 2003; Moskowitz, 1996). However, sometimes it appears that majority sources can induce more processing than minority sources (e.g., Mackie, 1987; Martin & Hewstone, 2003; Shuper & Sorrentino, 2004). Various contextual factors have been identified that determine whether it is majorities or minorities that elicit more thinking in these unconstrained situations, such as whether it is more surprising to have the position endorsed by a majority or minority (e.g., Baker & Petty, 1994; see Martin & Hewstone, 2008, and Tormala et al., in press, for reviews).

### **A New Role for Majority/Minority Impact: Self-Validation**

Although several mechanisms of majority/minority impact have already been identified, our goal in the current research was to articulate a completely new mechanism by which majority or minority sources can influence attitudes. Specifically, we argue that a source's majority or minority status can affect persuasion not only by serving as a simple cue or affecting the amount, type, or direction of thinking but also by influencing the confidence with which people hold their thoughts in response to the persuasive message. That is, we propose that, at least under some circumstances, majority (vs. minority) influence can operate through *self-validation processes* (Petty, Briñol, & Tormala, 2002).

The self-validation approach is that the numerical status of the source can influence message recipients' confidence in their thoughts to the message. Confidence is a subjective sense of conviction about the validity of one's beliefs, opinions, goals, or whatever mental content is active (e.g., Briñol & Petty, 2009a; Gross, Holtz, & Miller, 1995). An early link between source status

and recipient confidence can be found in Festinger's (1954) discussion of social comparison theory. Festinger suggested that people evaluate the correctness of their attitudes by looking to other people's opinions. Thus, if people are assessing the correctness of an advocated position, they could use the number of other people who endorse the position as a cue to its validity and see the position as more correct when endorsed by a majority than a minority (see also Asch, 1956).

A large body of research now suggests that a subjective sense of confidence can play an important role in persuasion by validating people's own thoughts (e.g., Briñol & Petty, 2009a). The particular thoughts that are salient, and thus validated, will vary depending upon when confidence is induced—before or after receipt of a message. In the domain of persuasion, what is salient prior to message receipt is the confidence people have in their own initial opinion versus the confidence they have in the opinion advocated by the source (see Chaiken et al., 1989). When people already have an opinion that comes to mind quickly, this opinion is likely to be salient, and any confidence induction should increase confidence in that opinion relative to the source's opinion (e.g., see Briñol, Petty, Gallardo, & DeMarree, 2007). On the other hand, if people do not have a prior opinion or if it is not very accessible, then the perception of the position advocated is likely to be more salient than their own view. In this case, any confidence induction should increase confidence in the advocated view rather than one's own opinion. Whether people are confident in their opinion or in that advocated can determine how much thinking the message elicits. When people are very confident in their own existing attitudes, there is little need to process additional information on the object (e.g., Maio, Bell, & Esses, 1996; Tiedens & Linton, 2001; Weary & Jacobson, 1997). Similarly, if people can be confident that what the message is advocating is completely valid, there is also little need to think about the communication (e.g., Priester & Petty, 1995). In short, as confidence in the validity of one's own attitude or that advocated by the source increases, this signals that those beliefs can be relied upon, and thus, the need to attend carefully to subsequent information on the topic is reduced. As a consequence of reduced thinking when confidence is high, when the message contains strong (i.e., convincing) arguments, confidence will be associated with less persuasion than uncertainty since the reduced thinking associated with confidence will undermine realization of the cogency of the message. On the other hand, when the message contains weak (i.e., specious) arguments, confidence will be associated with more persuasion than uncertainty as people are less likely to recognize the flaws in the arguments when thinking is low rather than high (Petty & Cacioppo, 1986).

The situation should be quite different when people are made to feel confident or doubtful immediately following receipt of a message. Considerable research has demonstrated that when peo-

<sup>1</sup> One additional possibility for source status under high elaboration conditions according to the ELM is that it could be scrutinized as an argument and affect persuasion accordingly. Imagine, for example, a product that is designed to appeal to a particular segment of society. The fact that it is liked by only a minority of people might serve as evidence of the exclusivity and uniqueness of the product and thereby serve as a persuasive argument in favor of the product for some individuals. If the product was liked by a majority, however, this would not be good evidence for the exclusivity of the product.

ple are thinking carefully about an issue, their thoughts to the message are salient following message receipt, and the number and valence of these thoughts determine the attitudes formed (see Eagly & Chaiken, 1993; Petty, Ostrom, & Brock, 1981; Petty & Wegener, 1998, for reviews). Research on the self-validation hypothesis (Petty et al., 2002) has suggested that in addition to the number and valence of these thoughts, it is also important to consider the confidence people have in their thoughts. According to the self-validation framework, any variable that increases confidence in thoughts is likely to increase reliance on those thoughts in determining attitudes. Thus, increased confidence in favorable thoughts toward the persuasive proposal will result in more positive attitudes, whereas increased confidence in unfavorable thoughts will result in less positive attitudes. Conversely, any variable that instills doubt in thoughts is likely to decrease reliance on those thoughts in determining attitudes. Increasing doubt in favorable thoughts to a message's proposal will result in less favorable attitudes, whereas increasing doubt in unfavorable thoughts to a proposal will result in more favorable attitudes. Thus, even if people generate the same number and valence of thoughts to a message, their attitudes can differ if thought confidence differs. Several studies have provided support for this self-validation role of thought confidence in persuasion (see Briñol & Petty, 2009a, for a review).

Notably, the self-validation hypothesis predicts the opposite interaction with argument quality when confidence follows message processing than when it precedes it. As explained earlier, when confidence precedes message processing, it reduces the impact of argument quality since people are thinking less about the arguments than when uncertainty is present. However, when confidence follows message processing, it would increase the impact of argument quality effects because the confidence becomes attached to the salient mental contents at the time, which are one's positive or negative thoughts to the message. Thus, when the message contains strong (i.e., convincing) arguments, confidence will be associated with more persuasion because people will rely more on their positive thoughts to the cogent message. On the other hand, when the message contains weak (i.e., specious) arguments, confidence will be associated with less persuasion as people are more reliant on their negative thoughts to the flawed arguments.

In a prior illustration of the moderating role of timing on confidence effects, Briñol, Petty, Gallardo, and DeMarree (2007) presented people with a self-affirmation induction (Steele, 1988) either prior to or after receipt of a persuasive message. The key finding was that when the self-validation induction (i.e., a self-affirmation) preceded the persuasive message, it reduced information processing and the impact of argument quality on attitudes, consistent with past research on premessage confidence and elaboration (e.g., Tiedens & Linton, 2001). However, when the validating induction followed the persuasive message, it affected thought confidence and increased the impact of argument quality on attitudes. Our prior findings on self-validation argue that research on persuasion can benefit from considering the timing of the key manipulations as placement of the independent variable in the sequence of persuasion stimuli can have an impact on the mechanism by which it operates. In line with this notion, timing plays an essential role in our studies on majority versus minority impact.

## Overview of the Present Research

In accord with the self-validation hypothesis, we argue that the confidence (vs. doubt) induced by a majority (vs. a minority) source can validate whatever mental content is salient to people (i.e., the perception of the position taken by the source when source status precedes the message or their thoughts in response to the message when source status follows the message). The procedure we used to examine the self-validation approach was similar across three studies. Participants were assigned to receive majority or minority source status information either before or after receiving a persuasive message composed of strong or weak arguments on a novel topic. A novel topic was used so that the source status was most likely to validate people's perception of the validity of the source's position when they learned of the source prior to message receipt. However, our first study aimed to provide the first test of the idea that source status can validate one's thoughts to a message when the source status is revealed following processing of the message. Consistent with the self-validation hypothesis, when source status is induced after message processing, it cannot affect the extent of message processing, but it should affect attitude change by influencing the extent to which people rely on the thoughts they have already generated to the message. Thus, we predicted that a majority source status should lead to a greater argument quality effect on attitudes than a minority source status condition because confident people would be more reliant on their positive thoughts to the strong message and negative thoughts to the weak one.

Then, in Experiment 2, we presented the same source status information prior to presentation of the persuasive message. When source status is induced prior to a persuasive message, we predicted that the enhanced confidence from majority source status should decrease the likelihood of careful information processing. As explained earlier, when source status precedes the message it can provide information about the likely validity of the message position—at least when the topic is one for which people do not have strong prior attitudes. As a result, in Experiment 2, we predicted that majority source status would lead to reduced argument quality effects on attitudes compared to a minority source status condition. After all, if the message is already presumed to be valid, there is less need to process it than if the validity of the position is questionable (cf. Priester & Petty, 1995).

Taken together, our first two studies examined whether a majority relative to a minority source can either increase (when following the message) or decrease (when preceding the message) argument quality effects in persuasion. After testing these assumptions in separate investigations, in the final study (Experiment 3), we experimentally manipulated whether majority (vs. minority) source status was induced before or after receiving a persuasive message.

### Experiment 1: Thought Confidence Effects When Source Status Follows the Message

Experiment 1 was designed to provide an examination of whether majority (vs. minority) source status that is introduced following a message can influence attitude change by validating one's thoughts in response to the message. Participants first received a persuasive message composed of either strong or weak

arguments. This manipulation was designed to produce mostly favorable thoughts in response to the strong message and mostly unfavorable thoughts in response to the weak message. Following the argument quality manipulation, participants were assigned to the majority or minority source status conditions. Of importance, following this, participants reported the confidence that they had in their thoughts. On the basis of the potential influence of source status on the perceived validity of thoughts elicited by the message, we predicted majority source status individuals to show a greater effect of argument quality on attitudes than minority source status individuals. In other words, we predicted that source status would interact with argument quality to influence persuasion and that this effect would be mediated by changes in thought confidence.

## Method

**Participants and design.** One hundred and ten undergraduate psychology students at the Universidad Autónoma de Madrid (Madrid, Spain) participated in partial fulfillment of a course requirement. They were randomly assigned to the cells of a 2 (argument quality: strong vs. weak)  $\times$  2 (source status: majority vs. minority) between-participants factorial design.

**Procedure.** First, participants read a cover story that led them to believe they were taking part in a study designed to examine the organizational conditions in an unfamiliar international company. In fact, no participants had any prior knowledge or opinion about this company. They were told that it was important to assess the characteristics of the company because it was one of the companies they could choose for a subsequent internship. Participants were presented with a message describing this new company with either strong or weak arguments about the firm. All participants were explicitly encouraged to think a lot about the information provided because their opinions were very important to making decisions about the topic. After reading and thinking about this information, participants listed their thoughts in response to the company. Next, we manipulated source status by attributing the message to a source in the numerical minority or majority (i.e., 14% vs. 86% of their fellow students supported the company). Finally, participants' affect, confidence in the thoughts they had listed, and attitudes toward the company were measured before the participants were debriefed and thanked.

### Independent variables.

**Argument quality.** Participants were presented with a message introducing a new company. The message was composed of either strong or weak arguments about the firm. This manipulation was designed to influence the favorability of participants' cognitive responses if they were thinking about the message. The arguments selected were adopted from previous research and have been shown to produce the appropriate pattern of cognitive responding. That is, in pilot testing, the strong arguments elicited mostly favorable thoughts and the weak arguments elicited mostly unfavorable thoughts when people were instructed to think about them (see Petty & Cacioppo, 1986). Some of the strong arguments in favor of the company were that workers reported high satisfaction because of the flexibility of their work schedules and the company's investment in training, that there were freedom and autonomy to innovate, that decisions were taken based on merit, that the company invested in renewable energy and used environ-

mentally friendly policies, and that the company followed egalitarian practices (e.g., with a large number of woman being part of the management). In contrast, some of the weak arguments in favor of this firm were that they used unrecycled paper to have a good public image, that the logo of the company was very attractive, that the offices projected an environmental friendly image by having many plants around the company, that the company cared about their employees by having vending machines around, and that the company cared about flexibility since a lot of employees were there only temporarily.

It is important to note that both the strong and weak arguments argued in favor of the company but that the strong arguments provided more compelling reasons than did the weak arguments. For that reason, people instructed to think carefully about these messages are likely to generate favorable thoughts toward the proposal in response to the strong arguments and unfavorable thoughts toward the proposal in response to the weak version of the message. Thus, the purpose of the argument quality manipulation in this study was to vary the dominant valence of thoughts (favorable or unfavorable) that could be validated by the subsequent source status induction.

**Source status.** Following the message and after participants listed their thoughts, participants were led to believe that a recent survey of students who visited the company revealed that a majority or a minority of them liked and supported the company. Source status was manipulated by attributing the endorsement of the company to a numerical minority or majority of students (i.e., 14% vs. 86% of their fellow students supported the company). This manipulation was adapted from previous research on minority influence (see Baker & Petty, 1994; Tormala & De Sensi, 2009; Tormala, De Sensi, & Petty, 2007).<sup>2</sup> The specific instructions read as follows:

#### *Majority (minority) source status condition:*

Last year, approximately 900 undergraduates visited some companies to analyze their organizational conditions, and then they were surveyed. It was found that 86% (14%) supported this company and thought that they had good organizational conditions. In other words, a large (small) majority (minority) of students think this company is a good company for which to work.

### Dependent variables.

**Thought favorability.** Following the message, participants were instructed to list the thoughts that went through their minds as they read the message. Ten boxes were provided to list up to 10 individual thoughts. Participants were told to write one thought per box and not to worry about grammar or spelling (see Cacioppo & Petty, 1981, for additional details on the thought listing procedure). Two judges unaware of participants' experimental conditions coded participants' cognitive responses. Thoughts were classified as favorable, unfavorable, or neutral toward the message's proposal. Thoughts that were irrelevant to the proposal (e.g., "I am

<sup>2</sup> Numerical source status is understood as a continuous variable. Following previous research on minority influence, we chose relatively clear and extreme majority (86%) and minority (14%) percentages. Obviously, if these percentages change (e.g., 52% vs. 48%), the results might also vary (e.g., Erb, Bohner, Hewstone, Werth, & Reinhard, 2006; see also Gardikiotis, Martin, & Hewstone, 2005).



late for my doctor's appointment") were excluded. Judges agreed on the thoughts coded (93%), and disagreements were resolved by discussion. Only message-related thoughts were included in subsequent analyses. An index of favorability of message-related thoughts was formed by subtracting the number of unfavorable message-related thoughts from the number of favorable message-related thoughts and dividing by the total number of message-related thoughts (e.g., Briñol, Petty, Gallardo, & DeMarree, 2007; Chaiken & Maheswaran, 1994; Maio et al., 1996; Petty et al., 2002). The resulting index provided a relative favorability score, with higher numbers reflecting a greater relative proportion of favorable thoughts.

**Affect and mood measures.** Participants filled out the modified Positive and Negative Affect Schedule—Expanded Form (PANAS-X; Watson, Clark, & Tellegen, 1988) as a measure of affect. All participants completed both the Positive and Negative Affect subscales, using 5-point scales with the labels of 1 = *very slightly or not at all*, 2 = *a little*, 3 = *moderately*, 4 = *quite a bit*, and 5 = *extremely*. Participants' negative affect was computed as the average of their ratings on the 10 items in the Negative Affect subscale (i.e., guilty, ashamed, distressed, afraid, jittery, scared, irritable, hostile, nervous, and upset; Cronbach's  $\alpha = .90$ ). Higher values on this index represented more negative affect. Participants' positive affect was computed as the average of their ratings on the 10 items in the Positive Affect subscale (i.e., inspired, attentive, excited, interested, strong, alert, proud, determined, active, and enthusiastic; Cronbach's  $\alpha = .79$ ). Higher values on this index represented more positive affect. In addition to this measure, all participants were requested to report their overall current mood on a 9-point semantic differential scale (sad–happy). Responses to the mood scale were scored so that higher values represented more positive mood.

**Thought confidence.** After the source status manipulation but before the measure of attitudes toward the company, participants were asked to think back to the thoughts they had listed about the organizational conditions and to rate their overall confidence in the thoughts they had listed. Thought confidence was rated on four 9-point semantic differential scales anchored at *not at all* (1) and *extremely* (9), including confident, secure, certain, and valid. Responses to these items were highly intercorrelated (Cronbach's  $\alpha = .81$ ) and were thus averaged to create a composite measure of confidence in thoughts.

**Attitudes.** Participants were informed that it was important to assess their attitudes toward the company because what they thought might influence their earlier responses. Participants responded to a series of 9-point semantic differential scales (i.e., desirable–undesirable, recommended–not recommended, beneficial–harmful, in favor–against, competitive–not competitive) regarding the new company. Responses to the attitude scales were scored so that higher values represented more favorable opinions about the company. Ratings on the different scales were highly correlated ( $\alpha = .87$ ) and were averaged to create a composite measure of attitudes toward the company.

## Results

All dependent measures were submitted to 2 (argument quality: strong or weak)  $\times$  2 (source status: majority or minority) analyses of variance (ANOVAs). Because preliminary analyses revealed

that variances across conditions were heterogeneous on the attitude and thought favorability measures, we transformed these measures into ranks to move from heterogeneity to homogeneity (see Meddis, 1984; see also Conover & Iman, 1981; Kepner & Wackerly, 1996; McClelland, 2000; Sawilowsky, Blair, & Higgins, 1989). Basically, this procedure ranks all participants as a function of their original values on the critical variable, reducing heterogeneity and permitting the use of ANOVAs. Thus, the lowest value in the original scoring receives the value 1 in the new transformed variable, the next lower value is ranked as 2, and so forth. Participants with identical scores in the original data receive the same value in the transformed data (i.e., an averaged rank). Thus, the final variable has as many unique values as the number of participants unless there are participants with identical original scores. All means and standard deviations reported in the text refer to the transformed data (see the raw scores in Table 1).<sup>3</sup>

**Thought favorability.** Consistent with our expectations, results revealed a significant main effect for argument quality,  $F(1, 105) = 237.00, p < .001$ , showing that participants' thoughts were more favorable toward the proposal after receiving the strong ( $M = 79.50, SD = 14.87$ ) rather than the weak ( $M = 29.11, SD = 19.63$ ) message. There was a marginal effect of source status,  $F(1, 105) = 3.68, p = .06$ , but no Argument Quality  $\times$  Source Status interaction ( $F < 1, p > .45$ ).

**Thought confidence.** As predicted by the self-validation approach, participants expressed greater confidence in their thoughts when the message was linked to a majority source status ( $M = 7.48, SD = 0.79$ ) than a minority source status ( $M = 7.00, SD = 0.93$ ) condition,  $F(1, 106) = 8.28, p = .005$ .<sup>4</sup> There were no other significant effects ( $F_s < 1, p_s > .67$ ).

**Affect and mood measures.** As expected, there was no relationship between the manipulations and participants' affect, as measured with the negative affect subscale of the PANAS-X ( $F_s < 2.13, p_s > .14$ ), the positive affect subscale of the PANAS-X ( $F_s < 1.35, p_s > .24$ ), or the general item of mood ( $F_s < 1, p_s > .33$ ). Thus, affect did not vary as a function of argument quality, source status, or the Argument Quality  $\times$  Source Status interaction.

**Attitudes.** Results of the 2  $\times$  2 ANOVA revealed a significant main effect of argument quality such that participants who received strong arguments held more favorable attitudes toward the company ( $M = 78.13, SD = 20.59$ ) than those who received weak arguments ( $M = 31.44, SD = 21.91$ ),  $F(1, 105) = 143.98, p < .001$ . On the other hand, the main effect for source status was not significant ( $F < 1, p > .68$ ).

More interestingly and consistent with the self-validation hypothesis, a significant Argument Quality  $\times$  Source Status interaction emerged,  $F(1, 105) = 15.13, p < .001$ . As illustrated in Figure 1, the effect of argument quality on attitudes was greater for

<sup>3</sup> The results did not vary when analyzing the raw scores. That is, all the significant effects remained statistically significant when using the raw scores.

<sup>4</sup> Three participants did not complete all dependent measures. Specifically, one participant did not complete the thought listing procedure, another participant did not complete the mood measure, and still another participant did not complete the measure of attitudes. For this reason, degrees of freedom vary across measures.

Table 1  
Attitudes and Thought Favorability as a Function of Source Status and Argument Quality in Experiments 1 and 2

Experiment	Source status			
	Majority		Minority	
	Strong argument quality	Weak argument quality	Strong argument quality	Weak argument quality
<b>1</b>				
Attitudes				
<i>M</i>	7.76	4.28	7.05	5.33
<i>SD</i>	0.82	1.59	0.76	1.34
Thought favorability				
<i>M</i>	.79	-.63	.89	-.40
<i>SD</i>	.35	.41	.24	.59
<b>2</b>				
Attitudes				
<i>M</i>	6.43	7.13	7.26	5.30
<i>SD</i>	2.23	1.65	1.19	2.90
Thought favorability				
<i>M</i>	.65	.46	.80	.06
<i>SD</i>	.59	.73	.38	.70

Note. Attitudes ranged from 1 to 9. Thought favorability ranged from -1 to 1.

majority source status than minority source status participants. In the majority source status condition, participants who received the strong message reported significantly more favorable attitudes toward the company ( $M = 85.63, SD = 19.74$ ) than those who received the weak message ( $M = 24.48, SD = 20.06$ ),  $t(54) = -11.48, p < .001$ , Cohen's  $d = 3.12$ , effect-size  $r = .84$ . Participants in the minority source status condition also differentiated between strong and weak arguments, with those receiving strong arguments expressing more favorable attitudes toward the company ( $M = 69.12, SD = 18.10$ ) than those receiving the weak message ( $M = 37.91, SD = 21.90$ ),  $t(51) = -5.61, p < .001$ . However, as suggested by the significant interaction, the argument quality effect was not as pronounced as it was in the majority source status condition (Cohen's  $d = 1.57$ , effect-size  $r = .62$ ).

Viewed differently, for the group of participants receiving the strong message, those included in majority source condition showed more favorable attitudes ( $M = 85.63, SD = 19.74$ ) than those who were included in the minority source condition ( $M = 69.12, SD = 18.10$ ),  $t(53) = -3.21, p = .002$ . In contrast, for the

group of participants receiving the weak message, those who received the majority source condition showed less favorable attitudes ( $M = 24.48, SD = 20.06$ ) than those in the minority source condition ( $M = 37.91, SD = 21.90$ ),  $t(52) = 2.34, p = .02$ .

**Mediational analyses.** In addition to investigating the effect of source status on thought confidence, we aimed to examine whether thought confidence mediated the impact of the Argument Quality  $\times$  Source Status interaction on attitudes. To further verify the mechanism involved, we conducted a mediated moderation test (Muller, Judd, & Yzerbyt, 2005). In this test, argument quality and source status were both contrast coded (i.e., 1, -1), and thought confidence was mean centered. Consistent with the self-validation hypothesis, we found evidence of the expected mediation.

We first regressed attitudes on argument quality, source status, and the Argument Quality  $\times$  Source Status interaction (see Figure 2). In this regression, we expected and found a significant Argument Quality  $\times$  Source Status interaction,  $\beta = .24, t(105) = 3.89, p < .001$ .

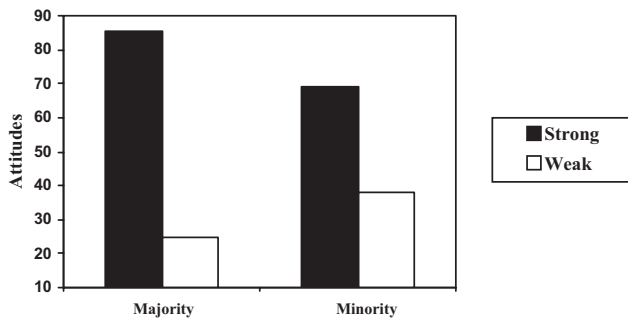


Figure 1. Experiment 1: Attitudes as a function of argument quality and source status.

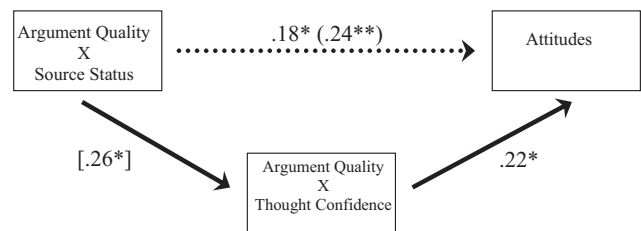


Figure 2. Experiment 1: Mediational analyses of the Argument Quality  $\times$  Source Status interaction on attitudes. The value in parentheses indicates the direct effect of the Argument Quality  $\times$  Source Status interaction on attitudes prior to controlling for the Argument Quality  $\times$  Thought Confidence interaction. The value in square brackets indicates the main effect of source status on thought confidence when controlling for the other factors. \*  $p < .01$ . \*\*  $p < .001$ .

Second, we regressed thought confidence (the presumed mediator) on argument quality, source status, and the Argument Quality  $\times$  Source Status interaction. In this regression, source status significantly predicted thought confidence,  $\beta = .26$ ,  $t(105) = 2.79$ ,  $p = .006$ . In a third model, we regressed attitudes on all of the previous terms but added the Argument Quality  $\times$  Thought Confidence interaction. This regression revealed that attitudes were predicted by the Argument Quality  $\times$  Thought Confidence interaction,  $\beta = .22$ ,  $t(103) = 3.58$ ,  $p = .001$ , as well as the Argument Quality  $\times$  Source Status interaction,  $\beta = .18$ ,  $t(103) = 2.99$ ,  $p = .003$ . As expected, the size of the effect of the Argument Quality  $\times$  Source Status interaction on attitudes decreased from the first regression to the third.

To provide a more formal test of mediation, we followed the recommendations of Shrout and Bolger (2002). These authors recommended that with small to moderate samples, bootstrapping methods be used to assess mediation (see also MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004). Bootstrap tests are powerful because they detect that the sampling distribution of the mediated effect is skewed away from 0 (Efron & Tibshirani, 1993). In other words, to test whether mediation has occurred, Shrout and Bolger (2002) suggested using bootstrapping procedures to compute a 95% confidence interval around the indirect effect (i.e., the path through the mediator). If zero falls outside this interval, mediation can be said to be present. Results of this procedure revealed a 95% confidence interval ranging from .004 to .125. Zero fell outside this interval, indicating successful mediation. Therefore, consistent with the self-validation hypothesis, this analysis revealed that the effect of source status on attitudes was at least partially mediated by thought confidence.

## Discussion

To our knowledge, all prior research on majority versus minority influence manipulated source status prior to message receipt. However, Experiment 1 shows that these manipulations can have important effects on attitudes even when they follow a message and therefore are unlikely to affect the processing of it. If our manipulation had preceded the message, the pattern we observed would likely have been attributed to greater processing of the majority versus the minority message. Because our manipulation followed message processing, we propose that a more likely explanation is that the majority (relative to the minority) status of the source increased confidence in the thoughts people already had to the message and caused people to rely on them more.

Consistent with the self-validation hypothesis, this initial study shows that source status can influence attitude change by affecting confidence in message-relevant thoughts. First, argument quality affected the direction of participants' cognitive responses, provoking mostly favorable thoughts in response to the strong message and mostly unfavorable thoughts in response to the weak message. Second, majority (vs. minority) source status influenced the confidence with which participants held their thoughts. Most importantly, in accord with the self-validation hypothesis, the confidence with which participants held their thoughts mediated the effects of source status on attitudes. To our knowledge, this is the first time in which thought confidence has been found to mediate majority/minority source status effects on judgment, providing a new psychological process by which majority/minority source status can

affect attitudes. Specifically, thought confidence induced via majority endorsement of the proposal led participants to rely on their thoughts more than when a minority endorsed the same proposal. The end result was that argument quality had a larger effect on attitudes when people were told that the message came from a majority than a minority source.

As noted in the introduction, we argue that the confidence produced by the majority source status can play different roles in information processing. Concretely, we postulate that the specific role of confidence depends on when confidence is induced. Specifically, if feelings of confidence are high prior to message exposure, rather than after as in Experiment 1, its role in the persuasion process is likely to be different. That is, as noted above, a majority source induction prior to a message on an unfamiliar topic should foster a reduction in elaboration (cf. Martin, Hewstone, & Martin, 2008). If source status information was induced after extensive message processing, as examined in our first experiment, however, it was expected and found to affect confidence in the thoughts that were already generated.

To further illustrate the point that source status has the potential to play different roles and produce different effects depending on when the information is revealed, we conducted another experiment that systematically examined whether source status, manipulated prior to message reception, would influence the amount of message processing in which participants engage. Specifically, the second study aimed to show that source status induced prior to a message would interact with argument quality in an opposite way from that observed when it was induced after message processing.

## Experiment 2: Message Processing Effects When Source Status Precedes the Message

Experiment 2 was designed to examine whether majority (vs. minority) source status, when it preceded a message, would influence attitude change by affecting the degree of information processing. Although prior research has already demonstrated that it can, we wanted to reverse the order of the source induction using a paradigm similar to that used in Experiment 1. Basically, this study was designed to be similar to the first experiment but with a reversed order of the source induction. Thus, participants were randomly assigned to a majority or a minority source status condition using a source status manipulation similar to that described in Experiment 1. After the source status induction, we assessed the extent to which participants processed information by varying the quality of the arguments contained within the persuasive message and by measuring the impact of these arguments on attitudes. In addition to changing the order of the inductions, this study used a different persuasive topic. Specifically, participants were told that they were helping out with research designed to assess possible changes in the institutional color that served as the symbol of their university.

Importantly, if a majority source reduces processing of the message arguments, as it should if it induces a feeling of confidence prior to message reception, it should produce the opposite interaction with argument quality on attitudes to that observed in Experiment 1. That is, if people are thinking less about the arguments when the message is said to come from a majority source, they should be less influenced by the quality of the arguments presented. Considerable prior research has shown

that when people are either unable (e.g., due to distraction; Petty, Wells, & Brock, 1976) or unmotivated (e.g., due to low personal relevance of the message; Petty & Cacioppo, 1979) to process a message, the impact of the quality of the arguments is less than when motivation and ability to process are high (Petty & Cacioppo, 1986). Thus, whereas, in Experiment 1, a majority source increased the impact of an argument quality manipulation on attitudes when source status was induced following message processing (because the majority source increased reliance on thoughts to the message), we expected that a majority source would decrease the impact of an argument quality manipulation on attitudes when source status was induced before message processing (because the majority source would decrease the extent of thinking about the message).

## Method

**Participants and design.** Eighty-two undergraduate psychology students at the Universidad Autónoma de Madrid (Madrid, Spain) participated in partial fulfillment of a course requirement. Students were randomly assigned to the cells of a 2 (source status: majority vs. minority)  $\times$  2 (argument quality: strong vs. weak) between-participants factorial design.

**Procedure.** Participants began this study by reading a cover story that led them to believe they were taking part in a study designed to examine potential changes in their university. Concretely, participants were told that they were helping out with research designed to assess possible changes in the institutional color of their university (i.e., using the color green to represent the university). Unlike typical U.S. universities, university colors in Spain are an unfamiliar topic for most students. In fact, most students do not know their institutional color and have no prior opinion about it.

First, participants were told that they were going to receive a message on a campus issue regarding the color the university should adopt. Before reading the message, participants were informed that a previous survey on campus had revealed that a majority or a minority of students already supported the proposal of the message (green as the institutional color). After participants received this source status induction, they received the message that contained strong or weak arguments in favor of the color green. Half of the participants were randomly assigned to receive a persuasive message containing strong arguments in favor of using green as the institutional color for the university, and the other half received a message with weak arguments about this color. Finally, participants reported their thoughts and attitudes toward the color green and were debriefed and thanked.

### Independent variables.

**Source status.** Participants were led to believe that the message they were about to read came from a majority or a minority source. That is, source status was manipulated by attributing the message they would receive next to a source in the numerical minority or majority (i.e., 14% vs. 86% of their fellow students agreed with the message; see Baker & Petty, 1994). The specific instructions read as follows:

*Majority (minority) source status condition:*

Last year, the university surveyed approximately 900 undergraduates, and found that 86% (14%) supported the color green to represent our university. In other words, a majority (minority) of students thinks

that green is a good color for the university. At this point, the issue is still being discussed on campus.

**Argument quality.** The persuasive message that participants received contained either strong or weak arguments in favor of using green as the institutional color for the university. As in the prior study, this manipulation is designed to affect the profile of thoughts (favorable or unfavorable) if people are thinking about the arguments carefully. Within the attitude change literature, the manipulation of argument quality (and the subsequent impact on the favorability of the thoughts generated) has been used in numerous studies to examine the extent of information processing induced under different conditions (see Petty & Cacioppo, 1986). Because the argument quality manipulation is used to assess how much thinking people are doing about the message, all arguments need to argue for the same position—but only with high or low convincingness. Because both sets of arguments are in favor of the issue, they may be equally persuasive if people do not think about their implications. Individuals not thinking about the message carefully may respond simply to the number of arguments presented or their initial gut reaction to the proposal. The more attention paid to the information provided, however, the greater the difference in subsequent attitudes to strong versus weak arguments.

The strong arguments in favor of the institutional color highlighted the following: Research found that the performance and satisfaction of everybody would improve if green was the color adopted by the university; recent research revealed that green is associated with more creativity in students, which induces higher levels of mental concentration; and several studies have found that people exposed to green report lower levels of stress, which leads to an improvement on a number of mental and physical tasks. The weak arguments in favor of this color pointed to the following: green traditionally has been defended as a solid institutional color for parents when choosing a university for their children, green is the color of essential elements relevant to education such as chalkboards, and a recent survey conducted by clothing companies revealed that green was growing in popularity for the following season.

### Dependent variables.

**Thought favorability.** After reading the persuasive message, participants were encouraged to list all of the thoughts they had, following the same procedure used in the previous study. For all participants, we analyzed the favorability of thoughts generated. Two judges unaware of participants' experimental condition coded cognitive responses. Message-related thoughts were classified as favorable, unfavorable, or neutral toward the proposal. Thoughts that were irrelevant to the proposal were excluded. Judges agreed on most of the thoughts coded (90%), and disagreements were resolved by discussion. We computed the same index of thought favorability as used in Experiment 1. The resulting index provided a relative favorability score, with higher scores reflecting a greater proportion of favorable thoughts.

**Attitudes.** Finally, participants' attitudes toward the advocacy were assessed using two 9-point (1–9) semantic differential scales (i.e., in favor–against, like–dislike) on which they rated the color policy. Responses to these items were highly interrelated ( $r = .92$ ,  $p < .001$ ), so we averaged them to form a composite index of attitudes.



## Results

The dependent measures were submitted to 2 (source status: majority or minority)  $\times$  2 (argument quality: strong or weak) ANOVAs. As in the previous study, measures of thought favorability and attitudes were transformed into ranks to reduce heterogeneity before using ANOVAs, though the results were the same regardless of the transformation. All means and standard deviations reported in the text refer to the transformed data (see the raw scores in Table 1).

**Thought favorability.** Consistent with our expectations, results revealed a significant main effect for argument quality,  $F(1, 78) = 10.78, p = .002$ , showing that participants' thoughts were more favorable toward the proposal after receiving the strong ( $M = 48.83, SD = 17.74$ ) rather than the weak ( $M = 34.85, SD = 22.45$ ) message. Of most interest, the Source Status  $\times$  Argument Quality interaction was significant,  $F(1, 78) = 3.82, p = .05$ . As shown in Figure 3, this interaction revealed that the effect of argument quality on thought favorability was restricted to minority source status participants. That is, participants in the majority source status condition did not differ in their thoughts to the strong ( $M = 47.00, SD = 19.87$ ) versus the weak version of message ( $M = 41.13, SD = 22.57$ ),  $t(41) = -0.90, p = .37$ . However, in the minority source status condition, those participants who received the strong message generated significantly more favorable thoughts toward the proposal ( $M = 50.76, SD = 15.48$ ) than those who received the weak message ( $M = 27.63, SD = 20.53$ ),  $t(37) = -3.96, p < .001$ .

**Attitudes.** Consistent with our hypothesis, results of the 2  $\times$  2 ANOVA revealed a significant Source Status  $\times$  Argument Quality interaction,  $F(1, 78) = 5.03, p = .03$ . As shown in Figure 4, this interaction demonstrated that the effect of argument quality on attitudes was restricted to minority source status participants. That is, for majority source status participants, there was not a significant difference between those who received the strong version of message ( $M = 39.70, SD = 24.58$ ) and those who received the weak version ( $M = 47.65, SD = 21.87$ ),  $t(41) = 1.12, p = .27$ . However, in the minority source status condition, those participants who received the strong message had significantly more favorable attitudes toward the proposal ( $M = 46.53, SD = 19.61$ ) than those who received the weak message ( $M = 31.45, SD = 26.14$ ),  $t(37) = -2.03, p < .05$ .

Viewed differently, for the weak message condition, attitudes of participants in the majority source condition were significantly

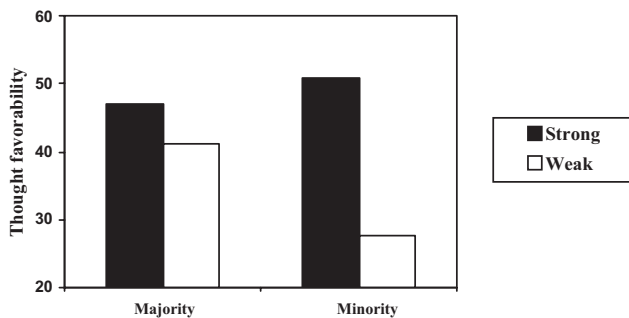


Figure 3. Experiment 2: Thought favorability as a function of source status and argument quality.

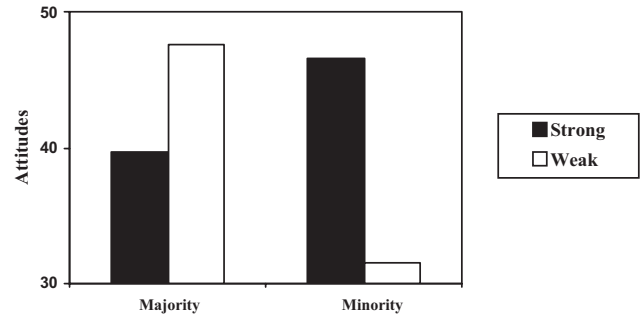


Figure 4. Experiment 2: Attitudes as a function of source status and argument quality.

more favorable ( $M = 47.65, SD = 21.87$ ) than attitudes of those in the minority source condition ( $M = 31.45, SD = 26.14$ ),  $t(41) = 2.21, p = .03$ . In contrast, for the strong message condition, participants in the majority source condition tended to show less favorable attitudes ( $M = 39.70, SD = 24.58$ ) than those in minority source condition ( $M = 46.53, SD = 19.61$ ), although this difference was not statistically significant,  $t(37) = -0.96, p = .35$ .

**Mediation analyses.** The pattern of results from this study is consistent with our hypothesis that source status could influence attitude change by affecting the extent to which people think about the message when source status is induced before receiving the persuasive message. To further verify the mechanism involved, we conducted a mediated moderation test to examine the obtained effects (Muller et al., 2005). In this test, argument quality and source status were both contrast coded (i.e., 1, -1), and thought favorability was mean centered.

We first regressed attitudes on source status, argument quality, and the Source Status  $\times$  Argument Quality interaction. Only the interaction was significant,  $\beta = .25, t(78) = 2.24, p = .03$ . Second, we regressed thought favorability (the presumed mediator) on source status, argument quality, and the Source Status  $\times$  Argument Quality interaction. In this analysis, we again obtained a Source Status  $\times$  Argument Quality interaction,  $\beta = .20, t(78) = 1.96, p = .05$ . In a third model, we regressed attitudes on source status, argument quality, the Source Status  $\times$  Argument Quality interaction, thought favorability, and the Argument Quality  $\times$  Thought Favorability interaction. This regression revealed that attitudes were predicted by thought favorability,  $\beta = .38, t(76) = 3.36, p = .001$ , but not by the Source Status  $\times$  Argument Quality interaction,  $\beta = .15, t(76) = 1.49, p = .14$ .

As in the previous study, to provide a more formal test of mediation of thought favorability for the effect of the Source Status  $\times$  Argument Quality interaction on attitudes, we followed the recommendations of Shrout and Bolger (2002). We used a bootstrapping procedure to compute a 95% confidence interval around the indirect effect (i.e., the path through the mediator). If zero falls outside this interval, mediation can be said to be present. Results of this procedure revealed a 95% confidence interval ranging from .001 to .191. Zero fell outside this interval, indicating successful mediation.

## Discussion

Consistent with our hypothesis that source status can influence attitude change by validating the perception of the validity of the

message position when it comes prior to message exposure, participants who were led to believe that the message came from a majority (vs. minority) source showed less differentiation of strong and weak arguments, revealing a decrease in elaboration among these participants. These findings are consistent with some prior research showing that when source status comes before a message, it can influence the extent of processing of the message (e.g., Martin et al., 2008), and also with previous research showing that individuals who are confident prior to receipt of a message are less attentive to argument quality differences (e.g., Briñol, Petty, & Wheeler, 2006; Petty, Tormala, Briñol, & Jarvis, 2006; Tiedens & Linton, 2001).

Together, the first two studies suggest that majority (vs. minority) source status can have different (and opposite) effects in persuasive settings depending on when the manipulation is introduced. These data are consistent with the multiple roles postulate of the ELM and with the notion that the effects of majority (vs. minority) source status can be due to a relative difference in confidence produced by these sources.

It is important to note that although our source manipulations, measures, and participants were constant across Experiments 1 and 2, the topic of the persuasive message was different and that this could have contributed to the opposite results.<sup>5</sup> Furthermore, people were not randomly assigned to different orders of the source manipulation. Thus, we conducted a final study in which the main goal was to replicate both directions of effect in a study in which we held the topic of the persuasive message constant and varied the order of the source induction in the same experiment.

### Experiment 3: Varying Placement of the Source Status Induction

The main goal of Experiment 3 was to replicate our previous findings in a study in which we varied the order of the source status induction and held the persuasive message constant. Thus, we manipulated the timing of the majority (vs. minority) source status induction to demonstrate the predicted consequences of both psychological mechanisms (i.e., affecting the extent of information processing in the premessage order and affecting the reliance on one's thoughts in the postmessage order) within the same experimental design. Because this study is primarily a methodological advance over our previous studies, we decided to use only a persuasive message composed exclusively of strong arguments to simplify the design. Thus, compared to the minority source status condition, we expected the majority source status condition to reduce persuasion when it was induced prior to the presentation of the message (as in Experiment 2) because majority source status individuals would be processing the strong arguments less, but to enhance persuasion when manipulated after the reading of the proposal (as in Experiment 1) because majority source status individuals would be more reliant on their positive thoughts to the strong arguments.

### Method

**Participants and design.** Sixty-eight undergraduate students enrolled in introductory psychology courses at the Universidad Autónoma de Madrid (Madrid, Spain) participated in partial fulfillment

of a course requirement. They engaged in a 2 (timing: before vs. after)  $\times$  2 (source status: majority vs. minority) between-subjects design. All participants received a message with strong arguments.

**Procedure.** Participants were told, as in Experiment 1, that they were going to take part in a survey regarding a new company. The source status manipulation was identical to the one used in Experiment 1. For half of the participants, the source information was presented immediately before they received the persuasive message, and for the other half, the source information was presented immediately after the persuasive message. Thus, the only difference was the moment (before or after the message) at which participants received the source information. In both cases, the impact of the message on participants' attitudes toward the company was assessed.<sup>6</sup>

#### Independent variables.

**Source status.** Source status was manipulated using the same manipulation as was used in Experiment 1.

**Timing.** Following the same cover story used in Experiment 1, the order in which the participants received the information about the source relative to the message was varied. Participants were randomly assigned to a majority (vs. minority) source status induction either before or after the persuasive message. In the *source status before* condition, we first presented the source information and then the message (as in Experiment 2). In the *source status after* condition, we first presented the message and then the source information (as in Experiment 1).

#### Dependent variable.

**Attitudes.** Following both manipulations, participants had to rate their opinions about the proposal on the same five 9-point semantic differential scales used in Experiment 1. The attitude scales were highly correlated ( $\alpha = .87$ ) and thus were averaged to

<sup>5</sup> However, a separate study replicated the attitude findings from the first experiment (majority source status increasing argument quality effects) when the source information followed the persuasive message using the green proposal as a topic. Although the pattern of results was identical to those observed in Experiment 1, we decided to report the current Experiment 1 since it contained more measures (e.g., confidence, mood) and therefore is more informative.

<sup>6</sup> It is important to note that the processes we propose are dependent on overall levels of elaboration (Petty & Cacioppo, 1986). As demonstrated in the present studies and in prior research on the self-validation hypothesis (e.g., Petty et al., 2002), the self-validation mechanism is enhanced when elaboration is sufficiently high for individuals to both generate thoughts in response to the message and care about their validity (examining the validity of thoughts is a form of meta-cognition; Briñol & Petty, 2009a; Petty, Briñol, Tormala, & Wegener, 2007). For confidence to affect the amount of thought, however, elaboration must not be constrained to be overly high or low. That is, if elaboration is already set to be very high or low by other factors (e.g., high cognitive load), there is little room for confidence to affect the extent of thinking further. To accommodate the conditions needed for these two mechanisms to operate in the same study, we created a context in which the ability to think was not disrupted and motivation to think was moderately high. In particular, we instructed participants to think about the issue, but we did nothing to further enhance motivation to think such as using a topic of high personal importance (e.g., Petty & Cacioppo, 1979) or making participants personally and uniquely accountable and responsible for message evaluation (e.g., Tormala, Petty, & Briñol, 2002).

create a composite attitudes index. Higher scores reflected more favorable attitudes toward the company.<sup>7</sup>

**Results**

**Attitudes.** Attitudes were submitted to a 2 (timing: before or after message) × 2 (source status: majority or minority) ANOVA. All means and standard deviations reported in the text refer to the transformed data (see the raw scores in Table 2).<sup>8</sup>

As expected, there were no significant main effects for timing,  $F(1, 64) = 0.85, p = .36$ , or source status,  $F(1, 64) = 0.31, p = .58$ . More germane to our hypothesis, the predicted interaction effect emerged,  $F(1, 64) = 17.42, p < .001$ . As displayed in Figure 5, when source status was manipulated prior to the presentation of the message (as in Experiment 2), the majority source status induction reduced persuasion ( $M = 23.22, SD = 17.68$ ) compared to the minority source status condition ( $M = 43.73, SD = 19.71$ ),  $t(31) = 3.15, p = .004$ . In contrast, when source status was manipulated after the reading of the proposal (as in Experiment 1), the majority source status induction enhanced persuasion ( $M = 45.30, SD = 13.94$ ) compared to the minority source status condition ( $M = 29.63, SD = 18.72$ ),  $t(33) = -2.72, p = .01$ .

Described differently, for the group of participants in the majority source status condition, there was less persuasion when source information came before the message ( $M = 23.22, SD = 17.68$ ) than when it came after the message ( $M = 45.30, SD = 13.94$ ),  $t(31) = -3.92, p < .001$ . In contrast, for the group of participants in the minority source status condition, there was more persuasion when the information about the source came before ( $M = 43.73, SD = 19.71$ ) rather than after ( $M = 29.63, SD = 18.72$ ) the message,  $t(33) = 2.16, p = .03$ .

**Discussion**

The results of Experiment 3 were in accord with our hypotheses regarding the different roles for majority (vs. minority) source status depending on whether it preceded or came after the persuasive message. That is, majority (vs. minority) source status had opposite effects on persuasion to the same message depending on its placement. Majority source status decreased the persuasive impact of the strong message relative to the minority source status when it was induced before the message, consistent with what would be expected if the majority source induced less thinking than the minority source. In contrast, when the source status manipulation followed the message, majority source status in-

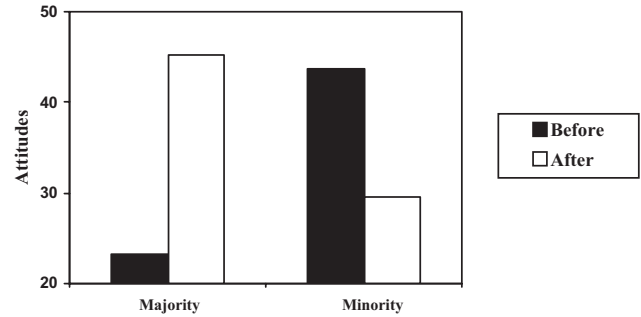


Figure 5. Experiment 3: Attitudes as a function of timing and source status.

creased persuasion relative to the minority source status. This pattern suggests that when the source status induction came after the message, it did not affect processing of the message. Rather, these results are consistent with the idea that majority (vs. minority) source status affected participants' reliance on the positive thoughts they presumably generated to the strong arguments.

Taken together, these findings replicate the patterns found in Experiments 1 and 2 in a single study and provide further evidence that source status can influence attitude change by different processes as a function of the moment at which it is introduced, before or after message processing. When induced before message processing, majority (vs. minority) source status effects seem best explained by the proposition that source status affects the extent to which people think, whereas after having already thought about the message, majority (vs. minority) source status effects seem best explained by the idea that source status influences the extent to which people use their thoughts. Although the former effect has already appeared in the literature, the latter has not. Thus, the current research provides the first evidence that majority versus minority source status can display a self-validation role, especially under moderate or high elaboration conditions.

**General Discussion**

Previous investigations in the conformity and persuasion literatures accumulated considerable evidence suggesting that endorsement from numerical majorities often exerts greater influence than numerical minorities do (see Wood et al., 1994), although sometimes minorities can be more effective (e.g., Baker & Petty, 1994; Crano & Chen, 1998; Moscovici, 1980; Mugny & Pérez, 1991). Several traditional mechanisms have been shown for the differential effectiveness of minority versus majority sources. As noted earlier, endorsement of an issue by a numerical minority (vs.

Table 2  
Attitudes as a Function of Source Status and Timing in Experiment 3

	Source status			
	Majority		Minority	
Attitudes	Timing: before	Timing: after	Timing: before	Timing: after
<i>M</i>	7.33	8.19	8.10	7.49
<i>SD</i>	0.85	0.42	0.71	1.10

Note. Attitudes ranged from 1 to 9.

<sup>7</sup> As in Experiment 1, participants filled out the modified PANAS-X (Watson et al., 1988), and mood was assessed using a 9-point semantic differential scale (i.e., sad-happy). There were no significant differences on these affect and mood measures as a function of timing, source status, or the Timing × Source Status interaction.

<sup>8</sup> Although variances were homogeneous in this experiment, we rank-transformed the dependent measure to be consistent with Experiments 1 and 2. Whether the raw scores on attitudes or the rank-transformed data are analyzed, all results that are statistically significant in one analysis are also significant in the other.

majority) has led to resistance to attitude change by a low-effort rejection process when thinking was likely to be low (e.g., Mackie, 1987) and by a more thoughtful but negatively biased processing mechanism under high thinking conditions (e.g., Erb et al., 1998). Under moderate thinking conditions, source status has affected the extent of message processing (e.g., Martin et al., 2007). In the present research, we proposed that minorities can affect persuasion not only by these previously identified mechanisms but also by influencing thought confidence (see Petty et al., 2002).

As a consequence of the proposed link between source status and recipients' confidence, we put forth a self-validation hypothesis as a potential mechanism of majority (vs. minority) influence. Importantly, according to our hypothesis, majority source status will validate whatever mental constructs are activated. As a result, we were able to make specific predictions regarding how source status would affect persuasion as a function of whether that information about the source preceded or followed a persuasive message. When the source status information preceded message processing (Experiment 2), we hypothesized that majorities would validate the perception of the position that the source was taking and therefore affect the amount of information processing, consistent with prior research perspectives on confidence induced prior to a persuasive message (e.g., Briñol, Petty, Gallardo, & DeMarree, 2007; Petty et al., 2006; Tiedens & Linton, 2001). As a result of reduced information processing, majority source status was associated with a smaller differentiation between weak and strong arguments compared to minority source status (Experiment 2).

In addition to showing effects when source status was in the traditional position prior to a message, we have shown that source status can have opposite effects when it follows the message. As explained earlier, in the premessage order, any variable (e.g., source status) can affect the amount of information processing that takes place as long as it is not already constrained to be high or low by other variables (e.g., see Baker & Petty, 1994). In contrast, in our Experiment 1, the status of the source was introduced when processing of the message proposal was already complete and operated through thought confidence. Thus, the effects of source status on attitude change and the mechanisms underlying those effects vary as a function of the timing at which the source information is introduced in the persuasion setting. When the elaboration level was moderately high and source status information was introduced after a proposal, we predicted and found that majority (vs. minority) source information affected thought confidence, which in turn determined whether people used their thoughts in forming attitudes toward the proposal. As a result, majority source status was associated with a larger differentiation between weak and strong arguments (Experiment 1) than was minority source status. Of importance, we also demonstrated that when induced after the persuasive message, the effects of majority versus minority source status on judgment were mediated by changes in thought confidence.

Finally, Experiment 3 revealed that source status can increase or decrease persuasion to strong arguments depending on when it is introduced—before or after processing the message. This study was important in isolating the timing of the source status manipulation as critical to producing the different effects observed in the previous experiments. Consistent with the ELM, these results support the idea that source variables are capable of affecting attitudes in different ways in different contexts (see Briñol & Petty,

2009b, for a review of multiple roles for source variables in persuasion).

In addition to contributing a new mechanism to the minority/majority influence literature, the present work also provides an important addition to prior work on self-validation processes and social judgment. For example, previous research found that other source variables can influence persuasion by affecting the confidence with which people hold their own thoughts (i.e., more confidence in thoughts in response to a message presented by a source with high rather than low credibility; Tormala, Briñol, & Petty, 2007). The present studies extend this line of research by demonstrating that majority versus minority source status can also be amenable to a self-validation analysis.

Although the data from our experiments provide clear support for the self-validation explanation of the source status effects we observed, other possible explanations might be considered. For example, majority source status might have induced a positive mood in the recipient, and being in a positive mood could have served as a signal that one should rely on the thoughts one is thinking (e.g., Schwarz & Clore, 1983). Given that participants did not report different affect on any of the measures of mood as a function of source status in any of the studies, we do not consider this possibility a compelling alternative. Although there is little reason to believe that mood rather than thought confidence is responsible for the current findings, it is worth noting that an interpretation based on mood is not necessarily incompatible with the self-validation perspective. It is possible for majority source status (and any other variable) to affect confidence by altering mood. Our previous research on self-validation clearly demonstrated that emotions such as happiness (vs. sadness and controls) can influence attitude change by increasing thought confidence (Briñol, Petty, & Barden, 2007). Although it would be possible to argue for a status–mood–confidence–attitudes path, as noted, we did not find evidence for the first link. Even in the hypothetical case of source status affecting a recipient's mood, the impact of source status on attitudes through meta-cognitive processes (of an affective nature) would be highly novel and relatively paradoxical since it produces opposite results as a function of timing.

Although it is worth noting that self-validation findings have been most pronounced under high thinking conditions in previous research (for a review, see Briñol & Petty, 2009a), we decided to hold elaboration constant to simplify experimental conditions. In the present experiments, all participants were placed in a moderate to high elaboration setting. Future research will have to analyze the moderating role of elaboration by manipulating motivation or ability to think and including very low thinking conditions. We expect and predict that the self-validation findings will be more pronounced under high elaboration conditions (when people have the capacity and motivation to think about the persuasive message and their own thoughts) but that self-validation effects will be attenuated or absent under low elaboration conditions.

It is also worth noting that although the data from our experiments provide clear support for the self-validation explanation of the source status effects we observed when source status followed message processing, the limitations of this effect are not clear. For example, all of our studies used relatively novel topics in which majority source endorsement prior to the message was more likely to validate the perception of the position the majority took. Furthermore, because of the unfamiliar topic, people might have been



especially attentive to the validity of their thoughts. It remains to be seen whether our findings generalize to topics on which people have stronger prior opinions. In general, of course, people are less susceptible to change on such topics (Petty & Krosnick, 1995).

In addition, it would be worthwhile to consider situations in which minority sources might induce more confidence than majority sources. For example, minority source status could increase confidence when the majority is perceived as a naïve (or untrustworthy) group (e.g., more perceived validity when only 20% vs. 80% of uninformed people support a proposal). On the other hand, minority source status might increase confidence for situations (e.g., exclusivity products) or for individuals high in need for uniqueness (e.g., Imhoff & Erb, 2009). Future research should examine whether these and other variables (e.g., accuracy motivation, Bohner, Dykema-Engblade, Tindale, & Meisenhelder, 2008; minority recipient vs. source status, Morrison & Miller, 2008) can moderate the relationship between source status and confidence.

In closing, it is important to note that confidence can have different potential meanings in different situations and for different people. In the context of this work, we have described confidence as a subjective experience related to the perception that one is correct in one's beliefs. Previous research has demonstrated that this psychological experience of confidence in the validity of thoughts can emerge from multiple variables, ranging from individual (e.g., one's own emotions; Briñol, Petty, & Barden, 2007) to situational (e.g., source credibility; Briñol & Petty, 2009b) factors. The present research introduces majority (vs. minority) source status as a new variable that can influence confidence. Thus, majority/minority source status is a new and previously unrecognized origin of confidence in persuasion paradigms.

In addition to the theoretical advance of the present research and the methodological innovation (placement of the treatment), one might wonder about the applicability of these results to real-life situations. In particular, one might wonder whether there are relevant situations in which source status information is learned following thinking. Indeed, some life situations might involve thinking about issues before learning the opinions of other people. For example, following a relatively cold analysis of the situation, another person could make a comment on the issue, and people could learn what a majority or a minority of others think. In these circumstances, the salience of source status will follow thought generation, and according to the present research, its effect on judgment can be understood in terms of self-validation processes. Of course, would-be persuaders who are familiar with our research on the importance of timing could strategically reveal the majority or minority status of a proposal to achieve the maximum persuasive effect. The external validity of research depends not only on what naturally happens in the real world but on what could be made to happen (Mook, 1983).

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