Source factors in persuasion: A self-validation approach

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The persuasion literature has examined several mechanisms that have contributed to understanding the effectiveness of credible, attractive, similar, and powerful sources. These traditionally studied processes focus on how persuasive sources can affect attitudes by serving as peripheral cues or by influencing the direction or the amount of thoughts generated. After describing these processes that operate at the primary level of cognition, we review research on self-validation that demonstrates how and when source factors can affect a secondary cognition—thought confidence. Thought confidence refers to a metacognitive form of cognition. This recently discovered mechanism can account for some already established persuasion outcomes (e.g., more persuasion with high- than low-credibility or similar sources), but by a completely different process than postulated previously. Moreover, under some circumstances we have also been able to obtain findings opposite to those typically observed (e.g., more persuasion with low- than high-credible or similar sources). Our research reveals that a consideration of self-validation processes provides an integrative mechanism for understanding many other unexplored source variables, such as oneself as a source, source matching and mimicry, and threatening sources.

Social influence through persuasion is the most prevalent as well as the most civil means of social control available to governments as well as to individuals. In contrast to satisfying wants and needs by using force, violence, terror or threats, persuasion provides an option that is more likely to be successful, lasting, satisfying, and rewarding for everyone. Thus, persuasion is likely to be the most frequent and ultimately efficient approach

to social influence. Among many other reasons, understanding persuasion is important because if the attitudes of a large number of individuals change, then societal norms (governments, habits, and ways of life) presumably will change as well.

We all try to persuade others in both professional and personal contexts. Given that people try to persuade and are also targets of persuasion in many of their social interactions, they have learned something about how persuasion works (e.g., persuasive strategies) thorough trial and error. Practitioners like lawyers, politicians, and salespeople have also devoted an incredible amount of time and effort to understanding persuasion, and what they can do to be more persuasive sources of influence. In contrast to this intuitive persuasion knowledge, scholars in disciplines like social psychology, marketing, and communication have systematically studied persuasion for many years through empirical observations and experimental approaches. In this review we describe how these more rigorous approaches have been useful for understanding the psychology of persuasive sources.

We use the term persuasion to refer to any procedure with the potential to change someone's mind. Although many constructs can be targeted for change (e.g., emotions, beliefs, behaviours), we focus on attitudes (people's general evaluations of people, objects, and issues) because attitudes serve a key mediational role (e.g., attitude change mediates the impact of belief change on behaviour change) and have been the focus of most persuasion research. Nevertheless, the same fundamental persuasion processes can operate regardless of the target of change.

In the typical situation in which persuasion might take place, a person or a group of people (i.e., the recipient, or audience) receives a communication (i.e., the message) from another individual or group (i.e., the source) in a particular setting (i.e., the context). The success of a persuasive attempt depends in part on whether the attitudes of the recipients are modified in the desired direction, with special attention to whether these attitudes in turn influence people's subsequent behaviour. In this review, we focus on the study of how different aspects of the source who delivers a persuasive proposal can influence recipient's attitudes towards that proposal.

More specifically, this chapter describes the basic mechanisms by which source factors can influence persuasion highlighting the role of a recently discovered process—called *self-validation* (Petty, Briñol, & Tormala, 2002). Unlike previous mechanisms that focus on primary or first-order cognition, this new process emphasises secondary or metacognition (Petty, Briñol, Tormala, & Wegener, 2007). In particular, we argue that source variables, such as credibility, attractiveness, status, and power can affect attitude change not only by previously studied mechanisms such as serving as a peripheral cue or by affecting the number or valence of thoughts generated

(Petty & Cacioppo, 1986), but by a new mechanism—affecting thought confidence.

We provide a comprehensive review of the primary and secondary processes by which source factors affect attitude change, and describe some research illustrating these processes. In reviewing the basic mechanisms underlying source persuasion we will: (1) provide a brief overview of social psychology's historical contribution to this area of research, outlining a general framework for understanding the key processes of persuasion, (2) use this framework to review classic and contemporary research on source-induced attitude change based on processes involving primary cognitions, (3) highlight *self-validation* as the most recently discovered process underlying source persuasion, (4) describe how the operation of this metacognitive process is moderated by several variables and how it differs from other mechanisms based on secondary cognition, (5) describe research revealing that self-validation can contribute to understanding traditional and new source phenomena in persuasion, (6) examine the impact of source variables on other, additional metacognitive dimensions, and (7) discuss how the self can also be interpreted as a persuasive source in attitude change.

SOURCE FACTORS IN PERSUASION: A BRIEF HISTORY

The first intuitive and empirical approaches to source factors in persuasion were guided by relatively simple questions that focused on main effects (e.g., are experts more or less persuasive than non-experts?). These early ideas about persuasion also tended to focus on just one process by which sources would have their impact (e.g., increased credibility increasing persuasion by enhancing learning of the message arguments; see Petty, 1997).

Although the main-effect and single process assumptions provided a reasonable early start to the field, it was not long before complications arose (see Petty & Briñol, 2008). First, source credibility was sometimes associated with increased attitude change and sometimes with decreased influence. Also, support for any one mechanism by which persuasion worked was not compelling. Finally, a puzzle that researchers have struggled with for decades is that sometimes attitude changes generated by source factors tended to be relatively durable and impactful (e.g., guiding behaviour), but sometimes the attitude changes produced were rather transitory and inconsequential. Thus, theories evolved to account for multiple effects, processes, and consequences of persuasion variables. Contemporary theories of persuasion, such as the elaboration likelihood model (ELM; Petty & Cacioppo, 1986), the heuristic-systematic model (HSM; Chaiken, Liberman,

& Eagly, 1989), and the unimodel (Kruglanski & Thompson, 1999) were generated to articulate multiple ways in which source (and other) variables could affect attitudes in different situations.

For example, the ELM holds that there are a finite set of persuasion processes, and that source factors (like any other communication variable) can influence attitudes by affecting one of these processes (see Petty & Briñol, 2006, for a discussion of other taxonomies of fundamental processes underlying persuasion). That is, any given feature of the persuasive setting (e.g., source attractiveness), can affect attitudes in one of five ways. As illustrated in Figure 1, the variable can (1) serve as a peripheral cue, or (2) serve as an issue-relevant argument, or (3) affect the motivation or ability to think about the message, or (4) bias the nature of the thoughts that come to mind, or (5) affect structural properties of the thoughts, such as how much confidence people have in them. The ELM also identifies the general conditions under which source variables act in each of the different roles, such as the likelihood of extensive or minimal thinking. In addition, because the ELM postulates that people want attitudes that are adaptive, it allows for the possibility that people will correct their initial judgemental tendency when people suspect that a source has biased their judgement (e.g., see Wegener & Petty, 1997).

In line with the ELM's multiple roles postulate, source factors, such as expertise, attractiveness, and power, have been found to affect attitude change through these different processes depending on the situation. Thus, source factors have been found to influence persuasion by serving as a peripheral cue when elaboration is relatively low, and by affecting how much thinking people do about the message when elaboration is not constrained to be high or low. On the other hand, when motivation and ability to think are relatively high, source factors have influenced persuasion by biasing the
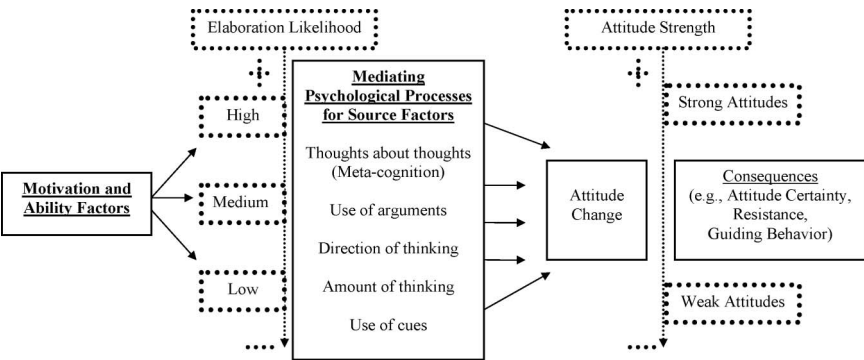
Figure 1. Fundamental processes by which source factors influence attitude change.

direction of the thoughts, serving as persuasive arguments, and affecting thought confidence.

As we describe briefly in the first part of this review, source factors can influence each of the above-mentioned processes depending on the circumstances. In this review we first mention some of the traditionally studied processes by which sources have been shown to influence persuasion and review some illustrative research. Then we focus more extensively on the more recent self-validation mechanism and the evidence for it.

MECHANISMS OF PERSUASION BASED ON PRIMARY COGNITION

Source factors can serve as cues

Early approaches to persuasion gave source factors just one role in the persuasion process, although the particular role varied with the theory. For example, in the original Hovland (Yale) learning framework, source variables (e.g., trustworthy sources) affected persuasion by increasing learning of the message (Hovland, Janis, & Kelley, 1953). In a second version of Hovland's theory, however, sources were proposed to serve as simple augmenting/discounting cues (Kelman & Hovland, 1953), which could increase or decrease persuasion independent of argument learning. In yet another account of source variables proposed by Kelman (1958) some source variables (expert sources) induced persuasion because of internalisation of message arguments, whereas other source variables (attractive sources) induced persuasion because of identification with the source. Thus, in these theories, particular content (e.g., attractive source) mapped onto particular processes (e.g., persuasion by augmenting cue or identification).

As noted in the introduction, a unique feature of contemporary theories of persuasion (e.g., ELM, HSM, unimodel) in contrast to prior approaches is that the new theories do not confound content and process. In these new theories, any one variable (e.g., an expert source) can induce persuasion by multiple processes. Thus, contemporary research has pointed to numerous source variables that can serve as simple cues when motivation and ability to think are relatively low (e.g., Briñol, Petty, & Tormala, 2004, Chaiken, 1980; Petty, Cacioppo, & Goldman, 1981). Furthermore, several specific mechanisms by which these source cues can affect attitudes when thinking is low have been proposed (e.g., classical conditioning, identification with the source, and use of heuristics). When source factors serve as heuristics or simple cues they produce persuasion in the same direction as their valence. Thus, likable, attractive, similar, or expert sources produce more persuasion than dislikeable, unattractive, dissimilar, or inexpert sources.

For example, in one study illustrating a cue role for sources, Petty et al. (1981) presented undergraduate students with a counter-attitudinal advocacy (implementing comprehensive exams) containing either strong or weak arguments that emanated from a source of either high (a professor of education) or low expertise (a local high school student). For some participants, the policy was high in personal relevance (they were told that the policy would begin the following year so that they would be affected by it) whereas for others the policy was low in relevance (the changes would take place in 10 years so it would not affect them personally). Attitudes towards the proposal were influenced primarily by the quality of the arguments in the message under high relevance, whereas under low relevance attitudes were influenced primarily by the expertise of the source. Thus, under low thinking conditions, rather than diligently considering the issue-relevant arguments, a person may accept an advocacy simply because it was presented by an expert (e.g., "if an expert says it, it must be true"; see also Chaiken, 1980).

Source factors can affect the amount of thinking

When thinking is not constrained to be high or low by other variables, one of the most fundamental things that source variables can do to influence attitudes is to affect the amount of thinking people do about a persuasive communication. Increasing the amount of thinking can get people to carefully process the relevant information presented and therefore be influenced by it. Getting people to process information carefully magnifies the impact of the quality of the arguments in the message. Thus, enhancing thinking about strong arguments tends to produce more persuasion, but enhancing thinking about weak arguments tends to reduce persuasion. For example, several studies have shown that when a person is not normally motivated to think about the message arguments, more thinking can be provoked by having the individual arguments presented by multiple sources rather than just one (Harkins & Petty, 1981). When the arguments are strong, having multiple sources thereby increases persuasion, but when the arguments are weak, having multiple sources present the arguments reduces persuasion.

It is also important to note that individuals vary in what type of source information serves as a motivator of thought. For example, DeBono and Harnish (1988) found that individuals low in self-monitoring (Snyder, 1974) processed messages to a greater extent when they were presented by an expert rather than an attractive source (see also Petty & Cacioppo, 1983; Puckett, Petty, Cacioppo, & Fisher, 1983). High self-monitors did the opposite. This is because source factors can be associated with the type of information of most interest to high and low self-monitors respectively (i.e.,

image versus quality information). Source factors can also influence persuasion by affecting the ability (rather than the motivation) to process carefully. For example, if the speaker talks too quickly (Briñol & Petty, 2003), thinking about the message has been found to be disrupted (resulting in reduced argument quality effects on attitudes).[1]

People not only think more carefully when they have the resources to do so, and when the message stems from several sources rather than just one, but also when they perceive the source to be similar to themselves in one way or another. This is presumably because linking a message to a similar source increases its self-relevance (Petty & Cacioppo, 1979). For example, people tend to think more about a persuasive message when it is presented by a source who shares the message recipient's group membership than when it is delivered by a source who does not share this membership (e.g., Mackie, Worth, & Asuncion, 1990). This increase in message elaboration as a function of similarity based on belonging to the same group is more likely to occur when the topic of the message is group-related (Mackie, Gastardo-Conaco, & Skelly, 1992; van Knippenberg & Wilke, 1992) and when the message is delivered by a prototypical or representative group member (van Knippenberg, Lossie, & Wilke, 1994). These effects on extent of thinking based on group membership are also more likely to occur when background levels of elaboration likelihood are relatively moderate. As is the case with other source factors, social identity can also influence persuasion by other, different processes under other circumstances (for an extensive review of social identity and persuasion, see, e.g., Fleming & Petty, 2000).[2]

In addition to affecting the perceived self-relevance of a message, message sources can sometimes induce a general sense of certainty or doubt. In general people will think more about messages from sources who make them feel doubt rather than certainty. Sources can induce doubt or uncertainty when the source of the message is seen as untrustworthy (Priester & Petty,

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[1] Of course, as noted earlier, when motivation to think is already set at a high or low level, these same source factors can serve in other roles. For example, when motivation to think is relatively low, a fast-talking speaker can be more persuasive, presumably because the fast-talking speaker is assumed to be more knowledgeable (e.g., see Smith & Shaffer, 1995).

[2] Identifying with the source of a message can (a) serve as a peripheral cue to decide about the proposal under low elaboration conditions, (b) bias the direction of the thoughts that come to mind under high thinking conditions, and (c) increase thinking under moderate elaboration likelihood. In general, a match of any kind (e.g., similarity) between the message source and the recipient, not just identity, can lead to persuasion through different processes in different situations. Thus, in addition to the mechanisms already described, similarity with the source or a matching in any dimension between source and recipient can presumably operate through self-validation processes as well. For example, if a woman who is highly identified with her gender learns that the speaker is a woman after thinking about the message, a feeling of confidence in her thoughts should be enhanced relative to conditions in which the recipient learns that the source is a male.

1995) or surprising (Ziegler, Diehl, & Ruther, 2002). Related to this possibility, people can also be ambivalent towards the source of a message. Thus, a recipient can feel doubt by having both positive and negative evaluative reactions towards the source (i.e., explicit attitudinal ambivalence) or by feeling any other form of discrepancy with regard to the source (e.g., when the source has conflicting expertise and attractiveness information).

The literature has documented that such explicit conflicts are typically experienced as aversive and dysfunctional (e.g., Abelson & Ronsenberg, 1958; Higgins, 1987; Newcomb, 1968; Osgood & Tannenbaum, 1955). As a consequence people attempt to deal with their ambivalence in one way or another. Perhaps the most common approach to dealing with ambivalence is enhanced thinking or information processing (e.g., Abelson et al., 1968; Aronson, 1969; Festinger, 1957; Hass, Katz, Rizzo, Bailey, & Moore, 1992; Heider, 1958; Nordgren, van Harreveld, & van der Pligt 2006). By considering additional information, individuals can hope to gain enough information for one or the other side of the discrepancy in order to resolve or minimise the inconsistency, or at least the subjective discomfort that results from it (e.g., Hänze, 2001; Hodson, Maio, & Esses, 2001; Jonas, Diehl, & Bromer, 1997). For example, Maio, Bell, and Esses (1996) measured participants' attitudinal ambivalence regarding immigration to Canada, and then exposed them to a discrepancy-relevant message favouring immigration from Hong Kong to Canada that contained either strong or weak arguments. The extent to which participants processed the message information was assessed by examining the extent to which the quality of the arguments made a difference in post-message immigration attitudes. As noted earlier, for people to be differently affected by strong and weak persuasive messages they have to carefully attend to and think about the content of the information. As expected, Maio et al. (1996) found that individuals who had ambivalent attitudes towards immigration were more influenced by argument quality than were unambivalent individuals, suggesting that they engaged in enhanced scrutiny of the issue-relevant information presented.

Although research has focused extensively on explicit discrepancies, relatively little work has examined the potential existence of and consequences of discrepancies in which one cognitive element may not be easily accessible (i.e., implicit ambivalence; see Petty & Briñol, 2009). That is, people can also be ambivalent towards the source of a message, both at the explicit level and the implicit level (e.g., when some information about the source is not consciously endorsed, but still influences automatic measures, creating implicit–explicit discrepancies; see Briñol, Petty, & Wheeler, 2006; Petty, Tormala, Briñol, & Jarvis, 2006).

Relevant to this issue is work on the persuasiveness of stigmatised sources. For example, there are now a number of studies suggesting that

Whites will sometimes engage in greater processing of a persuasive message from a Black than a White source. In the first research on this topic White and Harkins (1994) presented White participants with a persuasive message from a White or a Black source on the topic of senior comprehensive exams. The message contained either strong or weak arguments. Across several replications, they consistently found that the impact of argument quality on attitudes was greater when the source was Black rather than White.

In series of follow-up studies Petty, Fleming, and White (1999) suggested that this enhanced scrutiny might stem from a "watchdog motivation". That is, Whites might be processing messages from Blacks more than Whites in order to guard against possible prejudice towards Black sources. Petty et al. reasoned that if this were true, it should only be Whites low in prejudice who would show the enhanced scrutiny effect. To examine this, prejudice was assessed with several explicit measures (Katz & Hass, 1988; McConahay, Hardee, & Batts, 1981), and reactions to persuasive messages from Black and White sources were assessed. In several studies it was found that only Whites who were low in explicit prejudice processed messages more for Black than White sources. This enhanced scrutiny of Black sources by low-prejudiced individuals was replicated when the message was about a Black versus a White target individual rather than from a Black versus a White source (Fleming, Petty, & White, 2005; see alsoLivingston & Sinclair, 2008).

In a recent series of studies we tested a variation of the watchdog hypothesis based on the idea of implicit ambivalence (see Petty & Briñol, 2009). Specifically, our conceptualisation of implicit ambivalence suggests that among individuals low in explicit (i.e., deliberative) prejudice it is those who are also high in implicit (i.e., automatic) prejudice who will do the most processing. If people are also low in implicit prejudice, there is nothing internal to watch out for. Also, our framework suggests that individuals who are high in explicit prejudice and low in implicit prejudice will also engage in enhanced message processing. The reason is that these individuals would also experience some implicit ambivalence because their deliberative attitudes do not match their automatic evaluations.

To examine this possibility, in an initial study (Petty, Briñol, See, & Fleming, 2008), we assessed Ohio State University students' attitudes towards African-Americans using both automatic and deliberative measures. The automatic measure was an implicit association test (IAT) in which stereotypically Black names (e.g., Tyrone, LaToya) and White names (e.g., Andrew, Katie) were paired with good (e.g., freedom, love) and bad (e.g., poison, disease) terms (see Greenwald et al., 1998, for the scoring procedure and rationale). The explicit measure consisted of a series of pro and anti Black statements to which participants were to rate their extent of agreement (see Katz & Hass, 1988, for the scoring procedure and rationale).

The explicit and implicit measures of attitudes were unrelated to each other. Following previous research on explicit–implicit discrepancies (Briñol et al., 2006), an index of explicit–implicit discrepancy was formed as the absolute value of the difference between the standardised explicit and implicit measures of racial attitudes. We also coded for the direction of discrepancy (i.e., implicit score more prejudiced than explicit or vice versa) to see if this mattered.

After completing the implicit and explicit measures of racial attitudes, all of the students were exposed to a message advocating a new programme to hire African-American faculty at their university that was supported with either strong or weak arguments. As in past research, the strong arguments were designed to elicit favourable thoughts if people thought about them, whereas the weak arguments were designed to elicit mostly unfavourable thoughts (see Petty & Cacioppo, 1986). The strong arguments, among other things, mentioned that the new programme would allow class sizes to be reduced and would allow a greater percentage of classes to be taught by faculty rather than graduate students. In contrast, the message with weak arguments argued that the new proposal was desirable because it would allow current professors to have more free time and that several parents wrote letters in support of the proposal.

Consistent with the idea that people with automatic–deliberative discrepancies would act as if they were ambivalent, discrepancy interacted with argument quality to predict attitudes towards the programme. That is, as illustrated in Figure 2, as the discrepancy between attitudes assessed with implicit and explicit measures increased, attitudes were more affected by argument quality. Notably, the direction of the discrepancy did not further qualify the results, although there were relatively few individuals who on an absolute basis were high in explicit prejudice and low in implicit prejudice. Nevertheless, these results clearly demonstrated that among those who were low in their explicit prejudice, it was primarily those high in implicit prejudice who engaged in greater scrutiny of a message about a programme favouring Blacks.

In summary, source factors can influence persuasion by affecting the extent to which the recipient of a proposal thinks carefully about it. In this section we have reviewed how several aspects of the source can affect the ability (e.g., when sources speak too quickly) and the motivation (e.g., when sources make the recipient doubtful) of the recipient to think. Special attention was dedicated to the cases in which the message was presented by stigmatised sources, and when the recipient of the persuasive message was ambivalent towards those sources, both at the explicit and implicit levels. In the next section we describe how these and other source factors can influence persuasion not only by affecting the amount but also the direction of the thoughts generated by the recipient.
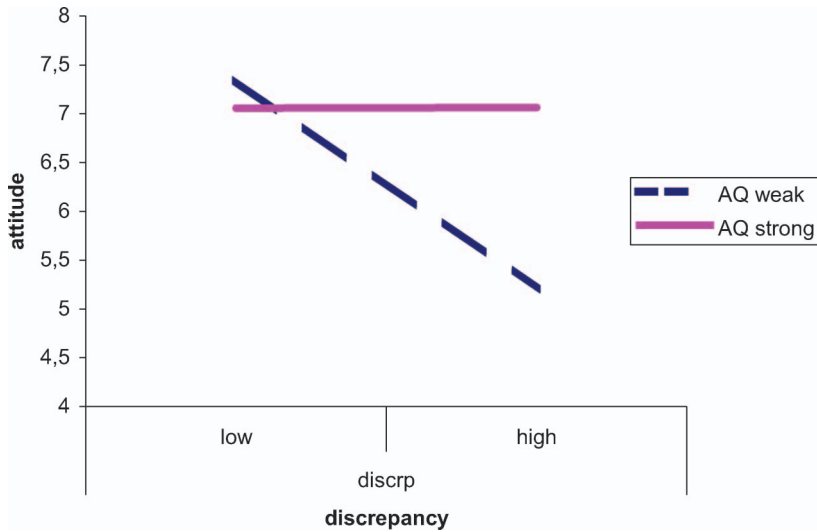
Figure 2. Attitudes as a function of argument quality and automatic–deliberative discrepancies regarding the group of the source. Adapted from Petty, Briñol, See, and Fleming (2008). As implicit ambivalence increases, elaboration also increases, and attitudes are more affected by argument quality.

Source factors can affect the direction of thinking

When motivation and ability to think are high, such as when the topic is one of high personal relevance (Petty & Cacioppo, 1979) and there are few distractions present (Petty, Wells, & Brock, 1976), people will be engaged in careful thought about a proposal, but that thinking can be biased by source variables. Most importantly, source variables can motivate or enable people to either support or derogate the content of the information provided. Some features of the source increase the likelihood of favourable thoughts being elicited, but others increase the likelihood of unfavourable thoughts coming to mind. For example, Chaiken and Maheswaran (1994) demonstrated that an expert (vs non-expert) source had a greater impact on attitudes by affecting the direction of the thoughts generated in response to a proposal, but only when the message was ambiguous (vs unambiguous), and when personal importance of the message topic was high (vs low). Under similar conditions, Tormala, Briñol, and Petty (2006) found that persuasion was mediated by the biased thoughts generated towards the proposal. Importantly, other research has also shown if people believe that their thoughts have been biased by the source, they can adjust their judgements in a direction opposite to the implication of the thoughts (correction processes; Petty, Wegener, & White, 1998; Wegener & Petty, 1995, 1997).

Source factors serving as arguments

According to the ELM, when the amount of thinking is high people assess the relevance of *all* of the information in the context and that comes to mind in order to determine the merits of the attitude object under consideration (Petty & Cacioppo, 1986). That is, people examine source factors (in addition to other information from the message, recipient, context, and internally generated information) as possible arguments or reasons for favouring or disfavouring the attitude object (see also Kruglanski et al., 2005). For example, source attractiveness has been found to influence persuasion by serving as an argument when it related to the central merits of the proposal (e.g., public image of a restaurant, beauty products; Petty & Cacioppo, 1983). Just as individual differences such as self-monitoring can affect what type of source information serves as persuasive evidence for any given attitude object, so too can features of the situation (e.g., dimensions of judgement that have recently been primed; e.g., Sherman, Mackie, & Driscoll, 1990).

Summary of the influence of source factors on thinking processes

One of the earliest and most well-known findings in the persuasion literature is that high-credibility sources often produce more attitude change than sources of low credibility. Similar findings have been found for high (vs low) attractive sources, as well as for sources with relative differences in social status and power. In this section we have outlined four ways in which these source effects (and the opposite) could come about according to the ELM. That is, depending on the message recipient's extent of thinking, source factors such as source credibility, attractiveness, and status have been found to influence persuasion by serving as a simple cue, biasing the thoughts message recipients have, serving as a piece of evidence relevant to the central merits of the issue, and determining the amount of information processing that occurs. In the next section we will describe how these and other source factors can also influence persuasion by affecting a recently discovered process. Understanding process by which source variables can produce persuasion is important because it informs us of both the immediate and long-term consequences for persuasion.

A NEW PROCESS FOR SOURCE PERSUASION: SELF-VALIDATION

Having provided a brief description and some illustrations of the more traditionally studied persuasion processes (which focused on primary

cognition), we turn to the core of this review, which is on how and when source factors affect persuasion by influencing thought confidence (which focuses on secondary cognition). Primary thoughts are those that occur at a direct level of cognition and involve our initial associations of some object with some attribute or feeling (e.g., this proposal is stupid). Following a primary thought, people can also generate other thoughts that occur at a second level, which involve reflections on the first-level thoughts (am I sure that the proposal is stupid?). *Metacognition* refers to these second-order thoughts, or our thoughts about our thoughts or thought processes (Petty et al., 2007; Jost, Kruglanski & Nelson, 1998). In other words, metacognition refers to thinking about thinking.

In recent years metacognition has assumed a prominent role not only in the domain of social psychology (Jost et al., 1998: Petty et al., 2007), but also in memory research (Koriat & Goldsmith, 1996), clinical practice (Beck & Greenberg, 1994), and advertising (Friestad & Wright, 1995). Indeed, metacognition has been touted as one of the top 100 topics in psychological research (Nelson, 1992).

According to most metacognitive views (including self-validation), secondary metacognitive processes are consequential in guiding further thinking, judgement, and action. For example, other research on metacognition has found that the stronger one's *feeling of knowing* about a piece of information, the more time one is willing to spend searching for it (e.g., Costermans, Lories, & Ansay 1992), particularly when one has the subjective experience that the information is on the *tip of the tongue* (Yzerbyt, Lories, & Dardenne, 1998). Instead of examining the feeling of knowing, the self-validation approach focuses on a sense of confidence in one's thoughts. We argue that metacognitive confidence is consequential because the extent of thought confidence affects whether people use their thoughts. That is, the extent of confidence determines whether people translate their individual thoughts into more general judgements or evaluations that in turn guide behaviour. Thus, two people might have the *same* thought but one person might have considerably greater confidence in that thought than the other, and the greater confidence in the thought, the greater its impact on judgement. This idea is referred to as the *self-validation hypothesis* (Petty et al., 2002). The key notion is that generating thoughts is not sufficient for them to have an impact on judgements. Rather, one must also have confidence in them.

Importantly for the present review, source factors can influence attitude change by affecting thought confidence, which is the key component of the *self-validation* mechanism of persuasion. According to the self-validation logic, when people are thinking, it is not only the number and nature of thoughts (i.e., the two dimensions of thoughts relevant to mechanisms based on primary cognition) people have that determines the extent of influence,

but also the confidence with which people hold their thoughts. Increasing confidence in positive thoughts should increase persuasion, but increasing confidence in negative thoughts should reduce persuasion. The opposite holds for increasing doubt. When doubt in favourable thoughts is increased, persuasion declines, but when doubt in unfavourable thoughts is increased, resistance is undermined and persuasion is enhanced.

In an initial study to examine whether the key idea of the self-validation hypothesis had any merit, thought confidence was assessed following a persuasive message along with the traditionally measured variables of thought valence and thought number. In this study Petty et al. (2002) asked participants to read a persuasive message about a campus issue, to think carefully about the proposal, and to list what they thought about the proposal. Following the thought-listing task, participants reported the confidence they had in the thoughts they listed as well as their attitudes towards the proposal. In accord with the self-validation hypothesis, the relationship between thoughts and attitudes was significantly greater to the extent that confidence was relatively high rather than low. In other words, to the extent that people had confidence in their thoughts, persuasion depended on the valence of those thoughts. On the other hand, to the extent that people lacked confidence in their thoughts, persuasion was less dependent on thought valence. This study showed that thought confidence could play an important role in persuasion and thus understanding the origins of thought confidence was important. Again, this is important because previous mechanisms of persuasion were based exclusively on the valence and number of thoughts.

For practical purposes it was very informative to know that measuring thought confidence can lead to increased predictability in attitudes. Nevertheless, because confidence was measured rather than manipulated in this study, some question could be raised concerning the interpretation of the results. For example, although we found no differences in the number or quality of the thoughts generated across levels of thought confidence, it remains a possibility that our measures of these constructs were ineffective. Thus, it was important to manipulate thought confidence to isolate the causal role of this variable. Furthermore, if it could be shown that direct manipulations of thought confidence were effective in modifying the impact of thoughts on attitudes, this would provide a new and unexplored way to produce persuasion.

In one study demonstrating this, college students were exposed to a message containing strong or weak arguments in favour of a new university exam policy (Petty et al., 2002). Examples of the gist of strong arguments include that students' grades would improve if the exams were adopted and that the average starting salary of graduates would increase. Examples of the gist of weak arguments, on the other hand, include that implementing the exams would allow the university to take part in a national trend and that

the exams would give students the opportunity to compare their scores with those of students at other universities. After thinking about the message and listing their thoughts towards the proposal, participants were asked to think about personal experiences in which they experienced confidence or doubt. Those who articulated past instances of confidence became more certain of the validity of their recently generated thoughts to the message compared to those who reflected on instances of doubt. That is, the feeling of confidence stemming from the memory exercise was overgeneralised (or misattributed) to the thoughts recently generated to the persuasive message. Furthermore, this confidence led to greater persuasion when recipients' thoughts were largely favourable (i.e., to the strong arguments), but more confidence led to less persuasion when recipients' thoughts were largely unfavourable (i.e., to the weak arguments). Thus, as shown in Figure 3, confidence (vs doubt) increased the impact of thought valence (and argument quality) on attitudes.

This study indicates that in addition to considering the number and valence of thoughts elicited by a message, confidence in thoughts can play a causal role in persuasion. That is, manipulating confidence after generating thoughts ruled out the possibility that there were unmeasured differences in the quality or the cogency or the number of thoughts listed by high- and low-confidence individuals that might have contributed to the effects observed in the initial study. Taken together, these studies reveal that persuasion attempts can be unsuccessful not because a message has failed to elicit many favourable thoughts, but because people lack confidence in the thoughts they generated. Similarly, people might fail to resist influence not because they have not generated counterarguments to the message but because they fail to have confidence in those thoughts.
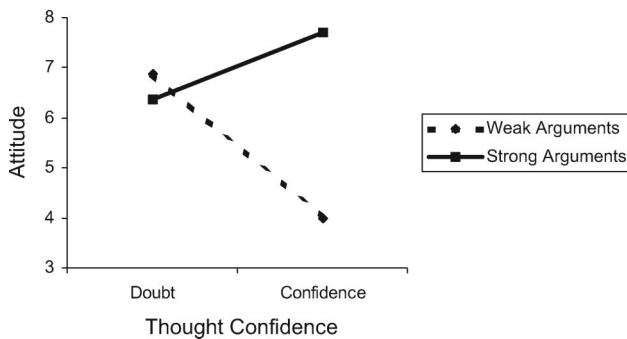
Figure 3. Attitudes as a function of argument quality and confidence. Adapted from Petty et al. (2002, exp. 3).

Summary of self-validation

The initial studies on self-validation indicated that the relationship between thoughts and attitudes was significantly greater to the extent that confidence was relatively high rather than low. When individuals wrote favourable thoughts, increased confidence was associated with more persuasion, but when individuals wrote negative thoughts, increased confidence was associated with reduced persuasion. It is important to note that in studies described in the above section, the self-validation hypothesis was supported whether thought confidence was measured or manipulated. We also used two different kinds of measures of thought confidence: assessing confidence in each individual thought or in all of one's thoughts together. Furthermore, as we will emphasise in the next section, we measured confidence both before and after attitude expression in different studies. We also used different ways to vary the valence of thinking (e.g., argument quality and instructed thinking). None of these differences changed the self-validation effects observed. Finally, across the studies in this original series we were able to demonstrate that the effects of thought confidence on attitudes are not accounted for by related constructs, such as belief likelihood or desirability.

Moderating factors of self-validation

In addition to proposing thought confidence as a general mediator of the impact of diverse variables on judgement, self-validation research also points to unique moderators that have either been ignored or viewed in different ways by other theories. Thus, another contribution of our initial research has been to specify the circumstances in which thought confidence is likely to influence judgements. Petty et al. (2002) demonstrated that self-validation is more likely to take place when people have the motivation and ability to attend to and interpret their own cognitive experience (e.g., participants are high in need for cognition; Cacioppo & Petty, 1982; when there is high personal relevance of the persuasion topic; Petty & Cacioppo, 1979). There are at least two reasons for this. First, for validation processes to matter, people need to have some thoughts to validate. Second, people need some motivation and ability not only to think at the primary level of cognition but also to think and care about their thoughts.

Thus the self-validation processes we documented have some boundary conditions, such as requiring relatively high levels of thinking. However, it is important to note that this does not mean it is necessary to ask people explicitly to evaluate their thought confidence in order to observe self-validation effects. In fact, our research has revealed that for thought confidence to be consequential it is not necessary to measure it at any point, making it unlikely that such a dimension needed to be primed explicitly for
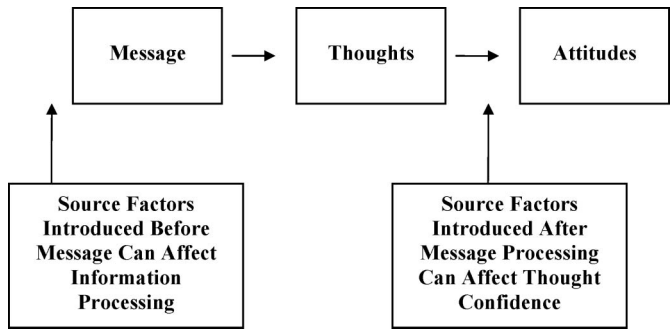
the effect to occur. Thus, self-validation effects hold for situations in which thought confidence is assessed or not (e.g., Petty et al., 2002; for another example, see Briñol, Petty, & Barden, 2007a). As mentioned earlier, our research has clearly shown that self-validation processes occur regardless of *whether* (or not), *when* (before or after reporting attitudes), and *how* (individually or globally) thought confidence is assessed (for a review, see Briñol & Petty, 2004). In other words, the notion that people might not be constantly aware of their confidence in their thoughts does not make it less impactful or any less metacognitive in nature. Indeed, metacognition (like regular, primary cognition) can sometimes have implicit bases and implicit effects. People might not even be able to consciously verbalise or explain the basis of their metacognition when asked to do so (just as they cannot verbalise the basis of their primary cognition). Yet such cognition could still have an impact. We have found that, when asked to do so, people are capable of reporting their confidence in their thoughts, and that this confidence maps onto predictable and potentially important outcomes. However, people are unlikely to have much conscious recognition of the *origins* of this confidence.[3]

Subsequent research has identified another limiting condition on the self-validation effect. That is, confidence should be salient *following* thought generation rather than prior to it. For example, as we will describe in detail in subsequent sections, Tormala, Briñol, and Petty (2007a) demonstrated that when the validating information (source credibility) preceded the message, it biased the generation of thoughts, consistent with past research (Chaiken & Maheswaran, 1994), but it affected thought confidence when it followed the message. As illustrated in Figure 4, our 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 will play an essential role in the studies of this review.

Finally, in addition to source factors reviewed here, and other situational determinants of thought confidence (from the message, context, and recipient), it is important to note that there might also be dispositional determinants of the use of mental contents. In a preliminary test of this idea, DeMarree, Petty, and Briñol (2008b) found that attitudes were more in line with participants' thoughts when participants were high rather than low in general self-confidence. Across several studies, self-confidence was measured in a variety of different ways (e.g., certainty in a diversity of attitudes or self

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[3] We have also measured confidence and doubt using an implicit measure (IAT) in the context of studying the implicit ambivalence that can emerge from automatic–deliberative discrepancies (see Petty & Briñol, 2009).

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┌─────────────┐      ┌─────────────┐      ┌─────────────┐
│   Message   │ ───▶ │   Thoughts  │ ───▶ │  Attitudes  │
└─────────────┘      └─────────────┘      └─────────────┘
       ▲                    ▲
       │                    │
┌─────────────────┐  ┌─────────────────┐
│  Source Factors │  │  Source Factors │
│ Introduced Before│  │ Introduced After│
│ Message Can Affect│ │Message Processing│
│   Information   │  │ Can Affect Thought│
│    Processing   │  │    Confidence   │
└─────────────────┘  └─────────────────┘
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Figure 4. Impact of source variables on psychological processes underlying attitude change as a function of timing.

traits, perceived self-confidence, and judgemental self-confidence) and regardless of the measurement, individuals who were high in self-confidence relied more on their thoughts in forming their attitudes than those who were low in self-confidence. These results held across different thought inductions, and after controlling for self-esteem and other related constructs. Furthermore, as expected from a self-validation approach, these findings were moderated by amount of elaboration. That is, the individual difference in self-confidence only mattered under high thinking conditions. This line of research suggests that the self-validation approach provides an integrative mechanism for understanding how many diverse variables can operate, and suggests that many additional variables are also likely to benefit by considering self-validation processes.

THE UNIQUENESS OF THE SELF-VALIDATION APPROACH

Now that the self-validation approach has been described, it is important to note that the self-validation framework shares features with some other metacognitive theories in social psychology, but also has notable differences.[4] Most obviously, the self-validation approach agrees with other

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[4] We use the term self-validation in order to emphasise that what people validate are their own thoughts. In a persuasion paradigm, the objects of validation are the cognitive responses that the person generates in response to the persuasive proposal received. However, as we describe later in this review, our self-validation view argues that metacognitive confidence can magnify the effect of not just attitude-relevant thoughts, but any content that is currently available in people's minds. It is important to note that the term self-validation has been used slightly differently in other domains of social psychology. For example, Crocker and Park (2004) use the term self-validation to refer to situations in which people want (mostly through others) to validate their abilities and qualities, and ultimately their self-worth. In this case, self-validation

recent theories on the importance of secondary cognition. However, previous approaches have generally examined and attempted to explain one single source of metacognitive influence. For example, Kruglanski's (1989) lay epistemic theory (LET) has been applied to causal attributions and argues that validation processes are affected by the number of causal explanations generated—the more alternative explanations generated for any given event, the less confidence a person has in any one given causal explanation. Generating few explanations, then, leads to greater confidence.

Perhaps the most well-known metacognitive theory in social psychology is that of Schwarz and colleagues (1991) on ease of retrieval effects. In this work the focus is on the ease with which primary cognitions come to mind and the key finding is that cognitions that come to mind easily are more impactful than those that are difficult to access. In a separate line of work, Clore and colleagues (Clore, Gaspar, & Garvin, 2001; Clore & Huntsinger, 2007) have focused on emotions, and have proposed that cognitions accompanied by positive emotions are more likely to be used than cognitions accompanied by negative emotions because of the promotive nature of positive emotions.

Interestingly, by focusing on particular variables (e.g., number of cognitions, ease, emotion), these theorists have developed rather specific rationales for why and when their particular variable of interest would matter. In contrast, and as will be evident in the studies that we review, the self-validation framework is designed to be a general metacognitive approach that can explain the effects of a wide array of variables that have been examined separately under the rubric of different theories. We also aim to explain the impact of variables that have not been considered to have a metacognitive impact by any prior theory.

To help understand how the self-validation approach differs from other theories focused on single variables, consider the ease of retrieval phenomena just mentioned. Schwarz et al. (1991) argue that when thoughts are easy to generate (e.g., generate two reasons to buy a BMW), people infer (mistakenly) that there are more reasons available than when they are difficult to generate (e.g., generate eight reasons). Because of this availability heuristic, generating two reasons in favour of something can lead to more persuasion than generating eight reasons. Furthermore, because the ease effect is presumed to be mediated by use of a heuristic, the ease effect is argued to be more likely when people are not thinking very much (e.g., for a low-importance topic; see Rothman & Schwarz, 1998). In contrast, the

is a goal that motivates people to seek and pursue self-esteem. This use of the term self-validation is similar to the meaning of that exact term within clinical psychology where self-validation is often seen as the process of restoring and reinforcing the sense of self-worth, meaning of life, and personal identity.

self-validation approach assumes that easily generated thoughts have greater impact because people infer greater validity of thoughts that are generated easily. This would be true independent of the actual number of thoughts that are generated. Second, the self-validation approach assumes that because a metacognitive inference of validity is involved, the ease effect should be magnified under high rather than low levels of thinking. Thus, the self-validation approach postulates a different mediator and different moderation from classic ease of retrieval theory.

In a series of studies examining both mediation and moderation of ease of retrieval effects we found that the ease effect was mediated by thought confidence rather than the availability heuristic, and occurred to a greater extent when thinking was high rather than low. In these studies Tormala, Petty, and Briñol (2002) asked participants to generate many (10) or few (2) thoughts in favour of a given proposal (e.g., instituting comprehensive exams for college seniors). Consistent with prior work on ease effects (e.g., Schwarz et al., 1991), participants who were asked to generate only 2 positive thoughts were more favourable towards the proposal than those asked to generate 10 favourable thoughts. Importantly, participants were more confident in their favourable thoughts when few rather than many were generated, and this thought confidence mediated the effects of ease of generation on attitudes. Furthermore, the ease effect was greater under high than low thinking conditions (e.g., high versus low need for cognition participants).

Subsequent research has replicated these findings using different paradigms (Tormala, Falces, Briñol, & Petty, 2007b).[5] As in prior research on self-validation effects, the impact of ease on confidence occurred only under high thinking conditions. This is notable given that the ease of retrieval effect had largely been assumed to be a phenomenon only of low cognitive effort based on the availability heuristic (e.g., Rothman & Schwarz, 1998). However, according to the ELM ease, like other variables, should be capable of affecting judgements by different mechanisms in different situations.

Finally, although self-validation focuses on confidence as the main metacognitive dimension, it is important to note that other metacognitive aspects can also be explored in relation to thoughts. For example, it is well established that thoughts and mental constructs that are highly accessible

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[5] In addition to self-validation, Tormala et al. (2007b) uncovered another mechanism relevant to understanding ease of retrieval effects in the most common paradigm in which people are asked to generate a high (difficult) or low (easy) number of cognitions in a given direction. Specifically, it was predicted and found that when it is difficult for people to generate the specific type of cognition requested, they are more likely to spontaneously generate unrequested cognitions, and the presence of these opposite-direction cognitions can play a mediating role in ease of retrieval effects.

are more consequential in terms of durability and subsequent impact than less accessible thoughts (e.g., DeMarree, Petty, & Briñol, 2007). Although accessibility and other features of thoughts (e.g., importance) are often related to confidence, they are relatively independent features of cognition (for a review, see Petty et al., 2007). Our research on self-validation has also differentiated on both conceptual and operational levels between confidence and other previously studied dimensions, such as desirability and likelihood (Briñol et al., 2004). We have distinguished thought confidence not only from other dimensions at the primary level of cognition, but also from other approaches to confidence that have focused exclusively on one aspect of confidence such as confidence in the *likelihood* component of a belief (e.g., Smith, 1993). Thought confidence is a broader concept that incorporates this as well as other sources of confidence (e.g., confidence in desirability, confidence that stems from ease of retrieval of the thought, etc.).

In sum, the self-validation notion seems to be relevant for understanding how source and other variables (e.g., such as ease) can affect attitude change not only by affecting the number or valence of thoughts generated, but also by affecting thought confidence. That is, the self-validation hypothesis provides a completely new mechanism by which a large number of traditionally studied source variables can have an impact on attitudes in persuasion situations. Next we describe how this new mechanism can be useful in accounting for the effects of numerous source variables in persuasion, such as credibility, similarity, status, and power, including also a section on the effects of the non-verbal behaviour of the source, and another one on the self as a source.

SOURCE CREDIBILITY

As outlined earlier, source credibility can influence persuasion through different underlying processes that rely on primary cognition. That is, depending on the message recipient's extent of thinking, source credibility has been found to work by different mechanisms. In particular, source credibility has been shown to affect persuasion by serving as a simple cue, biasing the thoughts that message recipients have, serving as a piece of evidence relevant to the central merits of the issue, and determining the amount of thinking that occurs.

Recently we have argued that source credibility can also influence persuasion by affecting the confidence people have in the thoughts they generated in response to a message. This hypothesis relies on the assumption that source credibility can influence the perceived validity of the information in a persuasive proposal. When one has already thought about information in a proposal and then discovers that it came from a high- or low-credibility source, one's thoughts can also be validated or invalidated by this source

information. For example, if people learn that a source is high in credibility they might think that, because the information is presumably valid, their thoughts in response to the message can be trusted. If they learn that the source has low credibility, however, they might think the information itself is invalid and thus have less confidence in the thoughts generated to the information. That is, if the credibility of the information in a message is undermined, confidence in one's thoughts that were based on that information is likely to be undermined as well.

In an initial demonstration of this possibility, Briñol et al. (2004) exposed participants to arguments in favour of the benefits of phosphate detergents. The ad was presented on a computer and contained either strong or mixed (i.e., both strong and weak) arguments in favour of phosphate-based laundry detergents. For example, in the strong argument condition, participants were told that in comparison with non-phosphate detergents, phosphate detergents were considerably less expensive, safer, and superior in cleaning power, which helps clothes last longer. In the mixed argument condition, participants were told that the packaging of most phosphate detergents was more attractive and colourful, which enhanced their appearance for shoppers. After reading the persuasive message, all participants listed their thoughts. We expected and found participants to generate a clear pattern of favourable thoughts towards the product only in the condition in which the ad contained convincing arguments. When the ad was mixed, thoughts were found to be mixed as well (i.e., both favourable and unfavourable).

Importantly, after receiving the ad and listing thoughts, but before reporting attitudes, source credibility was manipulated. That is, following receipt of the message, participants learned that the source of the information was either a government consumer agency (high credibility) or a major phosphate manufacturer (low credibility). This order was used to ensure that participants in the high- and low-credibility conditions would have generated basically the same thoughts overall, which could then be validated or invalidated by the source information. Following the source information, participants were asked to rated the confidence they had in the thoughts listed when they read the persuasive message (using a composite measure of several items assessing how confident they felt about the thoughts) and reported their attitudes towards the product (using a series of semantic differential scales). Finally, at the end of the experiment all participants completed the Need for Cognition (NC) Scale. NC refers to the tendency to engage in and enjoy effortful thought (for reviews, see Cacioppo et al., 1996: Petty, Briñol, Loersch, & McCaslin, in press). The self-validation reasoning is that when thoughts are generated in response to credible information people can be relatively confident in their thoughts, but when people learn that their thoughts were generated

to a source of low credibility, doubt is instilled. The results showed that, although participants in both high- and low-credibility conditions generated equally favourable thoughts to the strong arguments, participants exposed to the high- (vs low-) credibility source had more confidence in their thoughts, relied on them more, and were therefore more persuaded by the proposal (see top panel of Figure 5).

In addition to highlighting the role of thought confidence in source credibility effects, this research identified one of the limiting conditions on the self-validation process. Briñol et al. (2004) argued that the thought confidence mechanism for source effects is confined to high elaboration, or high thought, instances. As noted when describing the moderating factors relevant to self-validation, the metacognitive activity involved in this process is more likely to take place when people have the motivation and ability to
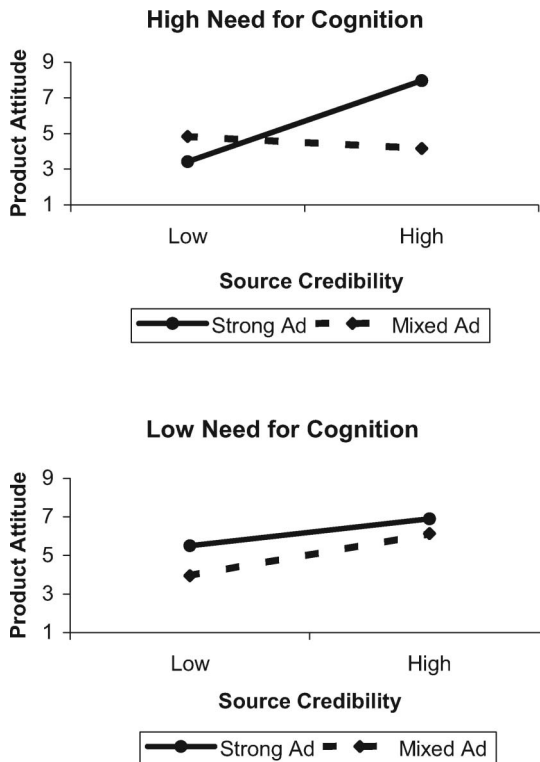

Figure 5. Attitudes as a function of argument quality, need for cognition, and source credibility. Adapted from Briñol et al. (2004, exp. 2). Source credibility validating thoughts (top panel) for high-thinking participants, and source credibility acting as a cue (bottom panel) for low-thinking participants.

attend to and interpret their own cognitive experience (e.g., Petty et al., 2002, 2007). Indeed, people need to have some thoughts to validate, and also need some motivation and ability to think about the validity of their thoughts.

Consistent with this idea, Briñol et al. (2004) found that thought confidence explained source credibility effects among high but not low need for cognition (NC; Cacioppo & Petty, 1982) individuals. Source credibility effects were only guided by thought confidence when people have the motivation and ability to think about their thoughts and gauge their confidence in them. That is, the effects of the source on attitudes was mediated by the confidence people placed in their thoughts, with individuals exposed to the high-credibility source expressing more thought confidence than those who were exposed to the low-credibility source (see figure 6). For individuals low in NC, confidence in thoughts did not mediate the attitude effects, which is consistent with prior research suggesting that low-elaboration individuals rely on source information as a cue to whether or not they should be persuaded (e.g., Petty et al., 1981; see bottom panel of Figure 5). This research extended the ELM notion that source variables can play a number of different roles in persuasion depending on the elaboration conditions. When elaboration was low, credibility served as a peripheral cue. However, when elaboration was relatively high, credibility influenced the confidence with which participants held their thoughts in response to the message.

One of the most intriguing implications of the self-validation hypothesis for source credibility is that increasing the credibility of the source of a persuasive message might sometimes undermine the persuasive potential of that message. Specifically, if credibility can influence thought confidence, high credibility might lead to less persuasion than low credibility when message recipients' thoughts are predominantly negative—for example, when the message contains weak arguments (see Petty & Cacioppo, 1986). Indeed, as thought confidence increases people rely more on their thoughts in forming their attitudes, so more confidence in negative thoughts would lead to more negative attitudes.
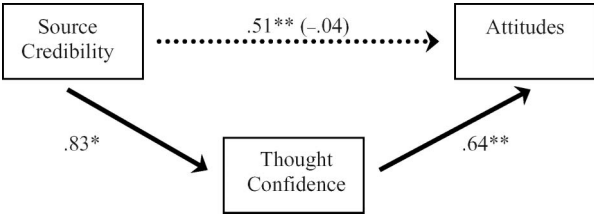

Figure 6. Mediation of the impact of source credibility on attitudes for individuals high in need for cognition. Adapted from Briñol et al. (2004, exp. 2).

In a follow-up study Tormala et al. (2006) explored this counterintuitive prediction that under some conditions high source credibility backfires and results in *less* persuasion than does low source credibility. Specifically, we predicted that because of the self-validation role for sources, a high-credibility source can lead to either more or less persuasion than a low-credibility source depending on the nature of people's thoughts in response to the persuasive message. In particular, when arguments are weak and thoughts were unfavourable, high source credibility following message processing should reduce persuasion, because people would develop greater confidence in their negative thoughts than when the same information was presented by a source of low credibility.

In one of the studies of this series, participants received strong or weak arguments promoting a new brand of pain reliever. This manipulation was designed to influence the overall valence, or direction, of participants' thoughts. In the strong arguments condition the message stated that the new product works 50% faster than other aspirins, lasts 3 hours longer than other aspirins, has no harmful side effects, and recently received a perfect score of 10 in quality and efficiency testing. In the weak arguments condition the message stated that the new product lasts about as long as other aspirins, has very few harmful side effects, contains only small amounts of caffeine and sodium, and recently received a score of 6 out of 10 in quality and efficiency testing. Following the message and thought-listing task, participants received source credibility information. In the high-credibility condition participants were told that the information about the product was taken from a pamphlet from a federal agency that conducts research on medical products. In the low-credibility condition participants were led to believe that the information was taken from a class report written by Jonathon Bower (age 14), a local high school freshman. This manipulation was designed to influence perceived source expertise. Immediately following the source information, participants reported their attitudes towards the product. Then, after reporting their attitudes, participants were asked to think back to the thoughts they listed about the product and rate their overall confidence in them.

Consistent with the self-validation hypothesis, this study demonstrated that source credibility information following a message can affect thought confidence, and that increasing source credibility can lead to relatively favourable or unfavourable attitudes, depending on the valence of thoughts elicited by the message. As shown in Figure 7 (top panel), when the message was strong and produced primarily favourable thoughts, high source credibility was more persuasive than low source credibility. When the message was weak and produced primarily unfavourable thoughts, high source credibility actually backfired and resulted in *less* persuasion than low source credibility.
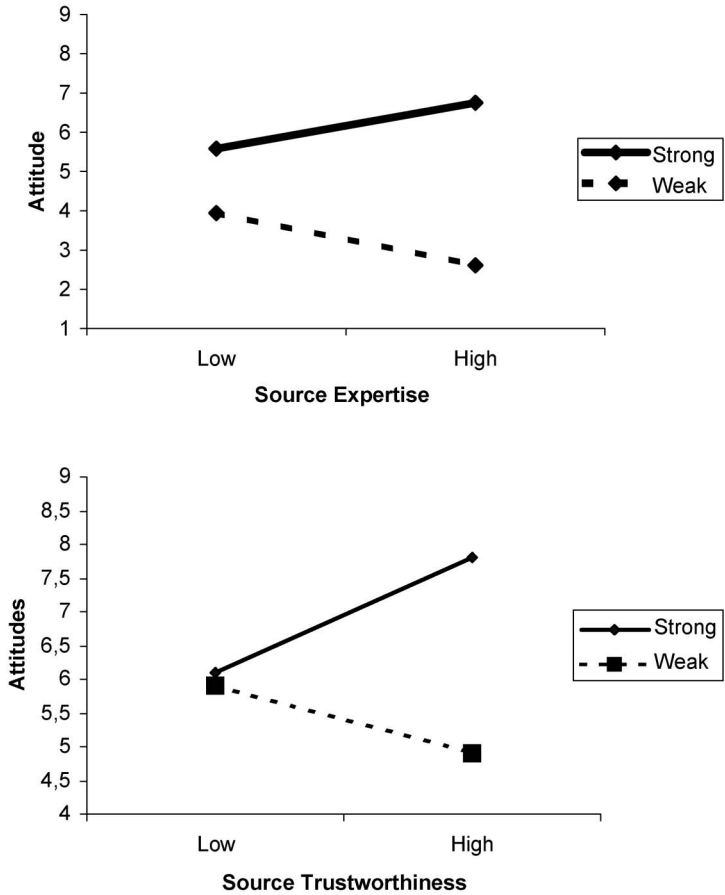
Figure 7. Attitudes as a function of argument quality and source expertise (top panel) and source trustworthiness (bottom panel). Adapted from Tormala et al. (2006).

A second study replicated these findings using a different manipulation of source credibility, focusing on trustworthiness rather than expertise. In particular, in this study participants first received a persuasive message in favour of phosphate detergents that contained strong or weak arguments. The message was designed to argue unambiguously in favour of phosphate detergents in both the strong and weak argument conditions. In the strong arguments condition the message contained rather compelling reasons to buy phosphate detergents (e.g., they are cheaper and more effective), whereas in the weak arguments condition the message contained less compelling reasons to buy phosphate detergents (e.g., they are useful in cleaning a wide range of materials and they have no scent). After the

message, participants were instructed to list the thoughts they had as they read the message. Participants then received source credibility information. In the high-credibility (trustworthy) condition participants were told that the information in the message was taken from a pamphlet from a consumer advocacy group that investigates consumer products with the express purpose of helping consumers make sound decisions. In the low-credibility (untrustworthy) condition participants were led to believe that the information in the message was taken from a pamphlet from a major soap and detergent manufacturer that sells phosphate detergents and thus encourages people to use them. Given its clear vested interest in the product, the latter source was expected to be viewed skeptically. Finally, after receiving the source information, participants were asked to report attitudes and thought confidence and complete a number of additional measures. As illustrated in the bottom panel of Figure 7, this study provided more evidence for the reverse effect of credibility on attitudes under weak arguments conditions. Thus, this research revealed that a high-credibility source can yield either more or less persuasion than a low-credibility source depending on the circumstances.

These two studies reveal that high source credibility can backfire relative to low source credibility. Other researchers have also suggested that high source credibility can backfire when weak arguments are presented, but do so for a different reason. For example, we have already seen that when a high-credible source is presented before a message and elaboration is unconstrained, greater credibility is associated with more processing of the weak arguments and this can reduce persuasion. However, because we presented the source after the message, it is unlikely to affect processing. Another possibility is that reduced persuasion might emerge because weak arguments violate people's expectancies for expert sources, leading to less persuasion (Bohner, Ruder, & Erb, 2002). If the mechanism is one of expectancy violation, then participants would be more likely to generate negative thoughts in that condition, which we did not find to be the case. Alternatively, one might argue that people reason that there must only be weak arguments out there, since a credible source would have proposed better arguments if these existed. This reasoning is consistent with the idea that low credibility leads to doubt, but it implies that doubt emerges from the incompleteness of the information provided.

Thus, although the reversed credibility effect for weak arguments conditions is not unique to our metacognitive approach, the specific mediating and moderating predictions are only derived from the self-validation approach. Furthermore, under high thinking conditions the processes based on primary cognition described earlier would always have predicted more persuasion for high- than low-credible sources regardless of the quality of the arguments included. Thus, we argue that the reversed

finding obtained for source credibility under high thinking conditions adds to a growing body of evidence suggesting that the self-validation framework can enhance our understanding of paradoxical effects in persuasion—e.g., generating few arguments yielding more persuasion than generating many arguments (Tormala et al., 2002); head shaking yielding more persuasion than head nodding (Briñol & Petty, 2003).

In a subsequent line of research, Tormala et al. (2007a) confirmed that source credibility affected thought confidence only when the source information followed, rather than preceded, the persuasive message, and when thinking was high rather than low or moderate. In this line of research 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. Because all participants received arguments that were somewhat ambiguous but that led to mostly favourable thoughts in pilot testing, we predicted that, regardless of source timing, attitudes would be more favourable 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 favourability, making thoughts more favourable than they would otherwise be. When the source followed the message, however, we predicted that source credibility would affect attitudes by influencing thought confidence, leading people to rely on the favourable thoughts they have generated. In the experiments of this series we measured attitudes, thought favourability, and thought confidence.

As shown in Figure 8 (top panel), this research showed that when credibility preceded message processing under high thinking conditions it biased the thoughts generated, consistent with past research (Chaiken & Maheswaran, 1994). Only when the source information followed the message did it affect thought confidence (see Figure 8, bottom panel). As noted earlier, these findings argue that research on persuasion can benefit from considering the timing of the source information, since placement of the source and other independent variables in the sequence of persuasion stimuli can have an impact on the mechanism by which the variable operates.

In sum, this research clearly showed that the self-validation process should be added to the other mechanisms previously identified for explaining the impact of source credibility on attitudes, and it indicated the importance of considering the order of presentation of persuasion stimuli. In closing this section it is important to note that our work on self-validation has demonstrated that credible sources can validate thoughts regardless of the content and valence of the thoughts generated. In all of these studies the content of the thoughts did not matter for validation
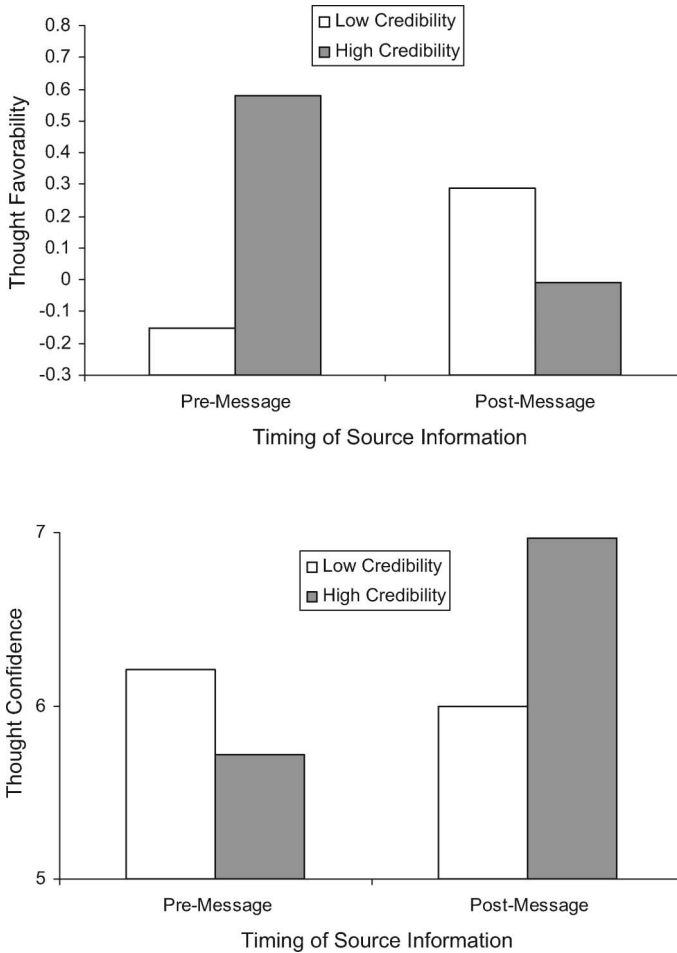
Figure 8. Thought favourability (top panel) and thought confidence (bottom panel) as a function of source credibility and timing. Adapted from Tormala et al. (2007a). Source credibility only affected the direction of the thoughts when it preceded the persuasive message (top panel), but only affected thought confidence when it followed the processing of the message (bottom panel).

purposes because the thoughts generated were unrelated to the source of the information (i.e., they were about the source's *proposal* rather than the source). However, it might be different when the target of the persuasion attempt is thinking about the source (Clark, Wegener, Briñol, & Petty, in press). For example, a credible source might validate thoughts in response to strong arguments if the judgement is about the source's intelligence, since in this case the person would be thinking that the source was intelligent

based on the strong arguments and then the expertise information would provide convergent validity for this judgement. Similarly, a non-expert source would validate judgements about the lack of intelligence when weak arguments are offered. This suggests that sources with low (vs high) credibility can affect judgements by validating thoughts under some circumstances such as when the source is the object of the thoughts, and when thoughts are stereotypical or match the nature of the source.

SOURCE SIMILARITY

Source attractiveness effects have not been as well studied in the literature as source credibility, but we have collected some initial evidence for self-validation effects of source similarity. It is important to begin by noting that the similarity of the source delivering the message was not directly manipulated in this research. Instead, we manipulated whether participants thought that other people had similar or dissimilar thoughts (i.e., thought similarity). In one study, for example, Petty et al. (2002, exp. 4) examined how telling people that others had similar versus dissimilar thoughts can affect the perceived validity of those thoughts and thereby modify their impact on attitudes. Participants in this study first received a message advocating the implementation of a new comprehensive exam policy at their university. In order to manipulate the direction of the thoughts towards the proposal, the message they received contained adaptations of either the strong or weak arguments on this now familiar topic in the persuasion literature. After listing their thoughts, participants were told that those thoughts were going to be analysed by the computer and compared with a pool of thoughts of many other students from their own university. After 10 seconds a new computer screen appeared with the ostensible outcome of this comparison. Half of the participants were told that their thoughts had been rejected for future research because they were very different from the rest of the members of their group. The other half of the participants were told their thoughts had been accepted into the pool for future research because they were quite similar to the thoughts listed by other members of their group. This induction was designed to influence the perceived similarity of their thoughts to others, and thus the confidence they had in their thoughts. After receiving this fictitious information, participants were asked to think back to the thoughts they listed about the exam topic and were asked several questions about the confidence they had in the thoughts. Finally, participants reported their attitudes and then completed the NC scale.

As anticipated by Festinger's (1950) notion of consensual validation, this study found that social consensus information affected persuasion by influencing thought confidence (see also Orive, 1988a, 1988b; Stroebe & Diehl, 1988). People reported more confidence in their thoughts when these

thoughts were said to be similar to those generated by others than when they were not. When thoughts were favourable towards the proposal, sharing thoughts with others increased persuasion, but when thoughts were not favourable, sharing thoughts with others reduced persuasion. In other words, as shown in Figure 9, the interaction between argument quality and consensus showed that the effect of argument quality on attitudes was greater when high rather than low thought similarity (confidence) was induced. With high levels of confidence in their own cognitive responses, participants viewed their positive and negative thoughts to the arguments as valid and relied on them in forming attitudes. However, when low confidence in their cognitive responses was induced (by leading participants to believe that had dissimilar thoughts), they viewed their positive and negative thoughts as less valid and relied on them less in forming attitudes.

Importantly, the results in support of the self-validation hypothesis were apparent particularly for participants high in need for cognition, who are more chronically motivated to engage in extensive thinking. This finding is similar to the one described above for source credibility, and is also consistent with the notion that metacognitive processes tend to be more pronounced to the extent that people have the motivation and ability to engage in considerable thinking. The effects of this study are especially interesting to compare with prior work on need for cognition and persuasion. Past studies have been reasonably consistent in their finding that individuals high in need for cognition are more responsive to the quality of the arguments in a persuasive message than are individuals low in need for cognition (for reviews, see Cacioppo, Petty, Feinstein, & Jarvis, 1996; Petty et al., in press). In line with the studies described earlier, the current
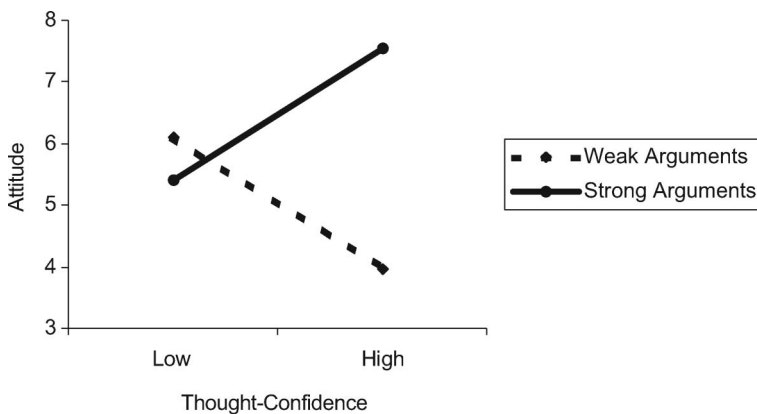
Figure 9. Attitudes of high need for cognition participants as a function of argument quality and confidence. Confidence was induced by others producing similar thoughts or not. Adapted from Petty et al. (2002, exp. 4).

study shows that the impact of argument quality on attitudes for high-NC individuals can be eliminated when these people lose confidence in the thoughts that they have generated. That is, generating appropriate thoughts to strong and weak messages is only one factor in producing argument quality effects on attitudes. People also need to have confidence in the validity of the thoughts that they generate.

In this research, having thoughts similar to those generated by others increased perceived validity compared to having dissimilar thoughts, This suggests that if source similarity were manipulated directly, similar sources would induce more thought confidence than dissimilar sources. However, this implication might only hold when the message is on a matter of opinion rather than fact. Following prior work by Goethals and Nelson (1973), it could be that agreement with *dissimilar* others would increase thought confidence if the message was on a topic considered to be a matter of fact rather than opinion. Thus, agreement by similar (vs dissimilar) others might increase or decrease perceived validity depending on the circumstances, such as the nature of the topic being considered.

SOURCE MAJORITY/MINORITY STATUS

The work described in the above section on source similarity compared the effects of a majority of others who shared or did not share a participant's thoughts. Other work has compared the influence of acceptance from a majority or a minority of others. Both the conformity and persuasion literatures have accumulated considerable evidence suggesting that endorsement from numerical majorities often exerts greater influence than do numerical minorities (e.g., Wood, Lundgren, Quellette, Busceme, & Blackstone, 1994) although sometimes minorities can be more effective, e.g., Crano & Chen, 1998; Moscovici, 1980; Mugny & Perez, 1991). Several traditional mechanisms have been shown for minority sources. Thus, endorsement of an issue by a numerical minority (vs majority) has led to resistance to attitude change by a low-effort rejection process when thinking was likely to be low, and by a more thoughtful but negatively biased processing mechanism under high thinking conditions. However, when elaboration is not constrained by other variables to be high or low, minorities can influence attitude change by influencing the amount of thinking (e.g., Baker & Petty, 1994; for a review of these mechanisms, see Martin & Hewstone, 2008; Tormala, Petty, & DeSensi, in press).

We have recently conducted a line of research in which we proposed that minorities can affect persuasion not only by serving as cues or affecting the direction and the amount of thinking, but also by influencing the confidence with which people hold their thoughts in response to the persuasive message (Horcajo, Petty, & Briñol, 2008a). That is, we propose that at least under

some circumstances, such as when the source information follows the message and the extent of thinking is high, minority influence can operate through self-validation processes.

In one of the studies of this series participants were presented with a message introducing a new company. The message was composed of either strong or weak arguments about the firm. The gist of one strong argument in favour of the company was that workers reported high satisfaction because of the flexibility in their work schedule. In contrast, the gist of one weak argument in favour of this firm was that they used recycled paper in one of the departments during an entire year. After reading and thinking about this information, participants listed their thoughts in response to the proposal. Next we manipulated source status by attributing the message to a source in the numerical minority or majority (e.g., 88% versus 18% of their fellow students support the company; see Baker & Petty, 1994). Consistent with the self-validation hypothesis, we predicted and found that the status of the source (minority vs majority) influenced the confidence with which participants held their thoughts about the company. Specifically, participants tended to have higher thought confidence when the message was endorsed by a majority rather than a minority. As a consequence, majority (vs minority) increased argument quality effects in persuasion.

Among other things these findings are important because in virtually all of the prior studies manipulating source status and argument quality the manipulation of source status has *preceded* presentation of the persuasive message. As explained earlier for source credibility, in this 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. In contrast, in the study just described the status of the source was introduced when processing of the message proposal was already done, 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 in which the source information is introduced in the persuasion process.

SOURCE POWER

Power has been recognised as a central motivating force in human relationships and action, being considered as one of the most fundamental concepts in social science. Although prior research on source power has emphasised its role in producing compliance rather than internalised change (e.g., Kelman, 1958), the self-validation mechanism holds open the possibility of internalised change for powerful sources. In a line of research inspired by the self-validation hypothesis we examined the effect of the message *recipients*' power on attitude change (Briñol, Petty, Valle, Rucker,

& Becerra, 2007c). It is important to highlight that this research did not manipulate the power of the source delivering a message, but the power of the recipient of the proposal. It is also true that power often involves a relative relationship between two or more individuals. Although not studied directly, the more powerful the message recipient feels, the less powerful the message source would seem in comparison. Or, stated differently, in studies where the message source is powerful, the message recipient feels relatively powerless. Because of the interpersonal nature of power, research and theory on the power of message recipients might be useful to make inferences about the power of message sources (and vice versa). Thus, although in the research described in this section we did not manipulate the power of the message source directly, we still think that it can illustrate how self-validation processes can be relevant to this aspect of the source.

In one study on power, for example, participants were first led to generate either positive or negative thoughts about a mandatory flu vaccination policy for students on campus. Following this induction participants were told that they were going to take part in another study related to memory. As part of that unrelated study, participants were instructed to recall either two incidents in their lives in which they had power over another person (high-power condition), or in which someone else had power over them (low-power condition). Thus, participants had to write about situations in which they controlled the ability of another person to get something they wanted and were in a position to evaluate those individuals (high power), or about situations in which someone had control over their ability to get something they wanted and were in a position to evaluate them (low power). This experimental procedure has been used successfully to manipulate feelings of power in previous research (e.g., Galinsky, Gruenfeld, & Magee, 2003). Following this manipulation, participants' attitudes towards the proposal were measured. Finally participants were asked to return to the thoughts they listed about the vaccination policy and report how confident and valid their thoughts were.

Relative to powerless individuals, those induced to have power following message processing reported greater confidence in their thoughts about the campus policy. As a consequence, the effect of the direction of the thoughts generated on attitudes was greater when power was high rather than low. Furthermore, thought confidence mediated the observed effects of power on persuasion. As in the prior self-validation studies, these effects were only present under high elaboration conditions and when power followed thought generation.

As suggested above, research on recipient power might shed light on previous findings in the literature on a *source*'s power and persuasion because power typically involves a relative relationship between two or more individuals. For example, prior theorists have suggested that if the high

power of a message source is made salient prior to a message, it should enhance the information processing of recipients (Fiske, 1993). Notably, this prediction implies that powerless message recipients would engage in greater message processing than powerful ones. Indeed we have found precisely this pattern when feelings of recipient power or powerlessness were induced *prior* to a persuasive message (e.g., Study 2, Briñol et al., 2007c). In this study participants were informed that they were going to participate in a study about non-verbal behaviour associated with different roles. In an interpersonal situation, each participant was randomly assigned to either a boss role (high-power condition) or an employee role (low-power condition), and asked to engage in a role-playing task in which they had to role-play one meeting they might have at work. That is, the role-playing task required one person to be the manager and the other to be the subordinate. Previous research (e.g., Kipnis, 1972; Overbeck & Park, 2001) has demonstrated the effectiveness of this kind of role-playing in inducing high and low power states. Also, in order to fit with the cover story, the person assigned to play the role of the manager was sitting down in a higher and better-looking chair than the one playing the role of the subordinate.

After the power induction we assessed the extent to which participants processed information by varying the quality of the arguments contained within a persuasive message, and by measuring the impact of these arguments on attitudes. Specifically, participants received a persuasive message consisting of an advertisement for a new mobile phone. Examples of the gist of the strong arguments in favour of the mobile phone included that the battery could be recharged in 5 minutes and that the material with which it was made was ecologically safe and completely unbreakable. Examples of the gist of the weak arguments in favour of the mobile phone included that it had a broad currency converter and that the PIN code was just two digits long.

Importantly, if power reduces processing of the message arguments, as it should if it induces a feeling of certainty prior to message reception, it should reduce the effects of argument quality on subsequent attitudes. That is, if people are thinking less about the arguments when they have power, they should be less influenced by the quality of the arguments presented. Thus, whereas power was found to increase the impact of an argument quality manipulation on attitudes when power was induced following message processing (because power increased reliance on thoughts to the message), in this study we expected that power would decrease the impact of an argument quality manipulation on attitudes when power was induced before message processing (because power would reduce processing of the message). The results of this study were consistent with our hypothesis that power can influence attitude change by affecting the extent to which people think about a message when it is induced before receiving the message, and

also with previous research showing that confident individuals are less attentive to argument quality differences (e.g., Briñol et al., 2006; Petty et al., 2006; Tiedens & Linton, 2001; Weary & Jacobson, 1997).

Thus, as was the case for other variables, whether the (source) induction comes before or after the message can have a profound impact on the effects obtained. When people feel powerless prior to a message (e.g., because the source is powerful), they process the message more and attitudes are affected by the thoughts generated. When people feel powerless after a message, they lose confidence in their thoughts and rely on them less. Interestingly, although the mechanism of attitude change is different when power precedes or comes after a message, in both cases power appears to work by affecting confidence. When people feel a lack of confidence prior to a message (e.g., due to low power), they come to doubt their initial opinions and thus process a message more carefully to obtain certainty. However, when people feel a lack of confidence after already processing a message, then they come to doubt the thoughts they have recently generated.

NON-VERBAL BEHAVIOUR OF THE SOURCE

Although source information is sometimes provided explicitly, sometimes a source's credibility, similarity, and many other qualities (e.g., status, power) can be inferred from the non-verbal behaviour of the source. Thus, the non-verbal behaviour of the message source can change the attitudes of the recipient by affecting the perception of these dimensions. As any other variable, a smiling source can produce more persuasion than a frowning source by acting as a simple valence cue (under low thinking conditions) or by biasing the thoughts generated by the recipient (under high thinking conditions). When thinking is not constrained to be high or low, a source smiling (vs frowning) can influence attitudes by affecting the amount of thinking the audience does about the persuasive communication. Consistent with this later possibility, Ottati, Terkildsen, and Hubbard (1997) found that happy faces reduced information processing in a television impression-formation task, as revealed by less discrimination between strong and weak arguments when delivered by a source with a happy (vs a control) face.

As is the case with any source factors, different aspects of the source's behaviour (e.g., happy facial expression) can also influence persuasion by affecting the confidence the recipients have in the thoughts they generated in response to a message. In order to examine this possibility, DeMarree, Briñol, and Petty (2008a) conducted research in which participants were presented with different facial expressions of emotion on a computer screen after thinking about a persuasive message. As expected if the source's facial expression influences thought confidence, people relied on their thoughts more when exposed to facial expressions depicting emotions associated with

confidence (e.g., happiness, anger) than when exposed to facial expressions depicting emotions associated with doubt (e.g., sadness, surprise). Thus we might validate or invalidate the thoughts of others by smiling or frowning following their comments because of the cognitive appraisals associated with these emotional expressions (see e.g., Smith & Ellsworth, 1985; Tiedens & Linton, 2001).

After describing research revealing that the non-verbal behaviour of the source can influence persuasion by validating the thoughts of the recipient, we consider research on behavioural mimicry—where recipients match a source's behaviour. Numerous studies have now documented that others' behaviour can function as a prime to automatically activate our behaviour (e.g., Chartrand & Bargh, 1999). Thus the behaviour of the source can prime similar behaviours in the recipient.[6] The behaviour generated by the recipient in response to the behaviour of the source, like any other variable described so far, can lead to persuasion through multiple roles (for a review, see Briñol & Petty, 2008). For example, the behaviour of the person can influence attitudes by serving as simple cues and by affecting either the amount or direction of thinking. Importantly, the behaviour of others (and our own behaviour) can influence not only the amount and direction of thoughts, but also what people think about their thoughts—especially thought confidence. As was the case with source credibility and power, the confidence (or doubt) that emerges from the non-verbal behaviour of the source and the recipient can magnify (or attenuate) the effect of anything that is currently available in people's minds.[7]

THE SELF AS A SOURCE

Although this review has focused on external sources, sometimes people try to persuade themselves (i.e., serve as the source of the message). In fact,

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[6] In this section we briefly mention cases when recipients of persuasion imitate what they observe in the source of a communication. If the source of a persuasive message smiles or nods their head at you, you are likely to smile and nod back. Alternatively, however, people sometimes respond to others' behaviour in contrasting, complementary ways (e.g., Tiedens & Fragale, 2003). The self-validation effect would follow the impact of the recipient's own behaviour.

[7] A final case of mimicry comes from research in which the source adapts his or her behaviour to match the non-verbal behaviour of the recipient. Recent research has suggested that even behaviours performed by a computer-controlled digital representation of the person in a virtual environment can induce subsequent changes in judgement. In one illustration, Bailenson and Yee (2005) found that digital agents who were high in behavioural realism by mimicking the head movements of participants were more persuasive than agents who did not mimic and merely displayed other realistic movements. Of course there are multiple mechanisms by which these effects can come about (e.g., mimicking a personal's behaviour might enhance thought confidence).

there is a very long tradition in the study of attitude change involving self-persuasion through role-playing (e.g., Janis & King, 1954). In a recent line of research, Briñol, Petty, and Gasco (2008) compared the self as a source to another person as the source. In one of the studies participants were first asked to generate positive or negative thoughts regarding their bodies. Then participants were led to believe that their thoughts originated externally or internally (by the self). Specifically, thoughts about the body were said to emerge from the particular views of their culture through socialisation (external origin) or to emerge from deep down inside the self. Because participants had more confidence in their thoughts in the latter than in the former condition, the direction of their thoughts generated had a greater impact on how satisfied they felt with their bodies when the origin of the those thoughts was perceived to be the self. As a result, perceiving positive thoughts to come from the self (vs externally) made people feel better about their body image, but produced the opposite effect for those with negative thoughts. In another study in this line of research we replicated these findings for attitudes towards fast food. Specifically, after thinking about the benefits or costs of eating fast food, participants were led to believe that food-related thoughts were learned from others (external source) or were innate (internal source). As expected, the direction of the thoughts (positive or negative) had a greater impact on the attitudes and behavioural intentions regarding eating fast food when people perceived the self (vs others) as the source of the thoughts.[8]

VALIDATION OF THOUGHTS VERSUS OTHER MENTAL CONTENTS

The research covered so far in this review has focused on how source factors can influence persuasion by affecting thought confidence. As described, when source features influence the confidence with which people hold their thoughts, sources affect attitude change. The self-validation view argues that metacognitive confidence can magnify the effect of not just attitude-relevant thoughts but any content that is currently available in people's minds. This can include other mental contents ranging from attitudes to emotions and goals. That is, confidence can be applied to whatever the salient or available mental contents are. Following a persuasive message, for example, what is most salient are the thoughts that just came to mind. However, in other circumstances the content and nature of available cognitions will be

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[8]These findings were restricted to participants who considered the self to be a valuable source (i.e., high self-esteem). For those with low self-esteem the opposite interaction emerged, revealing that external sources had more impact on the reliance on their thoughts than internal sources.

different. Our reasoning is similar to the argument made in work on priming where an activated concept (e.g., "hostile") can be applied to whatever the person is thinking about, whether it is the self (e.g., DeMarree, Wheeler, & Petty, 2005) or another person (e.g., Higgins, Rholes, & Jones, 1977).

Given that metacognitive confidence can be applied to any cognition, an interesting case to examine would be when source factors influence the confidence (or doubt) that people have in their attitudes (rather than in their thoughts). Indeed, other metacognitive lines of research have found that different variables in the persuasion context are capable of influencing attitude confidence directly (even in the absence of changes in attitudes). Affecting attitude confidence is important because confidence is generally understood as a core component of attitude strength (e.g., Barden & Petty, 2008). That is, to the extent that attitudes are held with confidence they are likely to persist over time, resist change, and influence thinking and behaviour (see Petty & Krosnick, 1995). For example, we have already noted that power induced prior to a message can affect confidence in a person's initial attitude and thereby reduce the perceived need for information processing.

A number of research findings converge on the notion that individuals are more certain of an attitude when that attitude stems from a credible (i.e., trustworthy and expert) source than from one that is not credible. For example, Clarkson, Tormala, and Rucker (2008) exposed participants to a message for a department store that came from a source low or high in credibility. They found that individuals were more certain of their attitude when the source was high as opposed to low in credibility. Credible sources can increase confidence because they are likely to be viewed as possessing both the ability (i.e., expertise) and the motivation (i.e., trustworthiness) to provide valid information to recipients.

In the self-validation framework described earlier in this review the confidence that emerges from credible sources is often applied to thoughts, whereas the research just described by Clarkson et al. (2008) showed that the confidence produced by the source had an impact on confidence in attitudes. That is, the object of confidence that emerges from source factors can be thoughts or attitudes. As noted, this difference is important because the impact of thought confidence is often reflected in subsequent attitude extremity, whereas the impact of attitude confidence influences subsequent behaviours and thinking activities. In both cases conviction increases the reliance and use of the mental construct to which it is attached. Thus, thought confidence increases the use of those thoughts in affecting attitudes, whereas attitude certainty increases the reliance on those attitudes in guiding further information processing and behaviour.

Given that some of the same variables (e.g., source credibility) have been shown to influence the confidence attached to both thoughts and attitudes, and given that the consequences are different in those two cases (i.e., changes in attitude extremity or changes in subsequent thoughts and behaviours, respectively), it is important to specify under what conditions a given variable will influence thought confidence versus attitude certainty. Although this is an important area for future research, initial research suggests that the sequence of persuasion stimuli affects to what construct confidence is attached.

As introduced earlier, a variable appears to be more inclined to operate by affecting attitude certainty (therefore influencing the extent or direction of thinking) when it is induced prior to the reception of persuasive information, and by affecting thought certainty (therefore influencing attitude extremity) when it is induced after the presentation of a message. Consistent with this notion, the same source variable can have opposite interactions with argument quality depending on its placement before or after a message. As described earlier, Briñol et al. (2007c) proposed that power can validate whatever mental constructs are activated in the power-holder. As a result, when power *preceded* message processing, power validated one's initial attitudes and therefore affected the amount of information processing (high-power participants showed a smaller differentiation between weak and strong arguments). In contrast, when power was induced *after* information processing, high-power participants were more likely to rely on their recently generated thoughts (showing a larger argument quality effect). This research builds on the idea that the timing of the induction is one critical factor in producing different outcomes depending on whether the variable is induced prior to message processing (thus affecting attitude certainty) or after message processing (thus affecting thought certainty).

SUMMARY AND CONCLUSION

Source factors are one of the most studied variables in persuasion research and several mechanisms have contributed to the effectiveness of credible, attractive, and powerful sources. The key mechanisms by which source variables in a persuasion setting can influence attitude change are: (a) by serving as simple cues and heuristics; (b) by affecting the amount of information processing; (c) by biasing the thoughts that are generated; or (d) by serving as persuasive arguments or evidence. By grouping the persuasion processes into meaningful categories specified by the elaboration likelihood model (ELM) of persuasion, we aimed to provide a useful guide to organise and facilitate access to key findings in the literature on source factors in persuasion.

After briefly describing these traditionally studied processes (focused on primary cognition), we reviewed research on how and when source factors can affect thought confidence (a secondary, metacognitive form of cognition). The former processes were covered illustratively, whereas the relatively new evidence regarding source factors and metacognition was treated more comprehensively. The self-validation research reviewed has shown that this new mechanism can account for some already established persuasion outcomes (e.g., more persuasion with high- than low-credibility sources), but by a completely different process than postulated previously. Moreover, we have also been able to obtain findings opposite to those typically observed (e.g., when thoughts are mostly unfavourable there is more persuasion to low- than high-credible sources).

Given that different processes are associated with different consequences (e.g., with high thought attitude change processes leading to greater attitude strength than low thought attitude change processes; see Petty, Haugtvedt, & Smith, 1995) even for the same outcome, it is essential to distinguish among the different processes underlying source persuasion. This aspect is crucial because it shows that the same source variable (e.g., a source smiling) can lead to the same outcome (more persuasion) by serving as a simple cue (for conditions of low elaboration) or by biasing the generation of positive thoughts (for conditions of high elaboration) or by validating those thoughts (for conditions in which people think about their thoughts; see Petty, Schumann, Richman, & Strathman, 1993). Although those effects might seem similar on the surface, the underlying mechanism that produces them is different, leading to differences in the strength of the judgements formed.

Importantly, we described a theoretical framework to understand the circumstances under which the different (primary and secondary) cognitive processes are more likely to influence our judgements, such as when variables precede or follow thought generation, and when the extent of thinking is relatively low, medium, or high. Although we have covered some source factors (e.g., speed of speech, stigmatised origin of the source) mostly as relevant to one of the key processes (e.g., amount of thinking), each of the source factors (ranging from expertise to similarity) is amenable to operating through different processes depending on the circumstances.

In closing, we have seen how self-validation not only relates to some classic topics in the psychology of the source of persuasion (e.g., credibility, attractiveness, status, and power), but also to more recent or relatively novel phenomena (e.g., one's self as a source). A consideration of self-validation processes might expand our understanding of the dynamics of other unexplored source variables that could influence persuasion either by increasing (e.g., source mimicry, source personalisation) or decreasing (e.g.,

threatening sources) thought confidence (e.g., Horcajo, See, Briñol, & Petty, 2008b).

It is also worth noting that research conducted on self-validation has examined the effect of thought confidence with regard to a variety of attitude objects and measures increasing the potential applicability of these results in the real world. Indeed, there might be many practical applications of the self-validation findings for sources to be more persuasive. For example, we might validate or invalidate the thoughts of others by smiling or frowning following their comments. Consider a situation in which, after having discussed a given proposal in a meeting, someone makes a funny joke and everybody laughs; or consider a situation in which, following the expression of some ideas, you relate them to a recent sad event or you make a sad facial expression. In these circumstances the source variable (expressions of emotions) will follow thought generation and, according to the present research, its effects on judgement can be understood in terms of self-validation process. Indeed, there may be many life circumstances in which some thinking takes place only to be followed in short order by a confident or doubtful expression of the source. The current research suggests that these irrelevant life events could affect the use of one's thoughts.

Although the source of a persuasive message has been the focus of the present review, an advantage of establishing a new basic mechanism such as self-validation is that it can provide scholars with a novel framework to examine other variables in the persuasion domain. For example, in addition to the analysis of source persuasion, the self-validation framework can also be applied to the study of numerous message, context, and recipient factors, such as bodily responses (Briñol & Petty, 2003), emotional states (Briñol et al., 2007a), self-affirmation (Briñol, Petty, Gallardo, & DeMarree, 2007b), and ease of retrieval (Tormala et al., 2002, 2007b). In each case our research has shown that the self-validation framework provides a novel way to understand the effects of the variable, pointing to new effects and a new view of established effects.

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