

Self-certainty: Parallels to Attitude Certainty

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ABSTRACT

The purpose of this article is to apply theory and research on attitude certainty to the study of the self. Our main goal is to show that research on attitudes, and in particular attitude certainty, can provide useful insights into self-related phenomena. By considering research on attitudes, we may be able to re-interpret previous self-related findings, make new predictions regarding the self, and increase the precision with which we can make existing predictions. Furthermore, this framework can offer new ideas for research on attitudes as well and foster integration between the areas. In this paper, we will 1) outline some fundamental parallels between attitudes and self research, 2) discuss the specific construct of self-certainty, including both the consequences and the origins of certainty, using research on attitude certainty as our organizing framework, and 3) suggest new ideas that this analysis can produce.

Key words: Attitudes, Attitude Certainty, Self, Self-certainty.

RESUMEN

Se aplica la teoría e investigación sobre la certeza actitudinal al estudio del yo. El principal objetivo es mostrar que la investigación sobre actitudes y, más en concreto, sobre la certeza actitudinal, puede ayudar a comprender fenómenos relacionados con el yo. La consideración de la investigación sobre actitudes puede ayudar a reinterpretar anteriores resultados relacionados con el yo, y también a formular nuevos pronósticos sobre el yo y a incrementar la precisión con que cabe formular los pronósticos ya existentes. Además, este marco puede ofrecer nuevas ideas para investigar sobre las actitudes y a promover la integración de áreas diferentes de investigación. Este trabajo 1) trazará algunos paralelismos fundamentales entre las actitudes y la investigación sobre el yo, 2) discutirá el constructo concreto de la certeza de yo, prestará atención tanto las consecuencias como los orígenes de la certeza, para lo que usará la investigación sobre certeza actitudinal como marco organizativo, y 3) aportará las nuevas ideas que surjan de este análisis.

Palabras clave: actitudes, certeza actitudinal, certeza del yo, yo.

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The purpose of this paper is to apply theory and research on attitude certainty to the study of the self. Our main goal is to show that research on attitudes, and in particular attitude certainty, can provide useful insights into self-related phenomena. By considering research on attitudes, we may be able to re-interpret previous self-related findings, make new predictions regarding the self, and increase the precision with which we can make existing predictions. Furthermore, this framework can offer new ideas for research on attitudes as well and foster integration between the areas. In this paper, we will 1) outline some fundamental parallels between attitudes and self research, 2) discuss the specific construct of self-certainty, including both the consequences and the origins of certainty, using research on attitude certainty as our organizing framework, and 3) suggest new ideas that this analysis can produce. We have chosen to focus our discussion on certainty because certainty in self-representations and in attitudes has received a great deal of empirical attention, and thus, provides us with a large body of experimental data from which to draw in analyzing the parallels between these two literatures.

THE SELF

Traditionally, the self has been a difficult concept for psychologists to define. Within the social-cognitive tradition, it is generally recognized that the self is a mental structure (e.g., Greenwald & Pratkanis, 1984) or a collection of mental structures (H. R. Markus & Wurf, 1987). The self-concept is thus the mental representation a person has of their own characteristics (Kihlstrom & Cantor, 1984). These characteristics can include representations of their personality or physical features (e.g., traits, physical attributes, etc., James, 1890/1950; Kihlstrom & Cantor, 1984), their possessions (James, 1890/1950), desired or feared possible selves (Higgins, 1987; H. Markus & Nurius, 1986), their social identities (Brewer & Gardner, 1996), their relationships (Aron *et al.*, 2004), their attitudes (Abelson & Prentice, 1989), among others (see e.g., Baumeister, 1998; Higgins, 1996; Kihlstrom & Cantor, 1984; H. R. Markus & Wurf, 1987).

The self-concept is a central schema, in that it is inherently linked to other mental representations and that it helps us to organize and interpret the world (Greenwald & Pratkanis, 1984). Many theorists have emphasized the importance of the self-concept in generating and regulating action (Cantor, Markus, Niedenthal, & Nurius, 1986; Cross & Markus, 1990; Greenwald & Pratkanis, 1984; James, 1890/1950). For example, Cross and Markus (1990) have suggested that linking an action to the self increases the likelihood of that action occurring. The self has been proposed as a source of willful action (James, 1890/1950) because "connecting an idea or an action with the self implies making it self-relevant, moving it from the vague, the global, or the abstract to the personal, the individual, or the concrete" (Cross & Markus, 1990, p. 727). Considerable research points to the importance of the working (currently accessible) self-concept in directing attention, perception, motivation, and information processing (Higgins, 1987, 1997; Kihlstrom & Cantor, 1984; H. R. Markus & Nurius, 1986; Ruvolo & Markus, 1992). Furthermore, linking imagined outcomes to the self in the form of possible selves has been shown to be central to creating motivations toward desired outcomes

and away from undesired ones (Higgins, 1987, 1997; H Markus & Nurius, 1986).

The Self as an Attitude Object

One of the first questions we need to address is why attitude theory should be applied to the self in the first place. Many people have argued that the self may be conceptualized as an attitude object (Greenwald & Pratkanis, 1984), and this is apparent among researchers who define self-esteem as an evaluation, or attitude, towards the self (e.g., Campbell *et al.*, 1996; Eagly & Chaiken, 1993; Tesser, 2000, 2001; Wright, 2001). An attitude is a summary evaluation, ranging from positive to negative, of some object, such as an idea, a person, or a thing (Petty, Wheeler, & Tormala, 2003). Attitudes can be based on information (cognition), feelings (affect), or behaviors that are relevant to the attitude object (Breckler, 1984; Zanna & Rempel, 1988). In the case of the self, each of these can also apply. That is to say, that cognitions ("I am an intelligent person"), affect (warmth towards oneself), and behaviors (taking care of oneself) that are relevant to the self all contribute, to varying degrees, to one's overall self-evaluation, or self-esteem.

Many of the processes that affect attitudes, such as social comparisons (e.g., Gibbons & Buunk, 1999; Sherif, Taub, & Hovland, 1958), self-perception (Bem, 1967), and classical conditioning (e.g., Zanna, Kiesler, & Pilkonis, 1970) have been shown to affect self-esteem and other self-judgments in a similar fashion (e.g., Dijksterhuis, 2004; Fazio, Effrein, & Falender, 1981; Mussweiler, 2001). Furthermore, many of the basic motives that have been attributed to attitudes have also been attributed to the self, and vice versa (e.g., information seeking motives, such as enhancement, consistency, and accuracy, DeMarree & Petty, 2005a). For example, both attitudes (Festinger, 1964) and self-esteem (as well as other self-judgments) (Aronson, 1969; Swann, Rentfrow, & Guinn, 2003) are subject to consistency motives. This motive leads people to go to a great deal of effort to seek out information that is consistent with their existing attitudes/ self-concept or to (re)interpret existing information in a consistent manner.

In addition to these parallels, our review will show that the properties of attitudes, such as certainty, operate similarly for self judgments as they do for attitudes in general (Ajzen, 1988; Sherman & Fazio, 1983). For example, certainty increases the likelihood that attitudes (Gross, Holtz, & Miller, 1995; Kraus, 1995) and self attributes (Pelham & Swann, 1994) predict relevant behavior. Based on these parallels, as well as others (see Ajzen, 1988; DeMarree & Petty, 2005a; Sherman & Fazio, 1983), we argue that enough similarity exists to justify attempting to import theorizing from the domain of attitudes to the literature on the self.

Before we go on, we offer a few additional points that are important to our analysis. First, we would like to note that we apply the concept of certainty both to self-evaluation and to the self-concept. In many ways, the self-concept can be viewed as the cognitive component of the self, which will have consequences for self-esteem. This is parallel to research on the cognitive components of attitudes (e.g., thoughts or beliefs relevant to the attitude object). In attitudes, knowing the beliefs a person has about an attitude object can help to predict a person's attitude toward that object (Fishbein,

1963), and in persuasion research, many attempts to change attitudes are directed at changing a person's thoughts about the attitude object (for a review, see Petty & Cacioppo, 1981/1996). In fact, attitude change is often mediated by the thoughts a person has with respect to the attitude object (Petty & Cacioppo, 1986; Petty, Ostrom, & Brock, 1981). Similarly, many cognitive therapies for depression and other mental disorders target changing self-relevant cognitions in order to initiate broader changes in self-evaluation and behavior (e.g., Beck, 1976; Ellis, 1962). Because of this, we will not focus specifically on self-beliefs or self-evaluation, but instead, we will draw on research that has examined both in order to provide a more complete body of work on which to base our analysis.

Beyond differences in the self-concept versus self-evaluation level of analysis, one can also apply the concept of certainty to global versus specific levels of self-representation. Global self-representations represent a person's overall self-concept or self-evaluation, while specific self-views are those that are constrained to specific beliefs, domains, traits, contexts, etc. Research in the self has often looked at these different levels of analysis (e.g., Dutton & Brown, 1997; Pelham & Swann, 1989) as has research on attitudes more generally (Ajzen & Fishbein, 1973; Davidson & Jaccard, 1979). Both levels of analysis have their utility, and the relative usefulness of each may depend on the outcome of interest (Dutton & Brown, 1997; Fishbein & Ajzen, 1975) and individual differences in their use (Dickhäuser & Reinhard, 2006). For ease of presentation, we will again discuss research that examines both global and specific self-views in our analysis.

Finally, we note that we are not the first researchers to observe the parallels between the attitudes and self-literatures. Others have made similar observations, often looking at similar constructs to those that we will discuss here (e.g., Campbell *et al.*, 1996; Gross *et al.*, 1995; Wright, 2001). Where our analysis differs, however, is that we go further than simply noting the parallels between these literatures by using more concrete definitions of the concepts we review, by using attitudes as our organizing framework to discuss the self, and by pointing to new areas of inquiry that such a framework can offer (see also Ajzen, 1988; Sherman & Fazio, 1983).

SELF-CERTAINTY

Attitude strength is a major area of research in the attitudes literature (Petty & Krosnick, 1995). According to this literature, strong attitudes are those that are enduring and that have an impact on information processing and behavior (Krosnick & Petty, 1995). Certainty (also referred to as confidence), the focus of our present discussion, is one indicator of attitude strength (Gross *et al.*, 1995), and is defined as "a subjective sense of conviction or validity about one's attitude or opinion" (Gross *et al.*, 1995, p. 215). That is to say, certainty is a judgment about an existing mental representation. Specifically, certainty is the judgment that a mental representation or thought (e.g., I am an extravert) is valid. Because of this, it is generally considered a form of meta-cognition (Petty, Briñol, Tormala, & Wegener, 2007), and therefore, the processes that we discuss are likely to occur under conditions that promote sufficient thought for meta-cognitive processes to operate. Lack of certainty (i.e., doubt) is often conceptualized

as an inhibitor to the use of the construct one is uncertain about, whereas constructs held with certainty are likely to be used (Petty, Briñol *et al.*, 2007; Visser, Bizer, & Krosnick, 2006).

In our review of certainty, we are careful to only discuss studies that measure or manipulate *certainty*. In the attitudes literature, and especially in the self-literature, there is often a feeling that different indicators of strength can be used interchangeably (e.g., Kernis, 2003; Kleine, Kleine, & Kernan, 1993; Pomerantz, Chaiken, & Tordesillas, 1995; Wright, 2001). The available research, however, indicates that this may not always be the case (e.g., Abelson, 1988; Krosnick, Boninger, Chuang, Berent, & Carnot, 1993; Krosnick & Petty, 1995; Raden, 1985; Visser *et al.*, 2006). Not only are different strength variables structurally distinct (Krosnick *et al.*, 1993), but they often have different empirical consequences (e.g., Pelham, 1991; Pomerantz *et al.*, 1995; Visser *et al.*, 2006). As such, we have carefully reviewed the studies we discuss to make sure that the construct the authors call certainty adequately maps onto the above definition.

Certainty is typically assessed with self-report measures such as "I am confident in my opinions about X" or "I am certain that my attitude toward X is correct." These definitions and measurement strategies are easily modified for application to the self-concept or self-esteem. For example, questions such as "I am certain of my standing on the trait of intelligence" (modified from Pelham & Swann, 1989) or "I am confident in my attitude towards myself" might be used to assess self-certainty. Other researchers have advocated different methods for assessing certainty (see e.g., Baumgardner, 1990; Wright, 2001), but it is unclear that these methods capture certainty, and may instead be better conceptualized as measures of other strength variables¹.

Because certainty is a meta-cognitive indicator of strength, it is most likely to operate under conditions that promote effortful thought (Petty, Briñol *et al.*, 2007). Only under these conditions are there sufficient cognitive resources to retrieve, construct, or use judgments of certainty. Under conditions that do not allow for the retrieval or construction of certainty judgments, attitudes and self-views may still be impactful, particularly if they are highly accessible (Petty, Tormala, Briñol, & Jarvis, 2006). Under such low-thought conditions, however, certainty will have a considerably smaller meta-cognitive impact in moderating these relationships².

In our review of self-certainty, we break our discussion into sections that cover the different features of strong attitudes. As we noted, strong attitudes are impactful in that they guide behavior and information processing, and are durable in that they are stable over time and are resistant to change (Krosnick & Petty, 1995). It is important to note that this is only a partial treatment of the possible outcomes of certainty (see figure 1 for a table of the specific issues we address here) and that this division is somewhat artificial, because these outcomes are often interrelated. For example, if a certainty self-view impacts information processing in a biased manner, this biased information processing may contribute to the long-term stability of the self-view by providing a constant source of self-view consistent information. Nonetheless, the strength consequences are sometimes independent and have provided a useful framework in work on attitude strength (Krosnick & Petty, 1995). In addition to these characteristics of strong attitudes, we will also briefly discuss recent advances in the self-validating

ANTECEDENTS	MENTAL CONTENT	CONSEQUENCES
Knowledge		Behavioral consistency
Amount of thought	Self-schemas (e.g., domain-specific self-views)	Information-processing (e.g., amount and direction of thoughts)
Thought repetition	Attitudes (e.g., self-esteem)	Stability
Social validation	Personality Traits (e.g., introversion, need to evaluate)	Resistance
Accessibility	Thoughts	:
Individual differences (e.g., Need for cognition, self-consciousness, age)	:	:
:	:	:
:	:	:
:	:	

This figure provides a general framework for understanding much of the research on self-element certainty. Column 1 lists antecedents of certainty, column 2 lists self-elements that certainty can be applied to, and column 3 lists consequences of self-elements that are held with certainty. Entries indicate the constructs that we explicitly discuss in this paper, in the order that we discuss them. As such, this diagram is meant to provide a useful guideline for the reader, rather than a complete treatment of all of the potentially relevant constructs.

Figure 1. Antecedents and consequences of self-related content certainty

effects of certainty (Briñol & Petty, 2004; Petty, Briñol, & Tormala, 2002) and how they can also be applied to the self. Finally, we will discuss the origins of self-certainty before pointing to directions for future research. We present the consequences of certainty first, because doing so will help elucidate the importance of this construct.

Certainty and the Prediction of Behavior

One of the major reasons that attitudes are studied is that they are thought to be predictive of behavior (Kraus, 1995). In fact, one of the hypothesized functions of attitudes holds these evaluations serve a general approach-avoidance function (Abelson & Prentice, 1989; Cacioppo, Gardner, & Berntson, 1997; Fazio, 2000), and thus determine the nature of our behavior when we encounter an attitude object. However, an attitude that a person holds with uncertainty is not likely to be useful in making a quick approach-avoid decision, and therefore will not be as predictive of behavior in general.

Taking into account the certainty a person has in their attitudes has been very useful for attitude researchers in improving their ability to predict attitude-relevant behaviors (e.g., Sample & Warland, 1973). One meta-analysis, for example, found an average attitude-behavior correlation of $r = .47$ for highly certain attitudes, whereas the

same correlation was only $r = .08$ for attitudes held with low certainty (Kraus, 1995).

Parallel findings have been documented in the self domain as well. For example, in one study (Swann & Ely, 1984), the behavior of people who were certain of their level of introversion or extraversion was rated more in line with these self-conceptions by independent coders than was the behavior of less-certain individuals. This effect held even when competing behavioral cues were salient. Similar findings have been found for a number of self-dimensions (e.g., academic competence, personality traits) as well as when the rater was a roommate, mother, or an acquaintance of the participant instead of an independent coder. This indicates that individuals are better able to convey their certain self-conceptions to others via their behavior, resulting in a convergence between self and other-ratings (Pelham & Swann, 1994; see also Swann *et al.*, 2003).

Research from our own laboratory adds to this evidence as well. We have found across a number of individual difference variables that asking participants how certain they are that their responses to scale items are descriptive of themselves adds to the predictive power of these personality inventories. For example, in one study (DeMarree, Rucker, Petty, & Shoots, 2005) we assessed Need to Evaluate (NE, Jarvis & Petty, 1996) as well as certainty in participants' responses to the NE scale. NE is an individual difference variable that assesses the extent to which people form opinions and think about the world in an evaluative manner (sample items: "I form opinions about everything" and "I want to know exactly what is good and bad about everything"). Previous research indicates that people high in NE are less likely to use "no opinion" response options on surveys (Jarvis & Petty, 1996). In our study we showed that certainty moderated the predictive power of NE. That is, as certainty in NE increased, NE became a better predictor of the "no opinion" response option (see figure 2). Across a number of individual difference scales, we find that the scales predict the behavior of people who are certain in their responses, but not those who are less certain (Shoots-Reinhard *et al.*, 2006).

Certainty and Information Processing

In addition to predicting behaviors, attitudes held with certainty also predict judgmental biases, such as the projection of one's own attitudes onto others (an egocentric bias), decreased information seeking, and biased information-processing (see Gross *et al.*, 1995; Visser *et al.*, 2006). Much of this information processing activity ensures that attitudes held with certainty remain unchallenged.

Consistent with the research on attitude certainty (Visser *et al.*, 2003; see also Tiedens & Linton, 2001), self-certainty seems to decrease unbiased information-seeking activity. Stapel and Tesser (2001), for example, explored the effects of self-activation and self-certainty on social-comparison seeking. Social comparison is one process by which people can learn about themselves (Festinger, 1954). Because individuals who hold their self-conceptions with certainty may feel they do not need any additional information about themselves, they should be less likely to desire such information. Consistent with this, Stapel and Tesser (2001; study 4) found that individuals who were highly certain of their personalities (as manipulated by a false feedback on a bogus

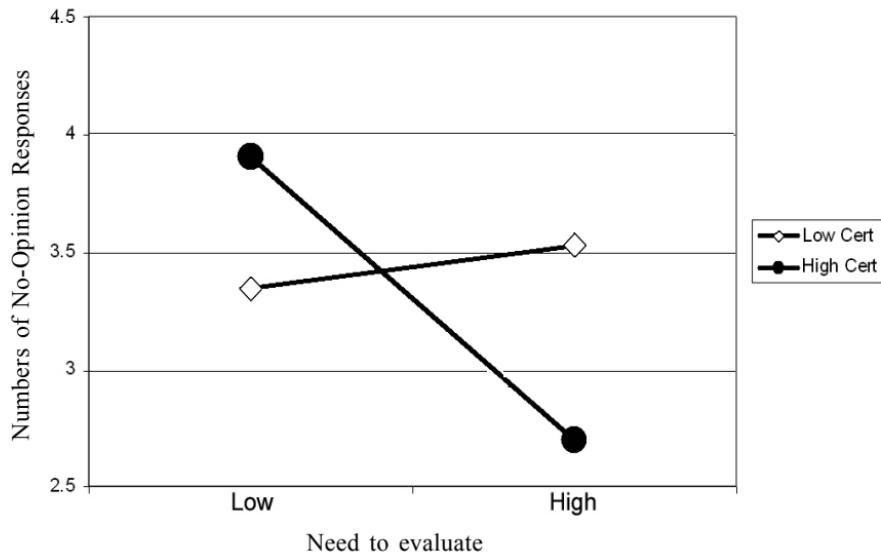


Figure 2. "No-opinion" responses as a function of Need to Evaluate (NE) and NE Certainty. Taken from Shoots-Reinhard *et al.* (2006).

personality measure)³ were less interested in seeking social comparison information and scored lower on a social comparison orientation inventory (Gibbons & Buunk, 1999), particularly when self-activation was low (Stapel & Tesser, 2001).

Certainty does not decrease all forms of information seeking, but rather it may only decrease objective information seeking that has the potential to contradict self-views. In the attitudes domain, research has explored the relationship between attitude certainty and biased information processing. One study by Pomerantz and colleagues (1995) examined how various attitude-strength measures would predict information-processing tendencies. Prior to analysis, they conducted a factor analysis of their attitude strength items and identified two factors. The factor that attitude certainty loaded on (which these authors dubbed "commitment") predicted biased information processing (e.g., selectively thinking about attitude-consistent information) as well as attitude polarization in response to new information (Pomerantz *et al.*, 1995; see also Visser, Krosnick, & Simmons, 2003).

Such biased information processing has been observed in the self domain as well. Participants may seek out feedback that specifically confirms their certainly-held self-conceptions, a process known as self-verification, even when these self-conceptions are negative (Swann *et al.*, 2003). This is hypothesized to occur because we are motivated to maintain consistency of our self-views (e.g., Aronson, 1969; Swann & Read, 1981). As a result, people may avoid self-inconsistent information and approach self-verifying information. This tendency should be particularly likely for people who are certain of their existing self-views (for a review, see Swann *et al.*, 2003), and the existing evidence supports this. For example, certain (but not uncertain) individuals preferred roommates

who treated them in a self-view consistent manner, even when this self-view was negative (Swann & Pelham, 2002). In another example, people with low self-esteem avoided success when it could be attributed to their abilities (and thus could contradict their self-views), but only if they were certain in their negative self-conceptions (Marecek & Mettee, 1972).

In another form of biased information processing, many people choose social situations that allow them to express their attitudes and self-characteristics (Snyder & Kendzierski, 1982). People who hold their self-conceptions with a great deal of certainty are more likely to prefer situations that allow them to express these self-conceptions (Setterlund & Niedenthal, 1993). For example, an introverted individual may prefer a quiet "dive bar" to a dance club when going out because the situation is more consonant with their self-views and allows them to behave in a self-view consistent manner. Setterlund and Niedenthal (1993, study 3) manipulated self-certainty by having participants write three instances in which they acted in a manner that was indicative of experimenter-provided traits. For self-certain participants, the traits used were previously identified as highly self-descriptive, whereas participants in the self-uncertain condition were asked to write about antonyms of self-descriptive traits. This manipulation was expected to manipulate certainty because one possible origin of certainty is the consistency of information. When information regarding a particular self-dimension is inconsistent, the person is not likely to feel certainty with regard to their standing on that dimension. Following the certainty manipulation, participants were provided with descriptions of prototypical customers of a series of restaurants and asked to rank the restaurants in order of preference. Participants in the self-certain condition preferred restaurants whose customer prototype matched their own traits, versus restaurants whose customers were dissimilar to their own self-conceptions. Participants in the self-uncertain condition showed no such preference (Setterlund & Niedenthal, 1993).

The studies reviewed in the preceding sections provide strong initial evidence that self-views held with certainty are impactful in many of the same ways that attitudes held with certainty are. Specifically, certain self-views, relative to self-views held with less certainty, are more predictive of self-view relevant behaviors and promote information processing strategies that lead to the further acquisition of self-view consistent information.

Certainty and Stability of Self-Views

It is generally recognized that attitudes held with certainty are more durable over time and are more resistant to attitude change attempts than are less certain attitudes (Gross *et al.*, 1995; Krosnick & Petty, 1995). In one study, for example, attitude certainty was a unique predictor of attitude persistence over a two-week time interval even after controlling for other attitude strength variables such as accessibility (Bassili, 1996).

Similarly, in the domain of the self, there is ample evidence indicating that self-views held with certainty are more durable than those held with less certainty. In one study, Pelham (1991) found that the certainty people had in their specific self-views (e.g., in the domain of academics or athletics) predicted both the absolute stability (absolute value of the discrepancy between time 1 and time 2 self-views) and correlational

stability (test-retest correlation between time 1 and time 2 measurements) over a 10-week period. For example, the correlational stability of participants' most certain self-view was .91 over the course of the study, while the correlational stability of participants' least certain self-view was .66 (Pelham, 1991).

Our own research has unveiled a similar effect focusing on participants' global self-evaluation rather than on their specific self-views (DeMarree & Petty, 2005c). Specifically, we measured self-esteem twice using the Rosenberg Self-Esteem Scale (Rosenberg, 1965). The two measurement periods were approximately 6-weeks apart, and stability was calculated by computing a correlation for each participant based on his or her answers to the scale questions (i.e., a correlation across scale items, not across people)⁴. We observed a positive correlation between the stability of participants' self-esteem and their self-esteem certainty, $r(73) = .50$, $p < .001$, such that participants with high self-esteem certainty (computed 1 SD above the mean) had higher stability correlations (predicted $r = .91$) than participants low in certainty (predicted $r = .71$; computed 1 SD below the mean). Furthermore, this effect remained significant even after controlling for potentially related variables, such as subjective ambivalence or self-concept clarity (Campbell *et al.*, 1996).

Certainty and Resistance to Change

The two studies described above deal with relatively passive stability over time. Another interesting way to look at durability is to explore the extent to which self-views are resistant to outside influence attempts. Often in the attitudes domain, certainty can influence the likelihood of change in response to a persuasive communication. People who are certain of their attitudes tend to maintain their attitudes in the face of a counter-attitudinal message (see e.g., Bassili, 1996; Chaiken, Liberman, & Eagly, 1989; Pomerantz *et al.*, 1995). For example, across several issues (e.g., hiring quotas for women, banning pornography), Bassili (1996) found attitudes held with certainty were less likely to change following a brief counterattitudinal message, compared with less certain attitudes. Often, in the self-domain, such attitude change attempts are not as blatant, yet similar outcomes have been found.

An established finding within social psychology is that others' expectations of us can often affect our own behavior in an expectancy-consistent manner (e.g., Rosenthal & Jacobson, 1968; Word, Zanna, & Cooper, 1974). Swann and Ely (1984) explored the extent to which perceiver expectancies can interact with a target's self-views in determining behavior. In their study, they had participants interact with perceivers who expected them to be either introverted or extraverted. Participants themselves differed in the certainty with which they viewed themselves as either introverted or extraverted. Judges then rated the interaction and assessed how introverted or extraverted they felt participants' behavior was during the interaction. Regardless of perceiver expectations, when participants were certain of their self-conceptions, judges' ratings of their behavior corresponded with participants' self-reported introversion/extraversion. This indicates that highly certain participants acted in accordance with their self-views even when the expectations of their interaction partner contradicted these self-views. Behavioral confirmation was

found, however, among participants who were *uncertain* with regard to their self-views, but only when they interacted with a partner who was certain of their expectations (Swann & Ely, 1984). That is to say, participants who were uncertain about their self-characteristics were more likely to change their behavior in response to an interaction partner's expectations than were participants who were certain of their self-views.

Similar results have been found when leading questions (questions that solicit specific responses and often produce response-consistent changes in self-views and behavior, see e.g., Fazio *et al.*, 1981) are asked in an interview situation, such that when self-conception inconsistent questions are asked of participants by an interviewer, uncertain participants change their self-reports in a question-consistent manner, whereas certain participants do not (Swann, Pelham, & Chidester, 1988). Interestingly, when "superattitudinal" leading questions are asked (leading questions asking for more extreme answers than participant's current self-views), highly certain people will change their attitude more than low certainty individuals, but in a direction opposite the leading questions. This is because resistance is not only an outcome (a lack of change), but also a process (e.g., active resistance by counterarguing a message, Petty, Tormala, & Rucker, 2004). Supporting the resistance process of highly certain individuals, they were rated by independent coders as acting more resistant in their responses to the interviewer's leading questions than were less certain participants (Swann *et al.*, 1988).

Taken together, these studies provide compelling initial evidence that the durability outcomes of certain self-conceptions are similar to those of certain attitudes. Although the relationship between certainty and durability is not always observed (e.g., Kernis, Grannemann, & Barclay, 1992), the bulk of the evidence indicates that self-views held with certainty are more stable over time and more resistant to change.

Certainty in Self-Related Thoughts

Recent research in the domains of attitudes and the self has lead to the advancement of the Self-Validation Hypothesis (Briñol & Petty, 2004; Petty *et al.*, 2002) which states that the degree of confidence a person has in their thoughts determines the impact that these thoughts will have on subsequent judgments. This research is similar to that described above, in that constructs held with certainty are more predictive of various judgments and behaviors, but it differs in the particular constructs of interest. Whereas the above research examines certainty in global attitudes or self-views, self-validation research examines certainty in thoughts -the building blocks of attitudes.

In the domain of attitude change, this research has found that measuring and manipulating the confidence people have in their cognitive responses to a persuasive message enhances prediction of the attitudes that are formed, beyond simply considering the valence and number of thoughts. In one study, for instance, following exposure to a message containing strong or weak arguments and a typical thought listing task (Cacioppo & Petty, 1981), Petty and colleagues (2002) asked participants to think about situations in which they had felt confident or doubtful in their thinking. Those who generated instances of confidence became more certain of the validity of their thoughts than those who generated instances of doubt. Furthermore, this confidence led to greater

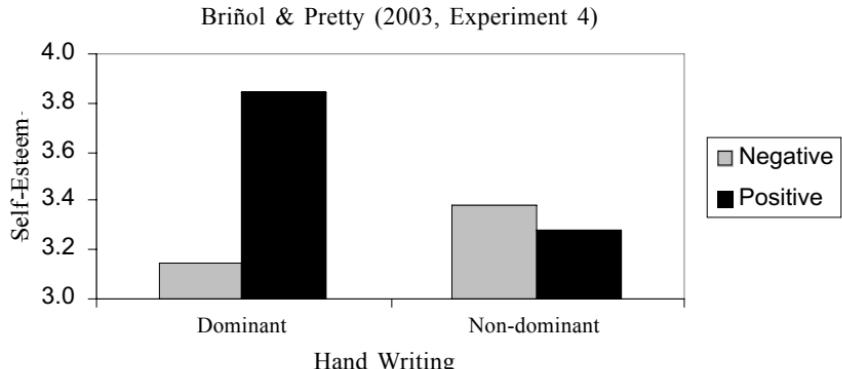


Figure 3. Self-esteem as a Function of Hand Writing and Traits Listed (Positive or Negative). Adapted from Briñol & Petty (2003, Experiment 4).

persuasion when the message arguments were strong and to less persuasion when the arguments were weak. This is because confidence led people to rely on the favorable thoughts generated to the strong arguments and the unfavorable thoughts they generated to the weak arguments. Individuals who were induced to doubt the validity of their thoughts were less reliant on them in forming attitudes even though the number and valence of thoughts was the same as those induced to feel confidence (for a detailed review of self-validation, see Briñol & Petty, 2004).

Recent research has also looked at the effects of self-validation processes on self-relevant thoughts. In one study, for example, participants generated three positive or three negative characteristics they possessed with respect to their abilities as a potential job candidate (Briñol & Petty, 2003, study 4). Thought confidence was manipulated through a handwriting manipulation. In the confidence condition, participants listed their thoughts using their dominant hand, whereas in the doubt condition they used their non-dominant hand. The reasoning behind this manipulation is that the thoughts listed with participants' non-dominant hands would look shaky and uncertain to participants. As a result, participants who wrote with their non-dominant hand might doubt the things they had written. Results supported this hypothesis (see figure 3). Specifically, participants reported more positive self-evaluations after writing about their positive qualities, compared to their negative qualities, but *only* if they wrote with their dominant hand. For participants who used their non-dominant hand, no differences in self-evaluation were found (Briñol & Petty, 2003) despite the fact that the content of the thoughts listed (valence and extremity) was the same. In sum, this study demonstrated that inducing doubts about possessing positive (or negative) qualities tended to undermine the impact of these qualities on self-esteem. Importantly, this study showed that those changes in self-esteem were mediated by changes in self-belief certainty.

Origins of Self-Certainty

Across all of the studies reviewed, constructs that were held confidently were more predictive of a relevant outcome. Constructs held with uncertainty were seen as less useful, and often, information-processing strategies aimed to reduce the uncertainty were enacted (e.g., unbiased information seeking). These effects held regardless of whether the construct of interest was a component of the self-concept or an attitude toward a self-irrelevant object. The major consequences of attitude certainty all seem to hold for self-certainty as well. We now turn our focus to a discussion of the origin of self-certainty, and how the factors that lead to attitude certainty are plausibly the same as those that lead to self-certainty.

There are many origins of certainty that have received attention in the attitudes literature (Gross *et al.*, 1995), though little has been done looking specifically at self-certainty. In general, factors that indicate that an attitude is valid contribute to the certainty with which the attitude is held. Among these factors are consensus, knowledge, elaboration (thought), consistency of information, direct behavioral experience, and social support (see Gross *et al.*, 1995). Below we discuss a few of the hypothesized origins of certainty, with the hope that this brief outline can guide research focusing on the origins of self-certainty (see also figure 1).

Knowledge. The more attitude-consistent knowledge a person has, the more certainty they are likely to have in that attitude (Gross *et al.*, 1995; Wood, Rhodes, & Biek, 1995). If a person either has little information about an attitude object, or if the information that they have is conflicting, then they are likely to experience uncertainty. The knowledge factor has obvious parallels in the self. The more one knows about an aspect oneself, the more certain one should be of that aspect, at least if all available information leads to the same conclusion. For example, imagine two people, one of whom consistently earns grades that are around a B- whereas the other person sometimes gets good grades and sometimes gets bad grades, but overall, manages to earn a B-. They may both have similar ratings of their intelligence, but the first person is likely to hold these beliefs with greater certainty, because all the knowledge this person has leads to the same conclusion. In addition to the amount and consistency of information, the degree to which a person's self-knowledge is organized may also contribute to certainty. A great deal of unorganized knowledge, for example, is likely to be overwhelming and result in attitudes that are held with low certainty (Gill, Swann, & Silvera, 1998).

Amount of thought. Related to knowledge as a potential origin of certainty is the amount of thought about the attitude object or self-domain (Gross *et al.*, 1995; Petty, Haugvedt, & Smith, 1995). According to the Elaboration Likelihood Model of persuasion (Petty & Cacioppo, 1986) attitudes that are formed as a result of thoughtful processes will be stronger (more certain) than those formed through less thoughtful means. The pathway from thought to certainty, however, may not be a direct one (Barden & Petty, 2005). For example, Barden and Petty (2005) show that it is the perception that one has thought a lot about an attitude object that mediates the link between amount of thought and attitude certainty. In some cases, it is even possible to dissociate actual and perceived thought by holding actual thought constant. Even when perceived thought does not

reflect actual thought, it still was related to certainty (Barden & Petty, 2005).

Similarly, perceptions that one has thought about both sides of an issue in arriving at a current judgment can also increase certainty (Rucker & Petty, 2004). So, if for example, a person considers both the possibility that they are an introvert and the possibility that they are an extravert, and finds support for their extraversion but not their introversion, they may be likely to hold their extraversion self-belief with a great deal of certainty, compared with a person who only considers the possibility that they are an extravert. Although the self may often receive a great deal of thought relative to other attitude objects, there are likely to be between and within-person differences in the extent to which specific self-views are thought about.

Ruminative thought. Not only does the amount of thought matter, but so too does the nature of the thought. Thoughts that continually dwell on the same self-domains (i.e., ruminative thoughts) may actually decrease certainty because rumination is associated with doubt and negative affect. The distinction between ruminative and reflective thought is not a new one (Nystedt & Ljungberg, 2002; Trapnell & Campbell, 1999). In fact, the two types of self-focused thought have different antecedents (Joireman, 2004), consequences, and correlates (Campbell *et al.*, 1996; Trapnell & Campbell, 1999). Ruminative thoughts that are recurrent (i.e., when a person keeps having the same thoughts over and over again) may undermine confidence if the thoughts are not sufficient to form a clear judgment (e.g., if the thoughts are mixed or do not provide a valid basis for judgment, see Petty, Jarvis, & Evans, 1996).

Some initial support comes for this point in the attitudes domain. For example, Briñol and Petty (2005b) found that asking participants to repeatedly write down the same thoughts they generated in response to a persuasive message reduced persuasion by decreasing the confidence with which those thoughts were held. In contrast, Holland and colleagues (2003) found that the repetition of an *attitude* increases its accessibility (see Powell & Fazio, 1984) leading to greater confidence (see also, Tormala, Petty, & Briñol, 2002). Taken together, these findings suggest that repetition might increase or decrease certainty depending on other variables, such as the specific mental construct that is rehearsed and people's naïve theories of the meaning of repetition (Briñol, Petty, & Tormala, 2006). Consonant with this view, Segerstrom, Stanton, Alden and Shortridge (2003) found that mental repetition was associated with more or less well-being, and with adaptive or non-adaptive self-related consequences, depending on the valence of the thought (e.g., positive or negative) and the purpose of the repetition (e.g., uncontrollable vs. controllable).

Social validation. One source of information about the self is the feedback we get from others, whether it is direct or indirect. If other people view us and treat us as we view ourselves, then this is likely to lead us to believe that our self-views are valid via social validation (see Visser & Mirabile, 2004, for a discussion of these ideas applied to attitudes in general). So, if we are treated similarly by all the people we encounter, and this is consistent with the way we view ourselves, then we are likely to gain confidence that this self-view is correct. Related to this, Swann's self-verification theory holds that we seek out people and situations that confirm our self-views in order to help maintain cognitive consistency and certainty with respect to the self (Swann,

1997; Swann & Ely, 1984; Swann *et al.*, 2003; Swann, Stein-Seroussi, & Giesler, 1992). Interestingly, because we are also more likely to seek out others who verify our certainly held self-beliefs (Swann & Pelham, 2002), certainty begets certainty.

Accessibility. Attitude accessibility, considered another indicator of attitude strength (Fazio, 1995), has been shown to influence attitude certainty (Holland, Verplanken, & van Knippenberg, 2003). Accessibility is reflected in the speed with which an attitude comes to mind when presented with the attitude object (Fazio & Williams, 1986). The speed of attitude or attribute retrieval is associated with the subjective experience of ease which can then influence the certainty with which that attitude is held (Holland *et al.*, 2003; Tormala *et al.*, 2002). In a study discussed above, Holland and colleagues increased the accessibility of participant's attitudes (or not) by having them repeatedly express their attitudes. They found that compared with control participants, repeated expression increased attitude certainty, but did not affect other strength components, such as attitude importance. Furthermore, the effects of repeated expression were mediated by attitude accessibility, as measured by reaction times an attitude semantic differential scale (Holland *et al.*, 2003).

Self-aspect accessibility is expected to have the same effects as attitude accessibility (DeMarree & Petty, 2005a, 2005b). As such, situational and individual differences in self-attribute accessibility should affect certainty in those self-aspects in the same way that attitude accessibility affects attitude certainty. In the domain of the self, individual differences in chronic accessibility have been documented (H. Markus & Kunda, 1986; H. R. Markus, 1977), and people who are have chronically accessible self-beliefs are likely to hold these beliefs with a high degree of certainty. Situational differences may be induced by a number of factors, such as the roles we are called on to occupy, the activities we are currently engaging in, and other aspects of the situation (H. Markus & Kunda, 1986; H. R. Markus & Wurf, 1987; McGuire & McGuire, 1988). So, for example, a man's identity as a male is likely to be accessible when he is in a room full of women (McGuire & McGuire, 1988), and as such, he may be more certain of his standing on gender-related traits than he would be if he were in a mixed gender context. Little research has tested situational impacts on self-certainty, so these predictions are necessarily speculative, though consistent with a number of theoretical perspectives in the self and in attitudes.

Individual differences. There are a number of individual differences that may impact the extent to which individuals hold their self-conceptions with certainty, though we will only discuss three here. The first of these variables is Need for Cognition (NFC, Cacioppo & Petty, 1982; Cacioppo, Petty, Feinstein, & Jarvis, 1996), an individual difference variable assessing a person's propensity to engage in, and enjoy, effortful thought. The reasons this variable may be associated with increased self-certainty are the same as those outlined above for why thought in general may be associated with certainty. In the attitudes domain, research has indicated that the attitudes of high NFC individuals are more resistant to change and persistent over time than are the attitudes of low NFC individuals (Haugvedt & Petty, 1992; Petty *et al.*, 1995). In addition to this general support for the association between NFC and strength consequences, empirical evidence has linked NFC to attitude certainty specifically (e.g., Barden & Petty, 2005;

Briñol & Petty, 2005a).

Private self-consciousness (Fenigstein, Scheier, & Buss, 1975) is an individual difference variable assessing differences in the extent to which people are self-aware and think about the self with relative regularity. Private self-consciousness is often broken down into two specific components, internal state awareness and self-reflectiveness (Piliavin & Charng, 1988). These components differ in the type of self-relevant thought associated with them. Internal state awareness is associated with open, reflective thought about the self and is associated with greater self-knowledge (Trapnell & Campbell, 1999). In contrast, self-reflectiveness is associated with negative affect-laden, ruminative thought, and is associated with greater neuroticism and instability of self (Trapnell & Campbell, 1999). As discussed in the ruminative thought section above, these two different modes of thought may have different consequences for self-certainty. Specifically, internal state awareness is likely to be associated with greater self-certainty due to the increase in self-knowledge whereas self-reflectiveness is likely to be associated with lower self-certainty due to its association with rumination, negative affect, and general instability.

In addition to personality differences in certainty, there may be stage-of-life differences as well. Visser and Krosnick (1998) examined the relationship between age and attitude strength. Across a number of attitude issues, experimental and correlational methodologies, and controlling for potentially confounding variables (e.g., education, race, conformity motives), they found a curvilinear pattern of attitude strength over the life cycle, with attitude strength peaking in middle adulthood. Young adults and the elderly showed the most susceptibility to attitude change and the lowest levels of many attitude strength indicators, including certainty.

Many of the factors they argue cause this pattern of attitude strength could also be extrapolated to self-strength. For example, middle-aged adults often have more stable roles (e.g., stable work and family environments) than do their younger and older counterparts. Young adulthood is a time of transition, a time of learning about oneself and the world, and a time when one's social roles change dramatically (Sears, 1986). The same can be said of the elderly, who are experiencing similar transitions as they enter into retirement, experience a decrease in their social networks as many of their friends pass away, and experience changes in their own physical and mental abilities (Trzesniewski, Donnellan, & Robins, 2003; Visser & Krosnick, 1998). As discussed earlier, consistency of knowledge and experience as well as social validation of our self-beliefs help facilitate the development of self-certainty, and during times of transition, it is less likely that such consistency and validation will be present.

THEORETICAL ISSUES AND FUTURE DIRECTIONS

In this section, we will discuss a number of unanswered questions in the self-domain that are raised by using the attitude strength perspective we have presented.

Dispositional Trait Certainty

So far, we have discussed certainty of self-concept and self-evaluation, both at specific and at general levels. To our knowledge, little has been done to investigate the relationship of certainty between these different levels. For example, if a person is certain that they know who they are at a general level, does this translate into certainty at the trait level? Similarly, what is the relationship between self-concept certainty and self-evaluation certainty?

It seems reasonable to postulate that bottom-up relationships may exist, particularly when looking at self-concept certainty. If Bob is certain of his standing on a number of divergent traits, then he is likely to develop certainty at the global level. In the evaluative domain, this may also apply, but the story may be more complex. If I am certain of my self-evaluation in several different domains (e.g., social, academic, athletic), then perhaps I will also be certain of my self-evaluation generally. This sort of bottom-up process may be more likely among people who think a lot (e.g., those high in need for cognition), because recent research has indicated that they tend to rely more on their specific self-views, whereas low thinkers rely more on their general self-views (Dickhäuser & Reinhard, 2006). In addition, this effect is only likely to be apparent when the domain-specific evaluations are congruent, however, because certainty in conflicting evaluative substrates may produce uncertainty or ambivalence at the global level.

Another interesting question is whether a top-down relationship exists, such that global certainty can produce certainty at specific levels. If an individual is confident that their self-views are correct, does that mean that he or she is also certain in his or her standing on the traits of jealousy, extraversion, superstitiousness, and intelligence? To our knowledge, little data exist to address these questions, and the data that do exist, precede the more recent focus on disentangling certainty from self-esteem (e.g., Campbell, 1990).

Origins of Confidence

Another direction for future research is to explore the notion of defensive or compensatory confidence. A number of research areas explain how claimed confidence (i.e. confidence that is not based on direct perceptions of self-judgment validity) can be a result of self-regulatory processes (e.g., McGregor, 2003). To the extent that confidence stemming from different origins operates the same, the origin of confidence does not matter. If, however, confidence stemming from different origins produces different consequences, then these distinctions become very useful. Although some have postulated that confidence stemming from different origins can produce different outcomes (e.g., van den Bos, 2001), the empirical evidence in support of this notion is limited. The origins of confidence we discussed above primarily reflect confidence based on diagnostic information (e.g., amount of knowledge), but several streams of research point to other potential origins of confidence.

One such stream of research is McGregor's work on compensatory conviction (McGregor, Zanna, Holmes, & Spencer, 2001). This perspective, derived from Steele's

work on self-affirmation (Steele, 1988), states that a threat in one domain can be dealt with through conviction in an unrelated domain. McGregor's work explored how a threat to one's self-integrity, specifically an uncertainty induction in an important self-domain, can be alleviated by claiming extreme and confident attitudes towards various attitude objects, such as social issues (McGregor *et al.*, 2001, study 1). In these studies, there is no objective reason for the increased confidence in attitude objects unrelated to the threat, yet under conditions where an identity threat was in place, and participants had no other opportunity to repair this threat, increased confidence was noted in these unrelated domains. Given this finding, and other research on the fluidity of self-defense mechanisms (Steele, 1988; Tesser, 2000), it is not unreasonable to postulate that a threat in one self-domain could be compensated for by increased confidence in an unrelated self-domain.

In a similar, but conceptually distinct line of research, Gollwitzer and colleagues (e.g., Gollwitzer, 1986; Wicklund & Gollwitzer, 1981) have postulated a symbolic self-completion mechanism. According to this perspective, when an individual is committed to a given identity (e.g., teacher), but lacks the objective indicators of this identity (e.g., training, experience), they are likely to claim the identity through self-symbolizing behaviors (e.g., claiming to be an excellent teacher, dressing like a teacher, Gollwitzer, 1986). Because self-confidence is often valued in western society, it is likely that self-confidence is a goal to which a sizeable proportion of people in Western cultures are committed. When these people lack more objective means of claiming this identity (e.g., acting with a great deal of confidence), they may seek to claim this identity by publicly stating that they are confident, even when they are not (for similar logic, see Wicklund & Eckert, 1992). For this to occur, a few important factors must be in place. Specifically, individuals must be committed to, and actively pursuing the goal of self-confidence, and the opportunity to claim confidence must be public (i.e., their efforts must be seen by another person, see Gollwitzer, 1986). Ironically, the effect is that people who objectively have little basis for their confidence are the ones most likely to claim confidence (Wicklund & Eckert, 1992).

According to both the compensatory conviction and the symbolic self-completion perspectives, self-reports of confidence can serve other functions for participants that help them maintain a positive self-image. As a result, the group of people who report the highest degrees of confidence is likely to be made up of people who authentically feel that their self-views are valid and those who are claiming certainty in order to serve some other function. Again, if all forms of certainty produce the same results and operate via the same mechanisms, then this is not problematic. If, however, confidence stemming from different origins can have different consequences, then methods must be developed to discriminate between various sources of confidence. Although this section has focused on the distinction between authentic and inauthentic origins of certainty, it may be possible that further distinctions can be made within these broad categories. As mentioned earlier, however, current research has not yet identified distinct outcomes for confidence stemming from different origins, and exploring these potential distinctions could be a fruitful direction for future research. For example, even among

those whose confidence is based on valid sources of information, there may be differences between individuals who have reached that confidence based on a lot of thinking versus those whose confidence is based on less thinking. Specifically, the confidence associated with a great deal of thought may be more easily retrieved from memory (e.g., because it is more accessible) and may thus be more likely to affect judgments than confidence based on low thought (for similar logic, see Petty, Tormala *et al.*, 2006).

Global Self-Certainty and Attitude Processes

Another direction for future research is to look at the relationship between self-certainty and attitude processes. For example, is there a relationship between self-certainty and attitude certainty? Perhaps if people are certain of themselves in general, then they will be certain of any self-aspect, including their attitudes (attitudes are often conceptualized as being a part of the self, see e.g., Maio & Olson, 2000; Pratkanis, 1989).

In addition to direct implications of self-certainty for attitude certainty, there also exist a number of ways that self-certainty may impact attitude processes in general (for more details on the multiple roles a variable can play in a persuasive setting, see Petty & Cacioppo, 1986; Petty & Wegener, 1999). For example, some research has shown that when a person is confident upon receiving a persuasive message, they think less about the content of the message (Briñol, Petty, Gallardo *et al.*, in press; Tiedens & Linton, 2001; Weary & Jacobson, 1997). According to this possibility, self-certainty might generally lead to a decrease in effortful thought about other issues, which could in turn lead to *weaker* attitudes (Petty & Cacioppo, 1986; Petty *et al.*, 1995; Petty & Wegener, 1999). This might be problematic for some of the processes we have discussed already, because many of the origins of self-certainty are likely to be cognitively effortful. It may not be that the potential effects of self-certainty on attitude processes are ubiquitous, but perhaps instead, they operate only when one's self-evaluation or self-views are particularly salient, and this particular role, that of decreasing information processing may only occur when these self-views are salient *before* receiving a persuasive communication. In addition, because certainty and importance are often strongly related, the impact of importance on increasing information processing of construct-relevant information may overpower the impact of certainty on decreasing information-processing (Visser *et al.*, 2003).

If instead of affecting confidence in one's preexisting attitudes and thus decreasing information processing, self-certainty impacted any self-generated thoughts, then a different impact of general self-certainty may emerge on attitude processes. Specifically, if general self-certainty impacts thought certainty, then the self-validation role of certainty, described earlier, could play out (Briñol & Petty, 2004; Petty *et al.*, 2002). Specifically, highly self-certain individuals might use their self-generated cognitive responses to any task more than those low in certainty (DeMarree, Petty, & Briñol, 2005). Again, however, this may be most likely to occur when one's self-evaluation or self-views are particularly salient *after* a person has already generated thoughts about the issue in question (Briñol, Petty, Gallardo *et al.*, in press). There are other roles that persuasion variables may play

(Petty & Cacioppo, 1986), but the bulk of the research on certainty has explored the elaboration and self-validation roles.

Context-Specific Self-Views

There is a great deal of theorizing and research on the self that indicates that the self is often malleable (e.g., Bem, 1967; H Markus & Kunda, 1986; HR Markus & Wurf, 1987; McGuire & McGuire, 1988). This malleability is not arbitrary, however, and consistency can be observed when looking at a person's behavior or self-reports within specific contexts (Mendoza-Denton, Ayduk, Mischel, Shoda, & Testa, 2001; Mischel, Shoda, & Mendoza-Denton, 2002). So, when we are with specific significant others, for example, we may always have certain aspects of our identity salient, and thus these may guide behavior (e.g., we may be warm and caring with a relationship partner, but competent and conscientious with a research collaborator, see Andersen & Chen, 2002; Baldwin, 1992). Similarly, we may always have specific self-aspects salient when we are in a given social role (e.g., we may always see ourselves as extroverted when teaching, but introverted when writing, see H Markus & Kunda, 1986).

One of the more developed lines of research on this idea is Mischel's work on person X situation interactionism (e.g., Mendoza-Denton *et al.*, 2001; Mischel *et al.*, 2002). According to this model, people demonstrate consistent personality *profiles*, where specific personality traits operate in specific circumscribed settings (e.g., athletic, academic, or social settings). According to this perspective, looking at a person's behavior or self-reports across situations could lead one to believe that the person is more variable than they really are. Instead, these researchers advocate looking for consistency within specific classes of settings, and creating profiles based on the personality characteristics a person demonstrates within specific settings (Mischel *et al.*, 2002).

From our perspective, there are several ways self-certainty research could be applied to this person X situation interactionism framework (as well as any similar frameworks). The first of these deals with the extent to which specific personality traits are operating from situation to situation. Much like Markus (H Markus & Kunda, 1986; HR Markus, 1977), we believe that, on some traits, people may exhibit a great deal of cross-situational consistency, whereas on others they may not. Markus' schematicity measure (HR Markus, 1977) can be seen as one indicator of self-strength (very similar to accessibility as discussed in the attitudes domain, see Fazio, 1995), with "strong" individuals exhibiting greater cross-situational consistency than "weak" individuals. Self-certainty is another variable that may help researchers determine which people will exhibit cross-situational variability in self-descriptions and in behavior. Applied to the person X situation interactionism perspective, for example, people who hold a trait with a high degree of certainty will display this trait across a number of different situationally constrained personality profiles.

A second potential untapped area of certainty research in the person X situation framework is the effect of certainty within a specific circumscribed identity or context. Imagine Fred, a student who is both extraverted and open-minded in the classroom. Fred is certain of his extraversion, but not of his open-mindedness within the classroom

setting. Consistent with our earlier discussion, we would expect Fred's extraversion to exhibit greater persistence and resistance to change and to influence his behavior and information processing more than we would expect his open-mindedness to do so. Additionally, these effects would be constrained to this *specific situation*. If Fred saw himself as both extraverted and open-minded in another context (e.g., when with family members), but held the opposite pattern of confidence (high for open-mindedness but low for extraversion), we would expect greater impactfulness and durability of his open-mindedness than of his extraversion, again, only within this specific context. While this is certainly speculative, it is consistent with the notion in attitudes research that our attitudes may be constrained by context (Barden, Maddux, Petty, & Brewer, 2004) and that different processes (e.g., correction for bias) may operate depending on the specific contexts (Maddux, Barden, Brewer, & Petty, 2005).

A third potential area of self-certainty research within the person X situation interactionism framework is to determine when certainty at different levels of specificity may be related and when they may be independent. Global self-conceptions, and their associated certainty, may in part be determined by considering either an aggregate of situation-specific self-conceptions (potentially weighted by the certainty and importance of those specific self-conceptions, see Pelham & Swann, 1989) or by considering the most salient situation-specific self-conceptions. How these various levels of certainty are related may depend on what the most useful level of representation is for the specific individual (Dickhäuser & Reinhard, 2006). In addition, when there is variability in the characteristics represented *between* situations, global self-ratings are likely to be more variable and certainty may be lower (particularly if an aggregate approach is used to determine global self-ratings). This may be most evident when competing self-dimensions are held with certainty in different domains. For example, Jill may be certain that she is aggressive when playing sports, and she may simultaneously be certain that she is peaceful when among her friends. Generally Jill may see herself as a very peaceful person, but she may hold this self-conception with a great deal of uncertainty because of the inconsistent evidence she will have to support this conclusion.

Other Self-Representations

With the analysis we just presented of the roles certainty might play in person X situation interactionism, our perspective, which originally was quite individualism-centered, can begin to offer insights into other cultural perspectives as well. Most of the research described above was conducted on people from individualist cultures, which value personal consistency and independence (HR Markus & Kitayama, 1991). As such, measuring certainty at the trait level has produced a large number of compelling findings. This approach may not be as fruitful when investigating people from collectivist cultures, however, because collectivist cultures value harmony and "fitting in" with the constraints of the social situation. As such, the self-descriptions of collectivists are often qualified by the specific contexts or social roles to which they apply (HR Markus & Kitayama, 1991). Measuring certainty in these context-dependent self-characteristics may reveal a similar pattern of results, within context, that global measures of self-

certainty reveal among individualists more broadly. Because research looking at certainty in context or role-specific identities has yet to be conducted, these ideas are necessarily speculative. If supported, however, they offer support for the idea that the same basic processes operate among all individuals, but the magnitude of these effects, and the level of specificity at which they operate⁵ might differ depending on individual differences such as individualism-collectivism.

In this paper, we have discussed only a few aspects of a person's self-concept. As we discussed in the introduction, however, the self-concept is a complex and multifaceted construct. The processes we have discussed here can be applied to any of these self-elements (e.g., traits, possible selves, social identities, different levels of self-construal, etc.), and comparable outcomes would be expected.

CLOSING REMARKS

Psychologists have conducted numerous studies within various sub-fields, but unfortunately, these sub-fields often do not connect with each other. By limiting ourselves to the knowledge of a specific sub-discipline, we may miss potentially useful ideas and findings from other sub-disciplines. We have presented an analysis of the "self-certainty" literature using research on attitude certainty as our guiding framework. Although our review was necessarily brief and incomplete, we hope that it provides an indication of the potential usefulness of this approach. The basic framework we have presented for certainty could also be applied to multitude of other self-strength variables (e.g., accessibility, importance, DeMarree & Petty, 2005a), and need not be limited to attitudes and the self, for these principles are basic, and should operate on any construct (e.g., stereotypes, heuristics, etc.). In addition, the ideas we have presented in our discussion outline a few possible directions for future research that have the potential to benefit the literatures on attitudes, the self, and beyond. Without the integrative approach we have taken, many of these insights and future directions would not be obvious.

NOTES.

1. For example, Baumgardner (1990) operationalized certainty as a latitude of acceptance for self-judgments. The number of positions that a person finds to be acceptable descriptors of the self, while quite useful as a strength indicator, may not speak to the perceived accuracy or validity of a given self-evaluation. As such, there are likely conditions where the width of a latitude of acceptance and a subjective sense of certainty may have different antecedents and consequences.
2. This does not mean, however, that certainty will have no impact under low-thought conditions. According to the Elaboration Likelihood Model of persuasion (Petty & Cacioppo, 1986), variables may serve multiple roles depending on additional factors, such as elaboration. The same roles that have been applied to variables in persuasion research may be equally applicable in the case of self-certainty. In fact, self-confidence and thought confidence have been postulated to play multiple roles in persuasive settings (Briñol, Petty, Gallardo, & DeMarree, in press; Briñol, Petty, & Tormala, 2004).
3. It is unclear whether this manipulation, or any other manipulation discussed in this paper, uniquely affected self-certainty, or whether it instead affected other self-strength features such as ambivalence toward the self. This is a common problem with manipulations of strength-related features (Wegener, Downing, Krosnick, & Petty, 1995), so caution should be exercised in interpreting results from studies that manipulate certainty. It may be best to look for convergence between manipulated and measured self-certainty, and where possible, we have attempted to discuss

- studies that use both approaches.
4. There are many ways of conceptualizing stability over time. See Pelham (1991) for a brief discussion of these issues.
 5. To add an additional level of complexity, certainty in a person's level of individualism-collectivism may further moderate these effects!

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