IN SEARCH OF INDIVIDUAL DIFFERENCES IN THE USE OF MENTAL CONTENTS

DISSERTATION

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By

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ABSTRACT

The validity associated with mental contents, often operationalized as the confidence with which a person holds these mental contents, is associated with their use in guiding judgments and behavior. This idea of self-validation has been examined in a growing body of research. Thoughts held with confidence are used to a greater extent than thoughts held with doubt. Individual differences in the operation of self-validation processes have been examined, as individuals who chronically engage in effortful thought are more likely to rely on the validity of their mental contents. The present research seeks to extend this earlier work, not by examining individual differences in validation processes, but instead by examining individual differences in the perceived validity of one’s own thoughts. From the existing literature, two potential individual differences are identified – self-esteem and self-related confidence. Across four studies, increases in self-related confidence were found to be associated with the increased use of mental contents above and beyond any self-esteem effects. These results stand in contrast to previous research that has generally associated confidence with less, rather than more change. In each study the valence of participants’ thoughts was manipulated by directing them to generate positive or negative thoughts (Experiments 1, 3, 4) or using an argument quality manipulation (Experiment 2). Participants’ judgments (attitudes and behavioral intentions) became more congruent with these thoughts as self-related confidence
increased. These results held after controlling for self-esteem and self-esteem extremity, only occurred among individuals engaging in effortful thought (Experiment 4), and were partially mediated by the impact of self-related confidence on thought confidence (Experiments 3 & 4). Results are discussed in terms of research on self-validation, the construct of self-confidence, multiple roles of confidence, and their implications for human behavior.
Dedicated to my family, friends, and colleagues who have supported me in all of my endeavors.
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CHAPTER 1

INTRODUCTION

Recently, there has been a great deal of interest in the antecedents and consequences of certainty (e.g., Hall, Ariss, & Todorov, 2007; Hogg, Sherman, Dierselhuis, Maitner, & Moffitt, 2007; Kurtz, Wilson, & Gilbert, 2007; Moore & Healy, 2008; Petrocelli, Tormala, & Rucker, 2007; Petty, Briñol, Tormala, & Wegener, 2007; Smith, Fabrigar, MacDougall, & Wiesenthal, 2008; Tormala, Clarkson, & Petty, 2006; Weary, Vaughn, Stewart, & Edwards, 2006). This research on certainty reflects a growing interest in meta-cognition generally, as mounting evidence indicates that meta-cognitive processes are critical to understanding human behavior (for relevant reviews, see Briñol & Petty, 2004; Dunning, Johnson, Ehrlinger, & Kruger, 2003; Jost, Kruglanski, & Nelson, 1998; Petty, Briñol, & DeMarree, 2007; Petty, Briñol, Tormala et al., 2007; Sanna & Schwarz, 2006). In particular, research on the self-validation hypothesis (Petty, Briñol, & Tormala, 2002), which is described in detail below, indicates that a person’s thoughts are utilized to the extent that they are held with certainty (i.e., viewed as a valid basis for judgment). The present research builds on recent developments within the literature on certainty to explore possible individual differences in certainty generally, and the impact of such individual differences for self-validation processes in particular. Specifically, this research examines the extent to which
individual difference variables are positively related to the use of mental contents, both when these mental contents are related to one’s self-views (e.g., self-esteem) and when they are not.

Certainty

Certainty typically refers to the subjective sense that a belief, evaluation, or other mental content is correct, valid, and clear in one’s mind (e.g., Festinger, 1954; Gross, Holtz, & Miller, 1995; Petty, Briñol, Tormala et al., 2007). Certainty is generally considered to be meta-cognitive because, as it is most often employed, it refers to a cognition about a cognition.¹ For example, if a person has a primary cognition (e.g., I like ice cream), meta-cognition is a secondary cognition about it (e.g., I am certain that I like ice cream; Petty, Briñol, Tormala et al., 2007). Beliefs, evaluations, and other mental contents that are held with certainty tend to be more stable and resistant to change (e.g., Bassili, 1996; Pelham, 1991; Pomerantz, Chaiken, & Tordesillas, 1995; Swann & Ely, 1984; Tormala & Petty, 2002) as well as more predictive of other thoughts, judgments, and behaviors (e.g., Fazio & Zanna, 1978a; Marecek & Mettee, 1972; Petty et al., 2002; Sample & Warland, 1973; Swann & Ely, 1984; Swann & Pelham, 2002) than those held with uncertainty (for reviews, see DeMarree, Petty, & Briñol, 2007; Gross et al., 1995; Petty, Briñol, Tormala et al., 2007; Tormala & Rucker, 2007). Thus, mental contents that are held with certainty tend to be stronger than those held with doubt (Krosnick & Petty, 1995; Petty & Krosnick, 1995).

¹ Although certainty is generally treated as a meta-cognition, there are instances in which it might also be present as a primary cognition, such as in beliefs such as “I am a confident person” (for discussion, see Briñol, DeMarree, & Petty, in press). This point becomes relevant and is discussed in more detail in Experiment 4.
Meta-cognitive certainty has been applied to a broad range of mental contents, including attitudes (Gross et al., 1995), self-relevant beliefs (DeMarree et al., 2007), and thoughts about a wide variety of objects and issues (Briñol & Petty, 2004; Petty et al., 2002; for a review, see Petty, Briñol, Tormala et al., 2007). The key difference between these literatures is in the target to which certainty is applied (i.e., a person’s attitudes, self-perceptions, or thoughts). As mentioned above, mental contents held with certainty tend to be more durable and impactful than mental contents held with doubt (e.g., Gross et al., 1995; Marecek & Mettee, 1972; Pelham, 1991; Pelham & Swann, 1989; Petty, Briñol, Tormala et al., 2007; Setterlund & Niedenthal, 1993; Swann & Ely, 1984; Swann & Pelham, 2002; Tormala & Rucker, 2007). So, attitudes held with certainty (versus doubt) better predict behavior (e.g., Fazio & Zanna, 1978b) and judgment (e.g., Visser, Krosnick, & Simmons, 2003) and are more stable over time (e.g., Bassili, 1996) and resistant to change (e.g., Tormala, Clarkson et al., 2006). Similarly, self-views held with certainty (versus doubt) are also more predictive of behavior (e.g., Swann & Ely, 1984) and judgment (e.g., Swann & Pelham, 2002) and are more stable over time (e.g., Pelham, 1991) and resistant to change (e.g., Swann, Pelham, & Chidester, 1988). In addition, within the attitudes literature, certainty has been applied to the thoughts and beliefs that serve as the building blocks of attitudes (Petty et al., 2002). Thoughts held with high certainty have a greater impact on attitudes than thoughts held with low certainty (Briñol & Petty, 2004).

Self-Validation

Just as attitudes and self-conceptions have been shown to increase in their predictive utility as confidence in them increases, the self-validation hypothesis holds that
as confidence in any mental construct increases, so too does the tendency of this construct to be impactful on relevant judgments (Briñol & Petty, 2004; Petty et al., 2002). A growing body of research has provided evidence for the self-validation hypothesis. For example, considerable research now shows that thoughts, regardless of valence, are more predictive of subsequent attitudes when held with certainty than when held with doubt. Similarly, thoughts about the self (Briñol & Petty, 2003) and specific self-views (Pelham & Swann, 1989) have also been shown to predict global self-evaluations better when held with certainty rather than doubt.

Initial research on the self-validation hypothesis began by examining natural variation in thought confidence. In one early study (Petty et al., 2002, Study 2) participants read a mixed message regarding a proposed exam policy and were asked to generate either positive or negative thoughts in response to the message. After listing their thoughts, participants then indicated how confident they were in them. As participants’ thought certainty increased, so did the degree to which participants’ attitudes reflected the positivity or negativity of the thoughts listed. A similar pattern was obtained when confidence was manipulated by giving participants false social consensus information regarding their thoughts. Because social consensus is one antecedent of certainty (e.g., Festinger, 1950, 1954; Goethals & Nelson, 1973; Visser & Mirabile, 2004), participants who were led to believe that their thoughts were similar to those of others showed greater thought-consistent attitude change than those who were told their thoughts were dissimilar from others, at least when participants were being thoughtful (Petty et al., 2002, Study 4).
Since this initial work, evidence has continued to support the self-validation hypothesis (Briñol & Petty, 2004). This research has begun to examine a variety of origins of thought confidence. In many cases, such as when thoughts are viewed as valid because they are similar to those of others (Petty et al., 2002), come to mind easily (Tormala, Petty, & Briñol, 2002), or are in response to a message delivered by a credible source (Tormala, Briñol, & Petty, 2006), the origin or basis of participants’ thought confidence can (at least in many cases) be viewed as diagnostic of the actual validity of the thoughts. However, other sources of confidence have also been documented, many of which are less plausibly related to the objective validity of thoughts. These sources of confidence include nodding (vs. shaking) ones’ head (Briñol & Petty, 2003), feelings of power (Briñol, Petty, Valle, Rucker, & Becerra, 2007), being in a positive (vs. negative) mood (Briñol, Petty, & Barden, 2007), and being self-affirmed (Briñol, Petty, Gallardo, & DeMarree, 2007). For example, when participants are induced to feel powerful instead of powerless after they have thought about a message, confidence in their thoughts is higher, and these thoughts are more likely to be reflected in the attitudes expressed (Briñol, Petty, Valle et al., 2007).

Individual Differences in Self-Validation

Although there is a wide range of variables that can affect thought confidence, all people do not use the confidence in their thoughts to the same extent. Because self-validation is a meta-cognitive process, it requires a relatively high degree of thought to operate (Petty, Briñol, Tormala et al., 2007). Thus, self-validation processes have typically been documented among people who are engaging in a high degree of thought, whether because of situational or dispositional factors (Petty et al., 2002). One key
A dispositional factor is a person’s level of need for cognition, an individual difference in chronic thought (NFC, Cacioppo & Petty, 1982; Cacioppo, Petty, Feinstein, & Jarvis, 1996). Individuals high in NFC typically show self-validation effects, whereas individuals low in NFC, who may not be engaging in sufficient levels of thought for meta-cognitive processes to operate, typically do not (e.g., Briñol, Petty, & Barden, 2007; Petty et al., 2002).

Need for cognition represents an individual difference that predicts whether people will rely on their validity assessments. That is, high NFC individuals are more likely than low NFC individuals to use thoughts they view as valid compared with thoughts they view as invalid. However, one might also wonder if there are individual differences in the perceived validity that people consistently associate with their thoughts. As described above, there does appear to be natural variation in the subjective validity of participants’ thoughts (Petty et al., 2002), although it is unclear if this variation is entirely due to factors related to the specific thoughts in question as well as transitory factors, such as momentary moods or feelings of power, or if dispositional variation in thought validity also exists.

Recent research by Harber (2005) examined one potential predictor of individual differences in reliance on mental states. Specifically, he argued that self-esteem, a person’s evaluation of him or herself (Rosenberg, 1965), should be associated with the reliance on mental contents. In particular, he proposed that individuals high in self-esteem should be more likely to rely on their mental contents than individuals who are low in self-esteem. This is because people who are higher in self-esteem might be more likely to view themselves as a credible source, and thus rely on “information” from this
source (e.g., their own thoughts or emotional reactions) in making judgments (see e.g., Greenwald & Albert, 1968; Rosenbaum & Levin, 1968). Thus, just as the credibility of an external source can determine whether people rely on their thoughts to this source (e.g., Tormala, Briñol et al., 2006), so too might one’s own credibility (as indexed by self-esteem) determine thought use. Harber investigated these predictions by examining the use of emotions in making judgments as a function of self-esteem (e.g., Schwarz & Clore, 1983, 2007).

Harber (2005) reported two studies in which participants’ chronic self-esteem was associated with reliance on their emotional reactions, such that the emotional reactions of high self-esteem participants better predicted their judgments than did the emotional reactions of low self-esteem participants. In a third study, Harber attempted to manipulate self-esteem by self-affirming (Steele, 1988) participants, and found parallel effects. Specifically, he found that participants who had been self-affirmed by remembering a time when they had helped someone important to them used their emotional responses more in making emotion-relevant judgments than control participants or participants who remembered a time when they failed to help someone important to them (Harber, 2005; Study 3).

Harber’s final study is interesting, because it maps directly onto other research on self-validation that has examined self-affirmation. Specifically, Briñol and colleagues argued that self-affirmation leads people to feel confident (Study 4), and this increased confidence can increase reliance on thoughts that are in a person’s mind when affirmed (Briñol, Petty, Gallardo et al., 2007). In this research (e.g., Study 2), participants generated thoughts in response to a persuasive message containing either strong or weak
arguments and then were either self-affirmed (by writing about a personally important value) or not. Affirmed participants exhibited attitudes more congruent with the valence of their thoughts (as affected by the strength of the arguments in the message) than did non-affirmed participants, consistent with the notion that they viewed their thoughts in response to these messages as more valid.

Thus, there are two sets of studies that demonstrate self-validation patterns as a function of self-affirmation. One argues that self-affirmation increases self-esteem, and this increase in self-esteem is the critical determinant of reliance on individuals’ thoughts. Converging evidence is offered by demonstrating a similar pattern using individual differences in self-esteem (Harber, 2005). The other argues that self-affirmation increases self-confidence, and this increase in confidence is the critical determinant of reliance on individuals’ thoughts. Converging evidence is offered by demonstrating a direct impact of self-affirmation on self-confidence (Briñol, Petty, Gallardo et al., 2007).

Although much of this discussion has centered on the effects of self-affirmation, individual differences in self-esteem (e.g., Blascovich & Tomaka, 1993; Robins, Hendin, & Trzesniewski, 2001; Rosenberg, 1965) and in self-related confidence (e.g., J. D. Campbell, 1990; DeMarree et al., 2007; Mirels, Greblo, & Dean, 2002) have been documented.

Interestingly, these two potential reasons for validation processes – increased feelings of self-worth and increased self-confidence – tend to co-occur. Though self-affirmation can restore a person’s sense of self-worth (Steele, 1988; Tesser, 2000) it can also increase a person’s self-confidence (Briñol, Petty, Gallardo et al., 2007). Similarly, a great deal of research has found a strong relationship between individual differences in
self-esteem and self-related certainty, such that participants higher in self-esteem tend to be more certain of their self-esteem as well as their self-conceptions more generally (e.g., J. D. Campbell, 1990; J. D. Campbell et al., 1996; Hermann, Leonardelli, & Arkin, 2002; Luxton, Ingram, & Wenzlaff, 2006; Story, 2004). Nevertheless, it is possible for high self-esteem individuals to hold this view with doubt, and low self-esteem individuals to be quite confident in this assessment. Thus, it is potentially important to distinguish the effects of self-esteem per se from self-related certainty.

In attempting to distinguish these constructs, it is important to note that the strength of this relationship might, in part, be due to the restriction of range of self-esteem examined in typical healthy (i.e., non-clinical), undergraduate samples. The level of self-esteem in these populations tends to be very high – well above the theoretical midpoint of the scale. Individuals classified as “low” in self-esteem in these samples are often at or above the theoretical midpoint of the scale. This relative restriction of range might intensify the relationship between self-esteem and self-esteem certainty because not only is high self-esteem more positive than low self-esteem, it is also more extreme.

Extremity is the deviation of an evaluation from a neutral midpoint (Abelson, 1995; Osgood & Tannenbaum, 1955), and extremity itself is associated with certainty and other indicators of strength. Indeed, examining over 3000 Ohio State University introductory psychology students tested in prescreening data from several years (1311 male, 1860 female, 1 unidentified) who completed the Rosenberg Self-Esteem scale (Rosenberg, 1965) with a possible range of 10-60 and a theoretical midpoint of 35, an average self-esteem score of 49.46 (SD = 8.36) was observed, much higher than the theoretical midpoint of the scale. Using the largest of the prescreening data sets that had
both self-esteem and self-esteem certainty measures (N = 757), highly significant correlations between self-esteem certainty and self-esteem level (r = .58, p < .001) and self-esteem extremity (r = .62, p < .001) were found. When controlling for each other, both of these correlations with self-esteem certainty remained significant, although the strongest relationship with self-esteem certainty was the extremity of participants’ self-esteem (for self-esteem level, partial r = .08, p < .05; for self-esteem extremity, partial r = .29, p < .001). In further support of the relationship between self-esteem extremity and self-esteem certainty, if only the participants whose self-esteem was at or below the scale midpoint (n = 65) were examined, a negative relationship between self-esteem level and self-esteem certainty emerged (r = -.27, p = .03).

Thus, prior research has identified two potential individual differences, self-esteem and self-related confidence, that might be responsible for between-person variability in use of one’s thoughts. Research examining these constructs as potential sources of thought validation has considered each of them in isolation (Briñol, Petty, Gallardo et al., 2007; Harber, 2005). As described above, however, these constructs are often strongly related, and because of this, research that has examined each construct in isolation is open to the alternative that the other, related construct is the true causal variable. To address these concerns, the present investigation sought to explore individual differences in self-esteem and self-related confidence as determinants of whether or not people relied on their thoughts. In several studies, these variables were measured and their effects were analyzed simultaneously to determine what independent influence each variable had.
The Present Research

The present research simultaneously examined self-esteem and self-related confidence as potential individual differences that could influence the validity associated with individuals’ thoughts. These potential influences are examined across four studies using different paradigms and measures of self-esteem and self-related confidence. In Experiment 1, self-esteem and self-esteem certainty were measured in prescreening. In a separate session several weeks later, participants were instructed to generate either positive or negative thoughts about the self in a self-presentation paradigm and the impact of this manipulation on subsequent self-evaluations was examined. In Experiment 2, self-esteem and self-esteem certainty were again measured during prescreening but this time thought direction towards a novel attitude object was manipulated using an argument quality manipulation. Then, the impact of this manipulation on behavioral intentions related to the message was examined. Finally, in Experiments 3 and 4, self-evaluation and several measures of certainty and self-confidence were measured within a single session. In the same session, a manipulation of thought direction regarding a novel attitude object was implemented and the impact of this manipulation on attitudes was assessed. In each study, individual differences in self-esteem and/or self-related certainty/confidence were used to predict the magnitude of impact of each manipulation on the relevant dependent measure. That is, the goal was to examine whether self-esteem or self-related certainty or both would be associated with use of one’s own thoughts. Because the current research is examining individual differences, in several of the studies the extremity and number of thoughts generated were examined to ensure that any
differences obtained were due to the postulated processes, and not due to differences in potentially confounding variables.

To enhance generalizability of the conclusions, the studies presented used different measures of self-evaluation and self-confidence/certainty. To assess self-evaluation, Experiments 1-3 used the Rosenberg Self-Esteem Scale (Rosenberg, 1965) whereas Experiment 4 used self-attitude semantic differential scales. To assess self-confidence/certainty, all studies used certainty with respect to some sort of self-assessment. In Studies 1 and 2, self-esteem certainty was examined. Including self-esteem certainty allowed for the exploration of competing predictions, outlined below, regarding the strength of self-esteem. Also, because the variables under consideration are both predicted from studies examining validation processes as a function of self-affirmation, the use of these measures was a result of a careful consideration of the form(s) of confidence self-affirmation might induce. An affirmation is essentially a validation of a person’s self-worth (i.e., their self-evaluation; Steele, 1988), and because of this, examining certainty in participants’ self-evaluation seemed to be a sensible starting point. However, in Experiment 3, the measurement strategy was expanded to include assessments of certainty in more specific evaluations, both related to the self (e.g., certainty in participants’ perceived level of attractiveness) and not (e.g., certainty in participants’ attitudes towards Mexican food). In Experiment 4, the measurement strategy was further expanded by also including general feelings of self-confidence and confidence in one’s judgments.

Because both self-esteem and self-confidence/certainty are plausible dispositional predictors of self-validation effects, no a priori predictions regarding their relative utility
in this regard were made. However, there are several possible alternative predictions regarding self-related confidence, and the current studies were designed to limit the applicability of these other mechanisms. As discussed earlier, certainty has been associated with the durability of its primary cognition (e.g., resistance to change; see Petty & Krosnick, 1995). Attitudes and self-conceptions tend to better resist change when they are associated with certainty than with doubt (e.g., Swann & Ely, 1984; Tormala & Petty, 2002). This is particularly relevant to Experiment 1, where changes in self-esteem as a function of whether participants were instructed to present themselves in a positive or negative manner were examined. When self-esteem is associated with high certainty, the attitude strength prediction is that self-esteem will evince less rather than more change. However, if the certainty associated with self-esteem also becomes associated with self-evaluation relevant thoughts, the self-validation prediction is that the self-presentation relevant thoughts will have an increased impact on self-esteem as self-esteem certainty increases. That is, it is possible that self-esteem confidence might sometimes be associated with more change, whereas decades of research on attitude strength suggest the opposite (i.e., less change with increased certainty; Gross et al., 1995; Petty, Briñol, Tormala et al., 2007). This competing prediction may hold for Experiments 2-4 as well. Many view attitudes as part of the self (e.g., Brown, 1991), thus it is unclear the extent to which certainty in the global self-evaluation or general self-confidence might extend to certainty in other self-aspects, such as attitudes.

In addition, confidence, whether free floating (Tiedens & Linton, 2001) or tied to a specific object (Stapel & Tesser, 2001, Study 4) is also associated with decreases in information processing. Because confidence can be a signal that one’s existing opinion is
valid, people who feel confident about their opinion rarely seek out or pay careful
attention to additional information (but see Tormala, Rucker, & Seger, 2008). Because
these alternative predictions would work against the effects this program of research is
designed to explore, paradigms that reduced the likelihood of such effects were utilized.
Specifically, in Experiments 1, 3, & 4, participants self-generated their own arguments, in
effect constraining elaboration to be high. In Experiment 2, participants were directed to
think carefully and the study was conducted early in the academic term when participants
were likely to be highly motivated and less likely to be distracted. In addition,
Experiments 2-4 used novel topics about which participants were unlikely to have pre-
existing opinions, making it unlikely that confidence could be attributed to participants’
pre-existing attitudes and thereby lead to reduced information processing. Thus,
although past research has demonstrated roles for confidence other than validation of
one’s thoughts (see e.g., Briñol et al., in press; Briñol, Petty, & Tormala, 2004; Petty,
Briñol, Tormala et al., 2007), the current studies were designed to limit the operation of
such effects.

The goal of this research is to identify individual differences in the use of
thoughts. The candidate variables, based on existing research findings, are self-esteem
and self-related certainty. Thus, the primary goal of these studies is to determine whether
individual differences in self-esteem and/or self-related confidence are predictors of self-
validation patterns across a range of different paradigms.

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2 In the Tormala et al., 2008 research, they found that confidence can be associated with increased
information processing when the information to be processed is framed as relating to confidence. This is
similar to other matching effects (see e.g., Petty, Wheeler, & Bizer, 2000) demonstrating that matches
between a the framing of a persuasive message and a person’s motives (Evans & Petty, 2003), traits
(Wheeler, Petty, & Bizer, 2005), and attitude functions (Petty & Wegener, 1998) all increase information
processing relative to mismatches.
Experiment 1 provided the first opportunity to determine whether individual differences in self-esteem or self-related certainty would be associated with self-validation effects. In this study, participants who had completed self-esteem and self-esteem certainty measures during a prescreening session engaged in a task where they were instructed to present themselves in a positive or a negative manner prior to completing the dependent measure, a measure of self-evaluation. Tasks such as this have been shown to affect subsequent self-evaluations in a self-presentation congruent manner (e.g., Jones, Rhodewalt, Berglas, & Skelton, 1981). This paradigm was selected because it allows for the test of several competing hypotheses. First, it allows for a determination of whether self-validation occurred as a function of the individual differences measured (i.e., self-esteem level and self-esteem certainty) and if so, which variable(s) best predicted the pattern of results. The self-esteem level hypothesis holds that those high in initial self-esteem should be more influenced by their thoughts than those low in self-esteem whereas the self-esteem certainty hypothesis holds that those high in certainty (regardless of self-esteem level) should be more influenced by their thoughts. In addition, by using the self as the attitude object, the possibility that self-esteem certainty would be associated with resistance of self-esteem to change could also be examined.
Method

Participants

Participants were eighty-four Ohio State University undergraduates enrolled in an introductory psychology course. Eleven participants did not complete all prescreening materials (i.e., self-esteem and/or self-esteem certainty) and thus were removed from analyses. In addition, another 9 participants chose not to engage in the self-presentation portion of the study (see below), leaving sixty-four participants in the final sample (44 female, 20 male).

Materials and Procedure

Procedure. Participants completed measures of self-esteem and self-esteem certainty during a prescreening session held during the first week of the academic quarter. Approximately six weeks later, participants representing a full range of available self-esteem and self-esteem certainty values were invited to a study on personality and personality perceptions and were told that they would be answering personality questions from different perspectives. Specifically, all participants from the lower half of the available distributions on these measures were invited to participate along with a random sub-sample of the upper half of the distribution. During the experimental session, participants again completed a measure of self-esteem so that the stability of participants’ self-evaluation over time could be explored. Participants then began the primary task, in which they were asked to present themselves in either an extremely positive or an extremely negative manner. Following the self-presentation task, ostensibly as part of an unrelated study, participants completed the dependent measure, another assessment of self-evaluation.
Prescreening materials. Early in the academic term, participants completed prescreening materials as part of a mass testing session. The first measure participants completed was the Rosenberg Self-Esteem Scale (RSE, Rosenberg, 1965). The RSE is a ten-item measure of global self-esteem that has favorable psychometric properties (Gray-Little, Williams, & Hancock, 1997) and has been used successfully in a broad range of psychological research (Blascovich & Tomaka, 1993). Sample items include “I take a positive attitude toward myself” and “All in all, I am inclined to feel that I am a failure” (reverse scored). A 6-item Likert scale ranging from 1 (disagree strongly) to 6 (agree strongly) was employed, thus possible scores range from 10 to 60 (for the sample analyzed, $\alpha = .94, M = 48.42, SD = 10.28$). Upon arrival at the primary experimental session, participants again completed the RSE using the same format ($\alpha = .94, M = 47.61, SD = 10.12$). Because certainty in an evaluation is generally associated with the stability of the evaluation (e.g., Bassili, 1996), this second measure of self-esteem was included to examine stability of self-esteem over time. For the primary analyses regarding self-validation, however, the prescreening self-esteem scores were used. This is because self-evaluation certainty was only assessed during prescreening, and it was important to ensure that the predictor variables used were on equal footing. Furthermore, and related to this point, to the extent that self-esteem and self-related certainty measured at one point in time can predict self-validation effects approximately six-weeks later, the assurance that that any effects are due to individual differences that are relatively stable over time is enhanced.

Also included in the prescreening packet was a three-item measure of self-evaluation certainty (for a review, see DeMarree et al., 2007). The items used in this
study were: “How confident are you of your feelings toward yourself?”, “How certain are you of your feelings toward yourself?”, and “How sure are you that your feelings toward your self are accurate?” These items were answered on 9-point scales ranging from 1 (not at all confident/certain/sure) to 9 (extremely confident/certain/sure). The items were strongly correlated ($\alpha = .88$) and thus were combined to form an index of self-evaluation certainty ($M = 6.37, SD = 1.59$).

**Self-presentation procedure.** The self-presentation portion of the study session followed that of previous research on the self-presentation carryover effect (Jones et al., 1981; Rhodewalt & Agustsdottir, 1986). Research on self-presentation has found that self-presentation in one context can carry over to affect self-perceptions and behavior in subsequent, unrelated contexts (for reviews, see Rhodewalt, 1986, 1998). That is, like the classic role playing research in which the information that people generate affects their opinions on various attitude issues (e.g., Janis & King, 1954), so too does the generation of information about the self lead to changes in self-attitudes.

In this paradigm, participants were told:

For the first experiment, we’re looking to develop materials for use in training graduate students in clinical interviewing skills. Clinical interviews can occur for a number of reasons, including career counseling, adjustment counseling, or skill interviewing. The interviews usually include a live interview as well as questionnaires and other clinical assessment tools. For today’s experiment, we would like your help in the development of materials for training graduate students in the written component of these interviews.
In order to do this, we’d like you to role-play the interview questions. Basically what we’re looking for you to do is to answer the questions that are presented as if you were really the type of person that you are playing.

Participants were also reminded that participation in this task was voluntary, and that if they decided not to complete the role-playing exercise, they could do so by clicking a “no role play” button. The voluntarily nature of this task was emphasized, because past research has found larger effects of self-presentation when the voluntary nature of the task is salient versus when participants’ choice seems to be constrained (Rhodewalt & Agustsdottir, 1986). Nine participants elected the “no role play” option. These participants completed the remaining materials, but did so without playing an assigned role. As such, the data from these participants are not reported.

Participants were then assigned to present themselves in either a self-enhancing or self-deprecating role. The instructions for this manipulation were taken directly from past research (e.g., Jones et al., 1981). For example, in the self-enhancing role, participants were told:

You are to play the role so as to give the interviewer a positive impression of yourself. By a positive impression, I mean think of yourself on a day when you are really up, when you are in a good mood, you feel really good about yourself, that after all you really are a pretty decent, competent, sensitive person. You can be most effective in playing the role if you really get yourself into it - you know, try to get yourself into one of those times when you felt really good about yourself. Now thinking of
yourself in this way, simply answer the interviewer's questions so that your feeling is conveyed in both your mood and the content of your answers.

Whereas previous research has used an actual face-to-face interview, participants were told that this study examined written assessment, so participants were asked to complete a number of questions on the computer in the assigned role. This “interview” began with several open-ended questions (e.g., “What is your major at OSU? How did you become interested in this? If you haven’t selected a major yet, what fields are you interested in?” and “Describe your study/work habits.”). The questions used were adapted from those utilized in previous research examining self-presentation carryover effects (Rhodewalt & Agustsdottir, 1986).

Continuing with the self-presentation task, participants then answered a number of personality questions taken from a variety of measures (e.g., Rosenberg Self-Esteem Scale, Self-Doubt Scale, Need for Cognition, Need for Uniqueness, etc.), and rated their personality on a number of traits (e.g., Friendly, Likeable, Aloof, Reckless, etc.). Before each set of questions they were reminded to continue playing their assigned role while responding to these questions. After this, participants were thanked for completing this portion of the study and asked how difficult the role-playing was and how much freedom they felt they had in playing the role they did.

Dependent measure. Participants were then asked to complete a second, ostensibly unrelated study for another researcher. To boost the credibility that this was an unrelated study, materials were completed using paper and pencil questionnaires instead of on the computer. Furthermore, the packet of dependent measures utilized
different scale anchors and response formats compared to the questions used in the self-presentation task. This packet began with a series of irrelevant questions; many taken from commonly used scales (e.g., Need for Cognition, Motivation to Control Prejudiced Reactions, etc.) although no items were the same as those asked in the self-presentation questionnaire. For all questions, participants were asked to indicate the extent to which the statements provided described them, using a 7-point scale ranging from 1 (Not at all accurate of me) to 7 (Very accurate of me). The critical questions were toward the end of the packet and were designed to assess participants’ self-evaluation, while appearing dissimilar from the previous self-esteem questions used. Specifically, the statements were “I like myself,” “I have a positive attitude towards myself,” and “I am a bad person” (reverse coded). These items were highly correlated (α = .89) and thus were averaged to serve as a measure of post-self-presentation self-evaluation, the primary dependent measure.

Following completion of all materials, participants were probed for suspicion and debriefed.

Results

Analyses in this and the other studies to follow employed the regression procedures outlined by Aiken and West (1991). Accordingly, any continuous variables (e.g., self-esteem) were mean centered by subtracting the mean of the variable from all observations while condition (i.e., direction of self-presentation) was effects coded (+1 versus –1 coding). Both procedures were employed to reduce multicollinearity concerns when computing interactions (Aiken & West, 1991). Initial analyses were conducted with these mean-centered variables, and the relevant cross products (e.g., self-esteem x
condition) provided the interaction term for the model. Analyses were conducted in a hierarchical manner, and terms were interpreted in the first model in which they appeared (Cohen & Cohen, 1983). If a significant interaction was found, it was decomposed using simple slopes analysis. Relevant variables (e.g., self-esteem) were recentered at one standard deviation above and below the mean, and the interaction term was recomputed with this centered factor. The full model was then rerun, and the simple effects were observed as the main effect of the unchanged variables in the complete centered model (e.g., the main effect of condition with self-esteem centered 1 standard deviation above its mean; for complete details of these procedures, see Aiken & West, 1991).

For the primary analyses, two sets of analyses were conducted. First, the self-evaluation dependent measure was regressed on self-presentation condition (positive vs. negative), self-esteem, self-esteem certainty, and the interactions of the individual difference variables with condition. This allowed for a simultaneous test of self-esteem and self-esteem certainty as potential validating influences, while controlling for each other. In addition, this analysis was followed with the full self-presentation condition x self-esteem x self-esteem certainty design. Although not focal to the current hypotheses, this analysis allowed for an examination of any potential interactive effects of self-esteem and self-esteem certainty.

**Manipulation Checks**

Many of the self-presentation questions were evaluative in nature, and thus can serve as a manipulation check to make sure participants were responding in a manner consistent with the role they were assigned to play. Results indicate that they were. For example, five items on the RSE were included in the self-presentation questions.
Submitting these questions to a regression with condition and its interactions with self-esteem and self-esteem certainty indicates that on all questions, there was only a significant effect of condition ($B > 1.24$, $t > 6.73$, $p < .001$) such that the responses of participants in the self-enhancing condition were consistent with a higher level of self-esteem than participants in the self-deprecating condition. A similar pattern was found on other relevant items (e.g., self-doubt scale, trait ratings). Specifically, there was a main effect of condition on 33 of the 35 questions included ($t > 2.45$, all $p < .02$; the two items that did not differ as a function of condition were from the Mindful Attention Awareness and Need for Closure scales). In addition, in no case was there a main effect of RSE or self-esteem certainty or an interaction of self-esteem certainty with condition, and in only one case (out of 35) was there an interaction of RSE with condition (on a self-doubt scale item), providing evidence that the manipulation was similar for all participants. This is important to establish, because if participants who varied in their self-esteem or self-related certainty experience the experimental manipulations differently, these differences in experience could potentially provide alternative explanations for any difference in outcomes on the dependent measures.

In addition, the difficulty and freedom questions were submitted to the above analysis. For self-presentation difficulty, only a main effect of condition emerged, such that participants in the self-deprecating role found the task to be more difficult than participants in the self-enhancing role ($B = -1.31$), $t(60) = 4.74$, $p < .001$. Important, 3

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3 This difference in difficulty might explain why the effect appears to be stronger in the self-enhancing role rather than the self-deprecating role. Previous research indicates that the ease with which thoughts come to mind affects their perceived validity, with greater ease associated with greater validity (Tormala et al., 2002), at least in most situations (Brinol, Petty, & Tormala, 2006).
there was no effect of self-esteem, certainty or their interactions with condition on difficulty ratings. There were no significant effects on the degree of freedom participants felt they had on the task.

**Dependent Measure**

Post-self-presentation self-evaluation was submitted to regression with condition and its interactions with RSE and self-esteem certainty as predictors. In this analysis, a main effect of RSE emerged ($B = .08$), $t(60) = 6.12, p < .001$. In addition, the condition x self-esteem certainty interaction emerged ($B = .17$), $t(58) = 1.97, p = .054$ (see Figure 1), while the condition x RSE interaction was not significant ($B = -.01$), $t(58) = .35, p = .730$. Decomposing the condition x self-esteem certainty interaction (at the mean level of RSE), an assimilative effect of condition was found among participants high ($B = .32$), $t(58) = 1.93, p = .058$, but not low ($B = -.21$), $t(58) = 1.33, p = .188$, in self-esteem certainty.

When the dependent measure was submitted to a full condition x RSE x self-esteem certainty regression, an interesting effect emerged. Specifically, a 3-way interaction was evident ($B = -.02$), $t(56) = 3.72, p < .001$ (see Figure 2), such that the condition x self-esteem certainty interaction was significant among low self-esteem participants ($B = .39$), $t(56) = 3.95, p < .001$, but not among high self-esteem participants ($B = -.04$), $t(56) = .42, p = .679$. Interestingly, and counter to Harber’s (2005) finding, the self-presentation-related thoughts appear to have been used most among low, but not high self-esteem participants, assuming they were high in self-esteem certainty.

However, this effect should be interpreted with caution, as when a condition x self-
esteem regression is conducted without self-esteem certainty, there is a tendency for Harber’s effect, more change among people high in self-esteem, to emerge ($B = .013$), $t(60) = 1.39, p = .170$.

Finally, the initial analyses were conducted controlling for extremity of self-esteem. Recall that certainty in an evaluation is often associated with the extremity of the evaluation. Although past research has not explored a validating role of extremity, this analysis was conducted to ensure the soundness of the primary finding. This analyses was conducted predicting post-self-presentation attitudes from self-presentation direction and its interactions with RSE, self-esteem certainty, and self-esteem extremity. Self-esteem extremity was computed as the absolute value of the difference between individuals’ RSE scores and the theoretical midpoint of the scale (35 using the response options utilized in this study). Results of this regression revealed no main effects or interactions involving extremity ($ts < .57, ps > .57$), while the thought direction x self-esteem certainty interaction remained significant ($B = .18$), $t(56) = 1.97, p = .053$.

Stability of Self-Esteem

As described earlier, self-esteem was assessed at two different points in time (prescreening and during the primary session) so that the stability of self-esteem over time could be examined as a function of self-esteem certainty (measured during prescreening). Because there are many ways to conceptualize stability and no single strategy has overwhelming support in the literature (see e.g., J. D. Campbell et al., 1996; Pelham, 1991), it was operationalized in three different ways in this study. The first way was to take the absolute value of the difference between time 1 and time 2 self-esteem assessments (AbsDiff). This represents any changes in overall level of self-esteem. The
second way was to predict time 2 self-esteem from time 1 self-esteem \((B = .83), t(62) = 12.50, p < .001\), and to take the absolute value of the residuals from this prediction (AbsResid). This index represents individuals’ deviation from global trends in stability of self-esteem over time. Finally, within-person correlations of participants’ responses to the individual items to the self-esteem scale across time measurements were examined (Corr). For each person, this index represents the similarity in the ordering of his or her responses to the items comprising the RSE scale over time. The correlations between self-esteem certainty and each of these measures of stability were all consistent with greater stability among high certainty individuals, however, only Corr reached conventional levels of significance, \(r = .48, p < .001\) (AbsDiff \(r = -.16, p = .20\); AbsResid \(r = -.15, p = .24\)). That is, as self-esteem certainty increased, the pattern of responses to the items on the RSE was more consistent across time.

Discussion

This study lends support to the idea that self-related certainty can validate self-relevant cognition. Specifically, as participants’ self-esteem certainty increased so did their self-presentation-consistent self-evaluation change. This is particularly noteworthy, as self-esteem certainty was measured approximately six weeks prior to the experimental session. These results held when controlling for self-esteem, a construct that past research has implicated in similar processes (Harber, 2005). Indeed, in the present data set, among high certainty participants, the tendency was for relatively low self-esteem participants to rely more on their thoughts. In addition, the effect of self-esteem certainty also held after controlling for the extremity of self-evaluation.
The larger change in self-evaluation among high certainty participants might seem ironic, given that certainty is generally associated with the stability of an evaluation (e.g., DeMarree et al., 2007; Gross et al., 1995; Pelham, 1991; Tormala & Petty, 2002). Indeed, the present data set provides some evidence that self-esteem tends to be more stable over time (at least when conceptualized as correlational stability) when it is held with certainty. However, the self-presentation manipulation utilized here was designed to make presentation-consistent self-aspects accessible. If participants’ self-esteem certainty is attributed to these self-evaluation relevant thoughts, these thoughts should have had increased influence in determining participants’ current self-evaluations (Petty et al., 2002), consistent with the pattern of data obtained. That is, the self-aspects made accessible by the manipulation, although not chronically accessible, were still part of the self, and therefore self-evaluation certainty was potentially very relevant to the validity of these self-aspects. To the extent that people are certain of their self-evaluation in general, they might be more certain in any self-evaluation relevant thoughts. Ironically, this sometimes leaves people high in self-esteem confidence more open to change the very beliefs in which they were initially most confident (i.e., regarding their own self-esteem).

This explanation seems very sensible when the thoughts are already part of the self. Indeed, even if the thoughts are not already part of the self, they are related to participants’ self-evaluation, and attributing certainty in one’s overall self-esteem to specific thoughts related to one’s self-esteem might be easy because the constructs are so closely related and might be experienced by participants in the same ways (cf. Johnson, Hashtroudi, & Lindsay, 1993). However, a considerable body of research has shown that certainty from one source can be misattributed to completely different sources. As noted
earlier, this includes certainty stemming from one’s bodily movements (Briñol & Petty, 2003), mood (Briñol, Petty, & Barden, 2007), feelings of power (Briñol, Petty, Valle et al., 2007), and self-affirmation (Briñol, Petty, Gallardo et al., 2007). Even though the self-related certainty assessed in the current study seems to have a clear referent (i.e., participants’ self-evaluation), it may be possible for this self-relevant certainty to be generalized to thoughts that are not related to one’s own self-evaluation. Experiment 2 seeks to explore this possibility by examining the ability of self-relevant confidence, again operationalized as self-esteem certainty, to moderate the impact of self-esteem irrelevant thoughts.

One interesting, and unexpected finding in the present data set is the interaction of self-esteem, self-esteem certainty, and condition. Recall that this interaction was such that the self-esteem certainty by condition interaction only occurred among low, but not high self-esteem participants. There are several possible explanations for this effect. High self-esteem participants in this sample were actually extremely high (+ 1SD was 58.70 out of 60). For these participants, ceiling effects may have been operating, particularly in the positive self-presentation role. Indeed, high self-esteem participants reported an average (based on the regression intercept) post-self-presentation self-evaluation of 6.86 out of 7. For the self-deprecating condition, the role high self-esteem participants were playing may have been too discrepant from their self-beliefs to provide a plausible source of self-change, representing a potential limitation of the current paradigm.

High self-esteem participants might also have avoided thinking about the negative information, similar to findings indicating that happy people tend to weigh the affective
consequences of their decisions when deciding what behaviors to engage in (Wegener & Petty, 1994). Another possible explanation is that only low self-esteem participants who were certain that they were “no good” may have been motivated to change, and thus were more open to the information made accessible by the self-presentation task. It may also be possible that this effect is a chance occurrence or a statistical anomaly due to the strong relationship between self-esteem and self-esteem certainty. Interestingly, the relationship between self-esteem and certainty might be least constrained near the middle of the scale, which is where “low” self-esteem participants’ actual self-evaluations fell.4

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4 Although we made attempts to recruit a full distribution of available scores on self-esteem and certainty, this sample did not appear to deviate very much from the overall population from which it was drawn. Perhaps the recruitment efforts were not aggressive enough at targeting individuals low on these dimensions. In addition, because other labs utilize data from the same prescreening sessions, it is possible that the handful of low self-esteem people in the overall sample had been recruited by other labs (e.g., because low self-esteem people are also likely to be high in academic self-doubt, causal uncertainty, or depression), and thus had completed their experimental requirements by the time this study was conducted.
CHAPTER 3

EXPERIMENT 2

Experiment 2, was designed to build on the findings of Experiment 1 in a number of different ways. First, the attitude object was changed from the self to a novel, self-irrelevant attitude object, the Rhode Island Foster Care Program. The purpose of this change was to see if self-related certainty would validate thoughts that were not directly related to the self or self-esteem. Second, the present investigation sought to explore whether the effects of self-related certainty would extend to the prediction of behavioral intentions, and not merely attitudes as demonstrated in Experiment 1. Finally, instead of directing participants to self-generate thoughts that were positive or negative, argument quality was manipulated, which, based on pre-testing, the arguments used were expected to produce the expected pattern of positive and negative thoughts (Petty, Wells, & Brock, 1976). To prevent increasing levels of self-esteem certainty from causing participants to think less about these messages, as previous research on certainty has found (e.g., Briñol, Petty, Valle et al., 2007; Tiedens & Linton, 2001), all participants were instructed to think carefully about the messages and sessions were conducted early in the academic term, when participants were expected to be most motivated and when distractions (e.g., from midterms) were expected to be low.
Method

Participants

Participants were fifty-eight Ohio State University undergraduates enrolled in an introductory psychology course (43 female, 15 male).

Materials and Procedure

Procedure. Participants completed measures of self-esteem and self-esteem certainty during prescreening during the first week of the academic quarter. Approximately two weeks later, participants representing a full range of available self-esteem and self-esteem certainty values were invited to a study on their attitudes towards social programs. Specifically, all participants from the lower half of the available distributions on these measures were invited to participate along with a random sub-sample of the upper half of the distribution. During this session, participants read information related to a foster care program and indicated their interest in engaging in behaviors promoting the program.

Prescreening materials. As in Experiment 1, participants completed the RSE during a mass testing session early in the academic term (for the current sample, $\alpha = .91$, $M = 47.78$, $SD = 9.51$).

As in Experiment 1, the prescreening packet included a three-item measure of self-evaluation certainty. The items used in this study were: “How confident are you of your responses to the above questions?” (referring to the RSE), “How certain are you of your thoughts and feelings toward yourself?”, and “How sure are you that your thoughts and feelings toward your self are accurate?” These items were answered on 9-point scales ranging from 1 (not at all confident/certain/sure) to 9 (extremely
confident/certain/sure). The items were strongly correlated ($\alpha = .90$) and thus were combined to form an index of self-evaluation certainty ($M = 7.14$, $SD = 1.33$).

*Argument quality manipulation.* Ostensibly as a study on thoughts towards social programs, participants were instructed to carefully read information about a Rhode Island foster care program (adapted from Petty, Schumann, Richman, & Strathman, 1993). Participants were told that this information was taken from a transcript of a college radio editorial. After receiving a brief introduction to the foster care program, participants read either strong or weak arguments in favor of the program. The gist of one strong argument is that foster children are required to stay with their guardian until they are 18 years old to ensure the support of their family in dealing with life’s challenges. The comparable weak argument stated that foster children are required to stay with their guardian until they are 18 years old so that their foster parents had authority and control over them for as long as possible. These arguments have been used successfully in previous research and have been shown to produce the appropriate pattern of positive and negative thoughts (Petty et al., 1993). It is important to note that all arguments argued *in favor* of the foster care program, albeit with differing degrees of convincingness. All participants in this study were instructed to read the information carefully, and if they complied with this instruction, participants in the weak argument condition should have generated mostly negative thoughts with respect to the advocacy while participants in the strong argument condition should have generated mostly positive thoughts (Petty & Cacioppo, 1986; Petty et al., 1976).

*Thought listing.* After reading the message, participants were asked to list as many thoughts as they had in response to the message regarding the foster care program
Following the dependent measure, participants were asked to rate each of their thoughts in terms of their favorability with respect to the foster care plan. Specifically, participants were presented with each of their individual thoughts one at a time, and asked to categorize each thought as unfavorable, neutral, or favorable towards the proposal. From this measure, it was possible to determine whether the number and valence (computed as \( \frac{P-N}{P+N} \)) of thoughts differed as a function of self-esteem or self-related certainty.

**Dependent measure.** After reading about the foster care program, participants were told that the researchers associated with the project were seeking volunteers to help promote the program. Participants were asked how willing they would be to make phone calls, write letters, or sign a petition advocating the program as well as have their name put on a list of people supporting the program, and receive additional information about the program. These items were highly correlated (alpha = .85) and thus were averaged to create a measure of behavioral intent towards the foster care program.

Following completion of all materials, participants were probed for suspicion and debriefed.

**Results**

Analyses followed the regression procedures described in Experiment 1.

**Manipulation checks**

The valence of thoughts listed, based on participants self-coding of the thoughts, was submitted to a regression with argument quality and its interactions with RSE and

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5 Due to a programming error, the actual thoughts participants listed were not saved. However, from the thought ratings, it was possible to determine how many thoughts participants listed as well as the valence of the thoughts they listed. Thus, measures were available to examine whether thought valence and number varied as a function of the individual difference measures utilized in this study.
self-esteem certainty as predictors. In this analysis, a main effect of argument quality emerged \((B = .28), t(51) = 3.05, p = .004\), such that participants who read strong arguments generated more favorable thoughts than participants who read weak arguments. No other effects emerged \((ts < 1.52, ps > .13)\). When the same regression was conducted predicting the total number of thoughts listed, no significant effects emerged \((all ts < 1.15, ps > .25)\). Together these results indicate equivalent thoughts as a function of self-esteem and self-related certainty.

**Behavioral Intentions**

The behavioral intention measure was submitted to a regression with argument quality and its interactions with RSE and self-esteem certainty as predictors. In this analysis, a main effect of argument quality emerged \((B = .58), t(54) = 2.39, p = .021\). The condition x self-esteem certainty interaction again emerged \((B = .45), t(52) = 2.31, p = .025\) (see Figure 3), while the condition x RSE interaction was not significant \((B = .01), t(52) = .48, p = .636\). Decomposing the argument quality x self-esteem certainty interaction (at the mean level of RSE), a significant effect of argument quality is found among participants high \((B = 1.18), t(52) = 3.40, p = .001\), but not low \((B = -.02), t(52) = .09, p = .945\), in self-esteem certainty.

When the dependent measure was submitted to a full argument quality x RSE x self-esteem certainty regression no additional effects emerged.

Finally, as in Experiment 1, the initial analyses were conducted controlling for extremity of self-esteem. Specifically, behavioral intentions were predicted from argument quality and its interactions with RSE, self-esteem certainty, and self-esteem extremity. Results of this regression revealed no main effects or interactions involving
extremity of self-esteem ($ts < .39, ps > .69$), while the condition x self-esteem certainty interaction remained significant ($B = .49$), $t(50) = 2.42, p = .019$.

Discussion

This study lends further support to the idea that individual differences in self-related certainty can validate cognition. Specifically, as participants’ self-esteem certainty increased, so did the impact of argument quality on behavioral intentions. These results held after controlling for self-esteem, a construct that past research has implicated in similar processes (Harber, 2005). These results also held after controlling for extremity of self-esteem. The pattern of data obtained in this study failed to find support for the idea that self-esteem level validates thoughts. Instead, self-related certainty seems to be critical. Again, this is particularly novel, because certainty has generally been associated with less change in an evaluation, whereas in the current study, increases in self-related certainty lead participants to be more persuaded by strong rather than weak arguments.

As discussed in Experiment 1, a number of studies indicate that certainty stemming from a variety of sources can affect confidence in thoughts irrelevant to the basis of the certainty, such as those generated in response to persuasive messages (for a review, see Briñol & Petty, 2004). The present data show that individuals who are high in self-esteem certainty are more reliant on their thoughts and thus the data are consistent with the notion that self-related certainty can be attributed to self-irrelevant thoughts. Based on this finding, however, it is unclear whether certainty in participants’ self-esteem is a reflection of a more general individual difference in certainty or self-confidence. Because the goal of this research is to find individual differences that predict feelings of
validity across a wide range of contexts, in the next study multiple measures of certainty – some related to the self and some not – are employed. If a broad individual difference in certainty or self-confidence exists, it should impact certainty in a wide range of evaluations, and thus these other certainty measures might also be expected to predict the validation pattern.
CHAPTER 4
EXPERIMENT 3

As outlined above, it is unclear whether the effects obtained in Experiments 1 and 2 were due to self-esteem certainty specifically or to a more general certainty or self-confidence that affects both self-esteem certainty and the self-validation outcomes obtained in those studies. Of course, answering this question definitively is difficult to do in a single study, but measuring certainty in many objects – both self-relevant and not self-relevant – might lend insight into the construct responsible for the validation effects. If there is some kind of general self-confidence, then it would presumably apply to self-esteem as well as to a variety of other evaluations. If certainty in all of the evaluations assessed predicts the same pattern of data, then this would be strong evidence in support of a general form of self-confidence that is driving these effects.

Method

Participants

Participants were eighty-one Ohio State University undergraduates enrolled in an introductory psychology course. Two participants did not complete the thought generation task, and thus were removed from the sample, resulting in 79 participants for analysis (53 female, 26 male).
Materials and Procedure

Procedure. Participants were recruited for two ostensibly unrelated studies – one to gauge student opinion on a program being considered at the University of Oregon and the other on personality. During the session, participants generated arguments in favor of or in opposition to a proposed campus beautification plan at the University of Oregon before indicating their opinion of the plan. After completing several filler questionnaires, participants indicated their attitudes and associated certainty towards a series of self-irrelevant attitude objects, completed the RSE, a measure of self-esteem certainty, as well as a measure of participants’ self-ratings in several domains and the certainty associated with these self-ratings. Measures are described in the order in which they were presented to participants.

Thought generation task. Parallel to classic research on self-persuasion (Janis & King, 1954) and to the paradigm employed in Experiment 1, participants generated arguments supporting or opposing the University of Oregon Campus Beautification Plan. This plan was briefly described as a $3.5 million expenditure over three years by the University of Oregon to improve the physical beauty of the campus by planting new trees and gardens, as well as other landscape improvements. After reading this brief introduction to the plan, participants were randomly assigned to generate three strong arguments either supporting or opposing the plan.

Attitudes. After generating arguments for or against the campus beautification plan, participants were asked to report their opinions of it. Participants were asked a number of questions, including evaluative semantic differentials (unfavorable-favorable, negative-positive, against-in favor), the extent to which they thought the plan was a good
idea, the likelihood that the plan would gain approval, the likelihood of successful implementation of the plan, and the projected satisfaction of the university community. These items were highly correlated (alpha = .90) and thus were averaged to create a measure of attitudes towards the program.

*Attitude certainty.* After indicating their attitude towards the campus beautification plan, participants were asked to indicate their opinion of the plan. Specifically, participants were asked “How certain are you of your feelings toward the University of Oregon Beautification Project?” This item was included to see if self-esteem or self-related certainty affected attitude certainty.

*Thought ratings.* After indicating their opinions, participants were asked to rate the thoughts they listed as part of the experimental manipulation in terms of their certainty in them. Participants were presented with each thought individually and were asked to indicate how confident they were in the thought on a 9-point scale ($\alpha = .79$). Analyses involving thought certainty are reported in Chapter 6, which examines mediation of the obtained effects. In addition, participants also rated how easy and how difficult the thought-listing task was on separate 9-point scales. The difficulty item was reverse scored and the items were then averaged to create a measure of thought listing ease ($r = .48$, $M = 5.50$, $SD = 1.85$).

*Irrelevant attitude certainty.* After some brief filler questionnaires to separate the certainty assessments from the thought generation paradigm, participants completed an attitude survey. In this survey, they were asked to indicate their opinion towards ten self-irrelevant objects (affirmative action, George W. Bush, paper plates, coffee, football, Mexican food, Tide laundry detergent, sun bathing, the Pope, and acid rain) on a 9-point
semantic differential scale (anchored at extremely negative/against and extremely positive/in favor). Critical to the present investigation, for each attitude object, participants were asked how certain they were in their attitude. These certainty items were averaged to create an index of general attitude certainty ($\alpha = .73; M = 7.24, SD = 1.14$).

*Self-esteem.* As in Experiment 1, participants completed the RSE ($\alpha = .88, M = 48.57, SD = 8.78$).

*Self-esteem certainty.* As in the previous studies, self-esteem certainty was assessed. The items used in this study were: “How confident are you of your thoughts and feelings toward yourself?”, “How certain are you of your thoughts and feelings toward yourself?”, and “How sure are you that your thoughts and feelings toward yourself are accurate?” These items were answered on 9-point scales ranging from 1 (not at all confident/certain/sure) to 9 (extremely confident/certain/sure). The items were strongly correlated ($\alpha = .89$) and thus were combined to form an index of self-evaluation certainty ($M = 7.15, SD = 1.70$).

*Self-Attributes Questionnaire (SAQ) certainty.* In order to obtain a final measure of certainty, this one related to specific self-evaluations rather than their global self-esteem, participants completed the SAQ. Specifically, participants completed a 5-item version of the SAQ (Pelham & Swann, 1989), where they were asked to rate, relative to their peers, their intellectual / academic abilities, social skills / social competence, artistic and/or musical ability, athletic ability, and physical attractiveness. Following these initial
questions, participants’ responses were presented back to them, one at a time, and participants were asked to indicate their certainty in each response on a 10-point scale (α = .76; M = 7.95, SD = 1.41).

Following completion of all materials, participants were probed for suspicion and debriefed.

Results

Analyses followed the regression procedures described in Experiment 1.

Manipulation Checks

To ensure that the thought direction manipulation was successful and equivalent across all individuals, two independent coders, blind to condition, rated the positivity of each thought on a 9-point scale from 1 (extremely negative) to 9 (extremely positive). Each coder’s ratings were then averaged for each participant (α = .87 for coder 1; α = .89 for coder 2). The averages for each coder were then averaged (r = .45)6 and were submitted to a regression containing RSE, self-esteem certainty, and the interaction of these variables with thought direction. The only significant effect to emerge was the expected main effect of the thought direction manipulation (B = 1.55), t(75) = 15.01, p < .001. In addition, the ratings of how easy it was for participants to list their thoughts about the plan were submitted to the above regression. Significant main effects of self-esteem (B = -.19), t(75) = 2.85, p = .005, and self-esteem certainty (B = .98), t(75) = 2.85, p = .006, emerged. Because self-esteem and self-esteem certainty are highly correlated in this sample (r = .73), and because these effects are in opposite directions, it might be

6 Because the correlation between each coder was not as high as anticipated, analyses were conducted on each coder’s ratings. Analyses for each coder’s thought ratings revealed the exact same findings as those reported in the main text.
possible that these effects are exaggerated when entered simultaneously because of multicolinearity. Examining the zero-order correlations of these variables with thought listing ease reveals much weaker effects (for self-esteem, $r = -.13$, $p = .24$; for self-esteem certainty, $r = .11$, $p = .32$). Thus, although not conclusive at ruling out differential ease across participants, these additional analyses are consistent with the idea that the manipulation was of similar ease across condition and level of self-evaluation and self-evaluation certainty.\(^7\)

In addition, because self-esteem and the three measures of certainty were measured following the thought direction induction, analyses were conducted to be sure that these measures were not affected by the manipulation. Each of these measures was submitted to an independent samples t-test. No effects of thought direction emerged ($t$s $< 1.16$, $p$s $> .25$).

**Attitudes: Self-esteem, Self-esteem Certainty and Extremity Analyses**

In a regression analysis, RSE, self-esteem certainty, and the interaction of these variables with thought direction were used to predict attitudes toward the University of Oregon Campus Beautification Plan. First, there were main effects of thought direction ($B = .47$), $t(75) = 3.22$, $p = .002$, such that participants who generated positive (vs. negative) thoughts evinced more positive evaluations of the proposal. These effects were qualified by the predicted thought direction x self-esteem confidence interaction ($B = .32$), $t(73) = 2.50$, $p = .015$. This interaction was such that participants high in self-esteem confidence exhibited a main effect of thought direction ($B = 1.00$), $t(73) = 3.93$, $p$...

\(^7\) The strong correlation between self-esteem and self-esteem certainty in this sample might raise concerns about the validity of the regression analyses reported. However, for all analyses reported below and in all other studies, the effects of self-evaluation or self-evaluation certainty were similar when not controlling for each other.
< .001, while participants low in self-evaluation confidence did not (B = -.09), t(73) = -.26, p = .79. As in Experiments 1 and 2, the measure of self-evaluation did not interact with condition (B = -.02), t(73) = .93, p = .354.

As in Experiments 1 and 2, the dependent variable was submitted to a full thought direction x self-evaluation confidence x self-evaluation design. When the full condition x self-esteem x self-esteem certainty design was employed, no additional effects emerged.

Finally, as in Experiments 1 and 2, the initial analyses were again conducted controlling for extremity of self-esteem. Specifically, a regression predicting attitudes from argument quality and its interactions with RSE, self-esteem certainty, and self-esteem extremity was conducted. Results of this regression revealed no main effects or interactions involving extremity (ts < .99, ps > .32), while the condition x self-esteem certainty interaction remained significant (B = .48), t(71) = 2.58, p = .012.

Atitudes: Other Certainty Measures as Predictors

In addition to measuring self-esteem certainty, as in the first two studies, this study also included measures of certainty in other self-attributes (i.e., items from the SAQ) and in self-irrelevant attitudes. These measures of certainty were moderately correlated (see Table 1). These measures of certainty were used to predict attitudes using separate thought direction x certainty regressions with the inclusion of self-esteem and its interaction with thought direction.

Prior to the analyses with attitudes on the dependent measure, the valence of thoughts participants listed as well as the ease with which they completed the thought listing task were submitted to regressions with condition and its interactions with self-esteem and certainty as predictors, with separate analyses using SAQ certainty and
attitude certainty. As with self-esteem certainty, no main effects or interactions involving either SAQ certainty ($t < .64, ps > .52$) or attitude certainty ($t < .15, ps > .88$) emerged on the valence of thoughts listed. Also parallel with the effects obtained on self-esteem certainty, there was a main effect of SAQ certainty on ease of thought listing ($B = .91$), $t(75) = 3.22, p = .002$, that was only slightly reduced when not controlling for self-esteem ($r = .30, p = .007$). For irrelevant attitude certainty, the main effect of SAQ certainty on ease was marginal both in the regression containing self-esteem ($B = .72$), $t(75) = 1.95, p = .055$, and as a zero-order correlation ($r = .19, p = .096$). Although the valence of participants’ thoughts did not differ as a function of self-esteem and individual differences in certainty, the ease with which participants reported completing the thought listing task may have differed as a function of certainty.  

SAQ certainty. Examining SAQ certainty, which represents certainty in self-attributes other than global self-esteem, a main effect of thought direction was obtained ($B = .46$), $t(75) = 3.12, p = .003$, as well as a marginal interaction of SAQ certainty with thought direction ($B = .19$), $t(73) = 1.78, p = .079$. Consistent with the effects obtained with self-esteem certainty, decomposition of this interaction revealed a significant effect.

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8 It is unclear if this is problematic for the present investigation. The ease with which a person completes a task, such as generating thoughts about something, is one variable that has been shown to increase confidence (e.g., Tormala et al., 2002). This appears to present a confound because both ease and self-related confidence lead to the same prediction. However, it is possible that self-reported ease might be an indication of the confidence people hold in their thoughts (i.e., the link between confidence and perceived ease might be bi-directional). Furthermore, frequent feelings of ease might be one critical factor that affects a person’s level of self-confidence. This final point is addressed in the general discussion. It should also be noted that this is the only study where the ease of thought generation differs as a function of the individual differences assessed, and as such, the findings of this study might not represent a more general trend.
of thought direction among high SAQ certainty participants \((B = .73), t(73) = 3.50, p = .001\), but not among low SAQ certainty participants \((B = .18), t(73) = .86, p = .395\).\(^9\)

**Self-irrelevant attitude certainty.** Conducting a parallel analysis with certainty in attitudes towards self-unrelated objects, the main effect of thought direction again emerged \((B = .47), t(75) = 3.19, p = .002\). However, no interaction of irrelevant attitude certainty with thought direction emerged \((B = .08), t(73) = .63, p = .533\).

**Effects on Attitude Certainty**

Recall that participants’ certainty in their opinion of the campus beautification plan was also assessed. When this measure was submitted to a regression with RSE, self-esteem certainty and the interaction of these variables with thought direction, only a main effect of self-esteem certainty on attitude certainty emerged \((B = .56), t(75) = 3.03, p = .003\) (see also Table 1).

**Discussion**

This study lends further support to the proposal that individual differences in self-related certainty can determine whether or not people use their thoughts, presumably by serving as a source of thought validation. Specifically, as participants’ self-esteem certainty increased so did the impact of their self-generated thoughts on their attitudes towards a novel topic. This effect held after controlling for self-esteem and its interaction with condition as well as self-esteem extremity and its interaction with condition.

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\(^9\) When using the average valence of participants’ SAQ responses in place of RSE in the primary analyses, the effect of SAQ certainty became non-significant and a marginal interaction of SAQ valence emerged \((B = .29), t(73) = 1.84, p = .069\), in a pattern consistent with Harber’s (2005) findings. Interestingly, inspection of analyses using individual SAQ items indicates the strongest effect on participants’ perceived social skills, while participants’ perceived intellectual ability, which seems most relevant to Harber’s predictions, was not a significant predictor over SAQ certainty.
Furthermore, the effects extended, at least marginally, to another measure of self-related certainty, participants’ certainty in their self-ratings on SAQ items.

The pattern of results obtained using different types of certainty is also of interest. Results revealed the strongest pattern of moderation using self-esteem certainty, a marginal interaction using SAQ certainty, and no significant moderation using self-irrelevant attitude certainty. Thus, it appears that as the measure of certainty became closer to the global self-evaluation, the strength of the self-validation effect increased. Why might this be? If a general self-confidence is underlying the effects, it may be that self-esteem certainty is more closely related to this global self-confidence than are the other forms of certainty assessed. This could occur because the general self-confidence is self-specific, because self-related constructs are more accessible, on average, and thus are more likely to be plausible targets of this general self-confidence, or because self-related constructs are thought about the most, and thus have had more opportunities for general self-confidence to impact the certainty of these evaluations.

So, although Experiment 3 extends the previous two studies in a number of ways, the critical issue of whether the effects are due to a general form of self-confidence or confidence related to self-evaluations specifically was not resolved with these data. In the next study, self-evaluation certainty as well as certainty in evaluations of specific self-attributes and self-unrelated attitudes are again assessed. However, to this set of measures, several sets of items intended to measure a global sense of self-confidence are added. By so doing, the goal is to determine not only which construct is primarily responsible for the effects, but also what the relationships are between these various forms of confidence.
CHAPTER 5
EXPERIMENT 4

As outlined above, it is unclear whether the effects obtained in previous studies were due to a general certainty/self-confidence that affects both self-esteem certainty and the self-validation processes obtained in those studies, or if the effects were due to self-evaluation certainty specifically. In this study it was hoped that measuring general self-confidence, in addition to the certainty measures included in Experiment 3, might lend insight into the construct responsible for the effects. If certainty that is related to self-evaluations moderates the use of participants’ thoughts but certainty unrelated to the self does not, then this provides a piece of evidence consistent with the idea that it is self-esteem certainty that is specifically responsible for the obtained effects. However, if general self-confidence is able to produce the same pattern of results, then perhaps the results are due to a more general form of certainty that does not specifically stem from self-evaluations.

Additionally, although the pattern of results obtained in the first three studies is consistent with the self-validation mechanism proposed, each study has provided conceptually similar evidence for the role of self-related certainty on attitude change. Because validation processes generally require high levels of thought (e.g., Petty et al., 2002; Petty, Briñol, Tormala et al., 2007), the present investigation included an individual difference variable associated with the amount of thought people engage in,
People high in NFC tend to exert more effort on difficult cognitive tasks (Cacioppo & Petty, 1982), think more deeply about persuasive messages (Cacioppo, Petty, Kao, & Rodriguez, 1986), and form stronger attitudes (Haugtvedt & Petty, 1992) that are based on more knowledge (Cacioppo et al., 1986) than people low in NFC. In addition, and most important to the current study, individuals high in NFC are more likely than individuals low in NFC to show self-validation effects (Briñol, Petty, & Barden, 2007; Petty et al., 2002). Because of this, support for the proposed mechanism would increase to the extent that the effects of self-related certainty grow stronger as NFC increases.

In the present investigation, the same paradigm described in Experiment 3 was utilized with the addition of several measures. First, several measures of global self-confidence, both taken from previous research (Mirels et al., 2002) and developed specifically for this study were added. Second, the NFC scale (Cacioppo, Petty, & Kao, 1984) was added to assess chronic individual differences in amount of thinking.

Method

Participants

Participants were 126 Ohio State University undergraduates enrolled in an introductory psychology course. Seven participants did not complete the thought generation task, and thus were removed from the sample, resulting in 119 participants for analysis (68 female, 51 male).

Materials and Procedure

Procedure. As in Experiment 3, participants were recruited to two ostensibly unrelated studies – one to gauge student opinion on a program being considered at the
University of Oregon and the other on personality. During this session, participants generated arguments in favor of or in opposition to a proposed campus beautification plan at the University of Oregon before indicating their opinion of the plan. Participants then completed the NFC scale. This was followed by measures of self-irrelevant attitudes and certainty, self-evaluation and associated certainty, SAQ evaluations and certainty, and several measures of global self-confidence. While the NFC scale always came first, followed by the self-irrelevant attitude certainty, all remaining measures were presented in a random order for each participant.

**Thought generation task.** Participants completed the same thought generation task described in Experiment 3.

**Attitudes.** Participants completed the same dependent measures described in Experiment 3. These items were again highly correlated (alpha = .91) and thus were averaged to create a measure of attitudes towards the campus beautification program.

**Thought ratings.** After indicating their opinions, participants were asked to rate the thoughts they listed as part of the experimental manipulation in terms of their certainty in them using the items described in Experiment 3 (α = .77). Analyses involving thought certainty are reported in Chapter 6. In addition, participants also rated how easy and how difficult the thought-listing task was on separate 9-point scales (r = .38, M = 5.77, SD = 1.68).

**Need for cognition scale.** Immediately following the above items was the 18-item need for cognition scale (Cacioppo & Petty, 1982; Cacioppo et al., 1984). The NFC scale is a well-validated individual difference measure assessing individuals’ intrinsic enjoyment of thinking (for a review, see Cacioppo et al., 1996). It includes items such as
“I would prefer complex to simple problems” and “Thinking is not my idea of fun” (reverse scored). Each item is answered on a 5-point Likert scale ranging from (1) extremely uncharacteristic of me to (5) extremely characteristic of me. Scale items were summed to create a measure of NFC ($\alpha = .84; M = 60.08, SD = 10.65$).

Self-evaluation. Whereas Experiments 1-3 used the RSE, in this study self-evaluation was assessed using semantic differential scales typically used in research on attitudes (e.g., Crites, Fabrigar, & Petty, 1994). Specifically, participants were asked to rate themselves on a series of 9-point scales anchored at extremely useless-extremely useful, extremely negative-extremely positive, extremely bad-extremely good, and extremely worthless-extremely valuable. These items were averaged to form a composite reflecting self-evaluation ($\alpha = .83; M = 7.14, SD = 1.15$).

Self-esteem confidence. As in the previous studies, self-evaluation certainty was assessed, this time using a single 9-point scale reflecting participants’ certainty in their responses to the self-evaluation items. Specifically, participants were asked, “How confident are you of your response to the previous questions (i.e., regarding how useful / positive / good / valuable you view yourself)” (anchored at not at all confident-extremely confident; $M = 7.49, SD = 1.40$). The changes to the self-evaluation and self-evaluation certainty measures were made so that they would be more comparable to the irrelevant attitude and attitude certainty questions. Perhaps the differences in their predictive utility in Experiment 3 were due to the nature of the measures used (e.g., in terms of their specificity, construal of scale anchors, etc.). In addition, by assessing self-evaluation certainty in this manner, responses are very closely tied to participants’ responses to the self-evaluation items, whereas the measures utilized in previous studies might have been
more open to interpretation by participants, and as a result, could have inadvertently been picking up on more general self-confidence (either as a trait variable or in terms of judgments).

**Self-Attributes Questionnaire (SAQ) certainty.** As in Experiment 3, participants completed self-ratings on five SAQ attributes and then indicated their certainty in these responses. The five certainty items were averaged to create the SAQ certainty measure ($\alpha = .67; M = 7.57, SD = 1.26$).

**Irrelevant attitude certainty.** Participants completed the same self-irrelevant attitude and attitude certainty items described in Experiment 3. The certainty items were averaged to create an index of general attitude certainty ($\alpha = .63; M = 7.21, SD = .98$).

**Judgmental self-confidence.** The Judgmental Self-Doubt Scale (JSDS, Mirels et al., 2002), is a 19-item scale measuring general doubt or confidence in individuals’ own judgments as a chronic individual difference. This scale has been associated with confidence in responses to a range of decisions (e.g., decisions in moral dilemmas, probability estimates), particularly when the decisions are difficult. It includes items such as “I often don’t trust myself to make the right decision” and “In almost all situations I am confident of my ability to make the right choices” (reverse scored). Each item was answered on a 7-point scale ranging from (-3) strongly disagree to (3) strongly agree. Responses to items were averaged to compute the scale ($\alpha = .92; M = .54, SD = .98$).

As a second measure of judgmental self-confidence, a 4-item scale was designed explicitly for this purpose. Specifically, participants indicated the extent to which they agreed with statements using 9-point scales (anchored at disagree very much and agree
very much). The specific items used were: “I am always confident in my thoughts, no matter what I'm thinking about,” “I often feel unsure of my thoughts and opinions” (reverse scored), “More often than not I feel confident in my opinions,” and “My thoughts and opinions are generally very clear in my mind.” These items were averaged to form an ad hoc judgmental self-confidence scale ($\alpha = .63; M = 6.14, SD = 1.39$).

**Trait self-confidence.** As a final and more global measure of self-confidence, participants were asked to rate themselves on a number of traits, including two related to self-confidence. Specifically, participants rated how “Confident” and “Self-Confident” they were using 9-point scales anchored at (1) not at all and (9) very much. Then, participants were asked to indicate the extent to which they agreed with the statements “I am a confident person” and “I am a doubtful person” (reverse scored), on 9-point scales anchored at disagree very much and agree very much. These items were averaged to create a measure of trait self-confidence that was not explicitly tied to confidence in judgments, as were the above measures ($\alpha = .83; M = 6.51, SD = 1.55$). Unlike the other measures of confidence employed, this measure treats confidence as a primary cognition. That is, for the earlier measures, the confidence was always “about” something (e.g., confidence in one’s self-esteem level, confidence in one’s judgments), but for trait self-confidence, confidence is the primary cognition (e.g., “I am a confident person”).

Although it is unclear if confidence as a primary cognition can affect secondary thought, there is evidence that confidence as a secondary thought can modulate the impact of confidence as a primary thought (i.e., people can be confident or not in their doubts, or confident or not in their confidence; Wichman et al., 2007).
Following completion of all materials, participants were probed for suspicion and debriefed.

Results

Analyses followed the regression procedures described in Experiment 1.

Manipulation Checks

To ensure that the thought direction manipulation was successful and equivalent across all individuals, two independent coders, blind to condition, rate the positivity of each thought on a 9-point scale from 1 (extremely negative) to 9 (extremely positive). Each coder’s ratings were then averaged for each participant ($\alpha = .92$ for coder 1; $\alpha = .78$ for coder 2). The averages for each coder were then averaged ($r = .49$) and were submitted to a regression containing self-evaluation, self-evaluation certainty, and the interaction of these variables with thought direction. The only significant effect to emerge was the expected main effect of the thought direction manipulation ($B = 1.43$), $t(115) = 18.46, p < .001$. In addition, the ratings of how easy it was for participants to list their thoughts about the plan were submitted to the above regression. No significant effects emerged (all $ts < 1.32, ps > .19$), indicating that the manipulation was of similar ease across condition and level of self-evaluation and self-evaluation certainty.

As an additional control, one coder (coder 1) rated each thought for how compelling it seemed (i.e., how convinced she would be by each argument in favor of / in opposition to the proposal; alpha = .69). This rating was conducted to determine if thought quality, independent of valence, varied as a function of self-esteem or self-related

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10 Because the correlation between each coder was not as high as anticipated, analyses were conducted on each coder’s ratings. Analyses for each coder’s thought ratings revealed the exact same findings as those reported in the main text.
confidence. When this item was submitted to a regression containing self-evaluation, self-evaluation certainty, and the interaction of these variables with thought direction, the only significant effect to emerge was a main effect of thought direction \((B = .39), t(115) = 2.33, p = .021\). There was a non-significant tendency for people high in self-evaluation to be perceived as generating more compelling arguments \((B = .20), t(115) = 1.52, p = .132\). These thoughts were also coded with respect to how confident participants seemed in their expression of each thought (alpha = .73). When the same regression was used to predict this observer-rated confidence, there was a main effect of thought direction on perceived confidence \((B = .62), t(115) = 3.94, p < .001\), with people in the positive argument condition writing thoughts rated as more confident. Neither self-evaluation nor self-evaluation confidence affected the ratings of confidence as perceived by the judge.

The above analyses, predicting thought valence and ease of thought listing, were repeated for each measure of confidence used in this study (with self-evaluation and its interaction entered simultaneously). For these dependent measures, these analyses replicated those reported for self-evaluation confidence. That is, there were no significant effects predicting ease of thought listing and only a main effect of experimental condition predicting thought valence across every analysis.

When comparable analyses were conducted on observer-rated thought compellingness and perceived confidence, additional effects emerged using some measures of confidence as predictors. For SAQ certainty, no additional effects emerged. For irrelevant attitude certainty, there was a marginal tendency for people high in attitude certainty to be perceived as generating more compelling arguments \((B = .31), t(115) = 1.83, p = .069\), and a non-significant trend for them to be perceived as being more
confident in their thoughts \((B = .24), t(115) = 1.48, p = .142.\) For trait self-confidence, there was a significant tendency for people high in trait self-confidence to be perceived as generating more compelling arguments \((B = .29), t(115) = 2.33, p = .022.\) For judgmental self-confidence, there was a non-significant tendency for people high in judgmental self-confidence to be perceived as generating more compelling arguments \((B = .29), t(115) = 1.51, p = .133,\) and a significant tendency for them to be perceived as more confident in their thoughts \((B = .43), t(115) = 2.35, p = .021.\) For the global self-confidence aggregate (described below), there was a significant tendency for people high in global self-confidence to be perceived as generating more compelling arguments \((B = .46), t(115) = 2.16, p = .033,\) and a marginal tendency for them to be perceived as more confident in their thoughts \((B = .35), t(115) = 1.72, p = .088.\)

The compellingness findings might seem problematic, because they might present an alternative explanation for they key findings on self-related confidence (i.e., if people high in self-related confidence generate more compelling arguments, it could be this difference, and not self-validation, that is responsible for any effects on attitudes. However, arguments that are conveyed with confidence might be perceived as being more compelling by a naïve coder. That is, the arguments might be of comparable actual quality, but because they are conveyed by individuals who differ in their self-confidence, they might be conveyed in a manner that seems more or less compelling. Indeed, when any of the above analyses were conducted predicting compellingness with perceived confidence as a covariate, the main effect of self-related confidence disappeared, providing some potential evidence for this claim.
In addition, because the measures of self-evaluation and certainty were administered following the thought direction induction, analyses were conducted to be sure that these measures were not affected by the manipulation. Each of these measures was submitted to an independent samples t-test. No effects of thought direction emerged ($t$s < 1.25, $p$s > .21).

**Attitudes: Self-evaluation, Self-evaluation Confidence, and Extremity Analyses**

In a regression analysis, self-evaluation, self-evaluation confidence, and the interaction of these variables with thought direction were used to predict attitudes toward the University of Oregon Campus Beautification Plan. First, there were main effects of thought direction and self-evaluation confidence, such that participants who generated positive (vs. negative) thoughts ($B = .61$), $t(115) = 4.46$, $p < .001$, and participants high (vs. low) in self-evaluation certainty ($B = .24$), $t(115) = 2.18$, $p = .031$, evinced more positive evaluations of the proposal. These effects were qualified by the predicted thought direction x self-evaluation confidence interaction ($B = .19$), $t(113) = 1.76$, $p = .086$. This interaction was such that participants high in self-evaluation confidence exhibited a main effect of thought direction ($B = .87$), $t(113) = 4.28$, $p < .001$, whereas participants low in self-evaluation confidence did so to a lesser extent ($B = .38$), $t(113) = 2.56$, $p = .012$. As in Experiments 1-3, the measure of self-evaluation did not interact with condition ($B = .05$), $t(113) = .56$, ns.

As in Experiments 1-3, the dependent variable was also submitted to a full thought direction x self-evaluation confidence x self-evaluation design. In addition to reproducing the above effects (thought direction x self-evaluation confidence interaction ($B = .15$), $t(112) = 1.92$, $p = .058$), this analysis also revealed a marginal self-evaluation
confidence x self-evaluation interaction \((B = .11), t(112) = 1.70, p = .091\) such that the main effect of certainty was strongest among participants high in self-evaluation. The 3-way interaction did not approach significance \((B = -.01), t(111) = .11, p = .913\).

Finally, in accord with Experiments 1-3, the initial analyses were again conducted controlling for extremity of self-esteem. Specifically, a regression was conducted predicting attitudes from thought direction and its interactions with RSE, self-esteem certainty, and self-esteem extremity. Results of this regression revealed no main effects or interactions involving extremity \((ts < 1.44, ps > .15)\). However, in these analyses, the thought direction x self-evaluation certainty interaction also dropped to non-significance \((B = .12), t(111) = 1.49, p = .138\).

*Attitudes: Other Certainty Measures as Predictors*

See Table 2 for the correlations among measures of confidence.

*SAQ certainty analyses.* As in Experiment 3, SAQ certainty, self-evaluation, and the interaction of these factors with thought direction were entered into a regression predicting attitudes toward the University of Oregon Campus Beautification Plan. In addition to the main effect of thought direction \((B = .55), t(115) = 5.38, p < .001\), an interaction of SAQ certainty with thought direction also emerged \((B = .15), t(113) = 1.73, p = .086\). This interaction was such that participants high in SAQ certainty exhibited a main effect of thought direction \((B = .73), t(113) = 5.00, p < .001\), while participants low in SAQ certainty did so to a lesser extent \((B = .37), t(113) = 2.53, p = .013.\)

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\(^{11}\) Comparable results were obtained when using the average valence of participants SAQ responses in place of RSE in the primary analyses.
As in the analyses reported above, the dependent variable was also submitted to a full thought direction x SAQ certainty x self-evaluation regression. This analysis reproduced the above effects, while the 3-way interaction did not attain significance ($B = .02$), $t(111) = .22, p = .829$.

Finally, as in the earlier experiments, the SAQ certainty analyses were conducted controlling for extremity of self-esteem. Specifically, a regression predicting attitudes from thought direction and its interactions with self-evaluation, SAQ certainty, and self-esteem extremity was conducted. Results of this regression revealed no main effects or interactions involving extremity ($ts < 1.24, ps > .22$), although the thought direction x SAQ certainty interaction was no longer significant ($B = .13$), $t(111) = 1.45, p = .151$.

*Irrelevant attitude certainty analyses.* As in Experiment 3, certainty in irrelevant attitudes, self-evaluation, and the interaction of these factors with thought direction were used to predict attitudes toward the University of Oregon Campus Beautification Plan. In addition to the main effect of thought direction ($B = .56$), $t(115) = 5.56, p < .001$, there was a main effect of irrelevant attitude certainty ($B = .19$), $t(115) = 1.80, p = .075$. The interaction of irrelevant attitude certainty with condition did not achieve significance ($B = .14$), $t(113) = 1.39, p = .167$, but the pattern of data was in the predicted direction.

*Judgmental self-confidence analyses.* To create an index of judgmental self-confidence, the two sets of items included to assess this construct (JSDS and ad hoc self-confidence scale) were standardized and reverse scored where needed (JSDS). These items were strongly correlated and produced parallel findings when analyzed separated, so these standardized items were averaged to create a composite measure of judgmental self-confidence ($r = .60; M = .01, SD = .90$).
Parallel to the analyses conducted with other measures, judgmental self-confidence, self-evaluation, and the interaction of these variables with thought direction was used to predict attitudes toward the University of Oregon Campus Beautification Plan. There was a main effect of thought direction, such that participants who generated positive (vs. negative) thoughts reported more positive evaluations of the proposal ($B = .55$), $t(115) = 5.43, p < .001$. This effect was qualified by the predicted thought direction x judgmental self-confidence interaction ($B = .31$), $t(113) = 2.67, p = .009$. This interaction was such that participants high in judgmental self-confidence exhibited a main effect of thought direction ($B = .83$), $t(113) = 5.77, p < .001$, whereas participants low in self-confidence did so to a lesser extent ($B = .27$), $t(113) = 1.89, p = .061$. As in Experiments 1-3, the measure of self-evaluation did not interact with condition ($B = .07$), $t(113) = .73, p = .466$.

As in Experiments 1-3, the dependent variable was also submitted to a full thought direction x global self-confidence x self-evaluation regression. This analysis reproduced the above effects, while the 3-way interaction did not attain significance ($B = .07$), $t(111) = .74, p = .463$.

Finally, as in the earlier experiments, the judgmental self-confidence analyses were conducted controlling for extremity of self-esteem. Specifically, a regression predicting attitudes from thought direction and its interactions with self-evaluation, global self-confidence, and self-esteem extremity was conducted. Results of this regression revealed no main effects or interactions involving extremity ($ts < 1.36, ps > .17$), while the thought direction x judgmental self-confidence interaction remained significant ($B = .30$), $t(111) = 2.55, p = .012$. 

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Trait self-confidence analyses. Parallel to the analyses conducted with other measures, trait self-confidence, self-evaluation, and the interaction of these variables with thought direction was used to predict attitudes toward the University of Oregon Campus Beautification Plan. There was a main effect of thought direction, such that participants who generated positive (vs. negative) thoughts reported more positive evaluations of the proposal ($B = .55$), $t(115) = 5.43, p < .001$. This effect was qualified by the predicted thought direction x trait self-confidence interaction ($B = .15$), $t(113) = 1.84, p = .068$. This interaction was such that participants high in trait self-confidence exhibited a main effect of thought direction ($B = .79$), $t(113) = 4.82, p < .001$, whereas participants low in self-confidence did so to a lesser extent ($B = .33$), $t(113) = 2.14, p = .034$. As in Experiments 1-3, the measure of self-evaluation did not interact with condition ($B = .04$), $t(113) = .23, p = .745$.

As in the analyses reported above, the dependent variable was also submitted to a full thought direction x trait self-confidence x self-evaluation regression. This analysis reproduced the above effects, with the addition of a trait self-confidence x self-evaluation interaction ($B = .14$), $t(112) = 2.83, p = .006$, such that a main effect of self-confidence emerged as self-evaluation increased, while the 3-way interaction did not attain significance ($B = .06$), $t(111) = 1.19, p = .237$.

Finally, as in the earlier experiments, the trait self-confidence analyses were conducted controlling for extremity of self-esteem. Specifically, a regression predicting attitudes from thought direction and its interactions with self-evaluation, trait self-confidence, and self-esteem extremity was conducted. Results of this regression revealed
no main effects or interactions involving extremity \((ts < 1.63, ps > .10)\), while the thought direction x trait self-confidence interaction remained significant \((B = .17), t(111) = 2.06, p = .042\).

**Self-confidence aggregate analyses.** The pattern of results obtained above is highly consistent across measures of confidence. Because of the consistency of this pattern, analyses were conducted on a single global measure of self-related confidence. To create this index, the measures of self-esteem confidence, SAQ certainty, irrelevant attitude certainty, JSDS, the ad hoc judgmental confidence scale, and trait self-confidence were submitted to factor analysis using principal axis extraction. The scree plot revealed a single factor solution, accounting for 44.14 percent of the variance (see Table 3 for factor loadings). It is noteworthy that the highest factor loading was associated with the most global trait self-confidence measure. From the factor analysis, factor scores were saved. These factor scores represent a weighted average of global self-related confidence, based on the items included in the factor analysis.

Parallel to the analyses conducted with other measures, global self-confidence, self-evaluation, and the interaction of these variables with thought direction was used to predict attitudes toward the University of Oregon Campus Beautification Plan. There was a main effect of thought direction, such that participants who generated positive (vs. negative) thoughts reported more positive evaluations of the proposal \((B = .55), t(115) = 5.47, p < .001\). This effect was qualified by the predicted thought direction x global self-confidence interaction \((B = .41), t(113) = 3.12, p = .002\) (see Figure 5). This interaction was such that participants high in global self-confidence exhibited a main effect of thought direction \((B = .93), t(113) = 6.00, p < .001\), whereas participants low in self-
confidence did not \((B = .19), t(113) = 1.23, p = .222.\) As in Experiments 1-3, the measure of self-evaluation did not interact with condition \((B = -.04), t(113) = .39, p = .696.\)\(^\text{12}\)

As in the analyses reported above, the dependent variable was also submitted to a full thought direction x global self-confidence x self-evaluation regression. This analysis reproduced the above effects, while the 3-way interaction did not attain significance \((B = .10), t(111) = 1.10, p = .274.\)

Finally, as in the earlier experiments, the judgmental self-confidence analyses were conducted controlling for extremity of self-esteem. Specifically, a regression predicting attitudes from thought direction and its interactions with self-evaluation, global self-confidence, and self-esteem extremity was conducted. Results of this regression revealed no main effects or interactions involving extremity \((ts < 1.34, ps > .18),\) while the thought direction x global self-confidence interaction remained significant \((B = .41), t(111) = 3.04, p = .003.\)

**Need for Cognition Moderation**

Because self-validation effects generally occur when people are thinking a lot (Briñol & Petty, 2004; Petty et al., 2002; Petty, Briñol, Tormala et al., 2007), analyses

\(^{12}\) To further reduce concerns about the impact of self-related confidence on compellingness, we conducted these analyses (i.e., thought direction and its interactions with global self-confidence and self-evaluation) with the addition of thought compellingness and its interaction with condition. In these analyses, the thought direction x global self-confidence interaction remained significant \((B = .38), t(111) = 2.91, p = .004,\) while the thought direction x compellingness interaction was not \((B = .08), t(111) = 1.44, p = .152.\) Similar analyses were conducted using observer-rated confidence in place of compellingness. In these analyses, the thought direction x global self-confidence interaction remained significant \((B = .36), t(111) = 2.11, p = .008,\) as was the thought direction x observer-rated confidence interaction \((B = .11), t(111) = 1.96, p = .053.\) Using the mediational analyses described in Chapter 6, the reduction in the thought direction x global self-confidence interaction was not significant, Sobel = 1.29, \(p = .20.\) Regardless of whether the observer-rated confidence mediates the moderating impact of global self-confidence on attitudes, the obtained interaction indicates that a naive observer is able to detect participants’ confidence as expressed in their thoughts. This is a novel finding, as the amount of information (generally single-sentence arguments) the coder had regarding each participant was minimal, and yet a reasonably valid assessment of participants’ confidence was detected.
were conducted to explore whether the above effects occurred predominantly among individuals who chronically engage in effortful thought – those high in need for cognition. Analyses were conducted separately using each measure of confidence reported above. The pattern of results across these measures was remarkably consistent (see Table 4 for a summary), so below, only the analyses involving the global self-related confidence aggregate are reported. Although analyses controlling for self-evaluation and its interactions with condition and NFC are not reported, adding these factors to the analyses does not appreciably change the results.

Attitudes towards the University of Oregon Campus Beautification Plan were submitted to a thought direction x global self-confidence x NFC regression analysis. In addition to the lower order effects reported in the analyses above, a 3-way interaction emerged ($B = .024, t(111) = 2.53, p = .013$ (see Figure 6). There was a significant interaction of condition with global self-confidence among high NFC individuals ($B = .68, t(111) = 4.32, p < .001$), but not among low NFC individuals ($B = .17, t(111) = 1.22, p = .224$). Among individuals high in NFC, there was a main effect of thought direction among those also high in global self-confidence ($B = .93, t(111) = 5.36, p < .001$), but not among those low in global self-confidence ($B = -.30, t(111) = 1.32, p = .191$).

Discussion

This study lends further support to the idea that individual differences in self-related certainty can validate cognition. This pattern was observed across several measures of certainty. Specifically, as participants’ self-evaluation confidence, SAQ certainty, judgmental self-confidence, trait self-confidence, or global self-confidence (i.e., the aggregate measure) increased so did the impact of self-generated arguments on
attitudes towards a novel topic. These effects held after controlling for self-evaluation and its interaction with thought direction and generally held after controlling for the extremity of participants’ self-evaluation and its interaction with condition. Furthermore, these effects were obtained primarily among individuals who chronically engage in effortful thought, those high in NFC. This is an important advance, because prior research has indicated that validation processes occur among individuals engaging in effortful thought (Briñol & Petty, 2004; Petty et al., 2002; Petty, Briñol, Tormala et al., 2007).

One goal of the present study was to determine whether the effects obtained in previous studies were due to global self-confidence or to more specific certainty in self-evaluations. Several pieces of evidence from this study point to a more global self-confidence. First and foremost, the strongest predictor of the validation pattern was the global self-confidence index that represented an aggregate of all measures of self-confidence. Furthermore, the individual confidence measure that loaded most highly on this general factor was the measure of global trait self-confidence. Although the measures of self-related confidence were not entirely overlapping constructs (see Table 2), the common variance they shared seems to be very consequential in predicting self-validation effects.

In addition, the analyses examining NFC moderation of the current effects also support a more general form of self-confidence. Whereas Experiment 3 only obtained validation patterns on certainty measures that were related to the self, high NFC individuals in the current data set demonstrated a validation effect that varied along every measure of confidence/certainty included in the study, including certainty in self-
irrelevant attitude objects. This is evidence for a more general form of confidence because these attitudes, while potentially construed as a part of the self, are not self-evaluations (like the RSE or SAQ). So, a more general form of self-confidence seems to be the most likely source of the validation pattern observed across all of the predictors.

Of course, validation effects of self-evaluation certainty were still found across four studies. As described in the discussion of Experiment 3, there are a number of reasons to believe that self-evaluation certainty would be strongly related to global self-confidence. As can be seen in the factor analysis reported in Table 3, the items that were included to measure judgmental and trait self-confidence have the strongest factor loadings, followed by self-evaluation confidence, SAQ certainty, and irrelevant attitude certainty. Thus, although self-evaluation confidence might not be the best overall indicator of the latent self-confidence construct, it is strongly related to this construct. It is probably because of this strong relationship that consistent findings across these studies were possible.

The four studies presented thus far have demonstrated the same basic pattern of data. As self-related certainty increases, participants showed changes in attitudes and

13 An interesting pattern emerged when certainty in the individual self-irrelevant attitude items is considered. Specifically, condition x attitude certainty x NFC regressions were conducted for each individual measure of attitude certainty. The items that produced the strongest moderation (affirmative action, paper plates, Tide laundry detergent, and the Pope) were rated by participants to be attitudes associated with low importance (\(M = 4.77\) on a 9-point scale), while the items that were weaker predictors (George W. Bush, coffee, football, Mexican food, sun bathing, acid rain), tended to be associated with attitude objects of higher importance (\(M = 5.52\)). Because the importance of attitudes and objects is defined as the link between an evaluation and the self (Boninger, Krosnick, & Berent, 1995; Petty & Cacioppo, 1990), this data might provide evidence the general self-confidence does not necessarily stem from self-evaluations. This finding might also provide support for the idea that unimportant attitude objects might be an effective way of tapping the general certainty. Because people tend to have less knowledge on unimportant attitude objects (Holbrook, Berent, Krosnick, Visser, & Boninger, 2005), participants may draw their certainty in these evaluations from their global feelings of certainty rather than from any particular knowledge of these objects. However, there is also a negative correlation at the group level between the importance of an attitude object and the variance of the certainty judgments of that attitude object, providing another reason for the effect to be strongest on low importance attitude objects.
behavioral intentions regarding the self as well as novel attitude objects that are more in line with the thoughts they were induced to generate. However, the data presented have yet to show whether individual differences in certainty become associated with participants’ thoughts. Chapter 6 presents mediation of the moderation patterns obtained in Experiments 3 and 4 to determine whether the impact of self-related certainty is due to its influence on thought certainty.
CHAPTER 6

MEDIATIONAL ANALYSES

As described above, Experiments 3 and 4 included measures of thought certainty that allow for a test of mediation. Specifically, after indicating their opinions towards the campus beautification plan, participants were asked to rate their thoughts in terms of their certainty in them. The inclusion of thought certainty measures in these studies, allowed for an examination of whether certainty in thoughts mediates the moderation patterns obtained in the primary analyses. This would be a case of mediated moderation, as the impact of self-related confidence on thought certainty is expected to mediate the moderation of the thought direction to attitude link.

Because self-esteem certainty was a significant predictor of the validation pattern across Experiments 3 and 4, these data sets were collapsed to perform mediated moderation analyses, which are reported below. Later, mediation of the global self-confidence pattern obtained in Experiment 4 is also explored.

*Self-evaluation Confidence*

To collapse across Experiments 3 and 4, which used different measures of self-evaluation certainty, the measures used in each study were standardized before combining data sets.

To establish this mediated moderation, four conditions must be met (Baron & Kenny, 1986; Edwards & Lambert, 2007; Muller, Judd, & Yzerbyt, 2005; see also
Preacher, Rucker, & Hayes, 2007). First, there must be an overall moderation effect of self-evaluation confidence and condition on attitude. This was tested by regressing attitudes towards the beautification plan on thought direction, self-evaluation certainty, and the interaction of these variables. In support of this first criterion, a significant interaction emerged \( (B = .19), t(194) = 3.48, p = .001 \). Second, the mediator (thought certainty) must be predicted by the variable whose impact it is predicted to mediate (self-evaluation confidence). When thought certainty was predicted in a regression containing self-evaluation certainty (controlling for condition and its interaction with self-evaluation confidence), a significant effect was found, satisfying this second criterion \( (B = .21), t(194) = 2.79, p = .006 \). Third, the proposed mediator (thought certainty) must also moderate the impact of thought direction on attitudes. This was confirmed in a thought direction x thought certainty regression by a significant interaction between these variables \( (B = .38), t(194) = 5.54, p < .001 \).

Finally, when controlling for the interaction of the mediator, the overall effect of self-evaluation certainty must be reduced in its predictive ability. This was tested by simultaneously regressing attitudes on thought direction and its interaction with both self-esteem certainty and thought certainty. In this analysis, a significant interaction of thought direction with thought certainty emerged \( (B = .26), t(192) = 5.46, p < .001 \), while the interaction of thought direction and self-esteem certainty was weaker in its predictive utility \( (B = .13), t(192) = 2.58, p = .011 \). Using a Sobel test to determine whether the drop in the strength of the thought direction x self-evaluation certainty interaction was significant, a significant reduction was found to have occurred, Sobel = 2.48, \( p = .013 \), consistent with partial mediated moderation.
Global Self-confidence

Analyses were also conducted to test whether the interaction of global self-confidence (i.e., the aggregate of the confidence measures used in Experiment 4) with condition in Experiment 4 was mediated by the impact of global self-confidence on thought confidence (see Figure 7). When predicting attitudes from global self-confidence and its interaction with condition, a significant interaction effect was obtained ($B = .36$), $t(115) = 3.29$, $p = .001$. Having established the first step of the mediation process, it was important to determine whether the mediator (thought certainty) was predicted by global self-confidence. When predicting thought certainty in a regression containing global self-confidence (controlling for condition and its interaction with self-evaluation confidence), a significant effect emerged, satisfying this second criterion ($B = .39$), $t(115) = 2.48$, $p = .015$. Third, the proposed mediator (thought certainty) must also moderate the impact of thought direction on attitudes. This was confirmed in a thought direction x thought certainty regression by a significant interaction between these variables, ($B = .26$), $t(115) = 4.40$, $p < .001$.

Finally, when controlling for the interaction of the mediator, the overall effect of global self-confidence must be reduced in its predictive ability. This was tested by simultaneously regressing attitudes on thought direction and its interaction with both global self-confidence and thought certainty. In this analysis, a significant interaction of thought direction with thought certainty was found ($B = .23$), $t(113) = 3.82$, $p < .001$, while the interaction of thought direction and self-esteem certainty was weaker in its
predictive utility ($B = .28$), $t(113) = 2.64, p = .009$. A Sobel test revealed a significant drop in the thought direction x self-evaluation certainty interaction, Sobel = 2.08, $p = .038$, consistent with partial mediated moderation.

Discussion

Using data from Experiments 3 and 4, the impact of self-evaluation confidence in producing the self-validation pattern was partially mediated by the impact of this variable on thought confidence. Similarly, in Experiment 4, the impact of the global self-confidence aggregate was partially mediated by its impact on thought confidence. These mediational patterns lend further credence to the proposed mechanism by which individual differences in certainty affect the use of thoughts. Although full mediation was not achieved in these data sets, they show that part of the validation effect observed in each of the studies is likely due to the impact of self-related confidence on thought confidence.
Meta-cognitive processes have garnered a great deal of research attention in recent years (see e.g., Briñol & Petty, 2004; Dunning et al., 2003; Jost et al., 1998; Petty, Briñol, & DeMarree, 2007; Petty, Briñol, Tormala et al., 2007; Sanna & Schwarz, 2006). In particular, research on self-validation has been noteworthy in the voluminous and consistent research it has generated applying meta-cognitive certainty to judgmental processes. Past research has found that naturally occurring variability in thought certainty is consequential (Petty et al., 2002); however the origins of this variability are still relatively under-explored. The present research indicates that chronic individual differences in self-related confidence might be one critical source of natural variation in the use of thoughts.

Summary of Results

Across four studies self-related certainty was examined as a source of thought usage, and remarkably consistent results were obtained. In Experiment 1, participants presented themselves in a positive or a negative manner and subsequently indicated their self-esteem to examine carryover effects of the self-presentation task on individuals’ self-evaluation. Approximately six weeks prior to completing this task, self-esteem and its associated certainty had been assessed. Results indicated that as self-esteem certainty increased, so too did the impact of the self-presentation task on subsequent self-
evaluation. This effect is consistent with the idea that individuals high in self-related certainty were more likely to validate the thoughts they generated during the self-presentation task, causing them to have more influence in determining self-esteem. Importantly, this effect held after controlling for the effects of self-esteem. In addition, the fact that self-related certainty measured at one point in time could predict validation patterns 6-weeks later indicates that the study examined relatively stable individual differences in confidence.

Experiment 2 extended the self-validation effect obtained in Experiment 1 to a new outcome (behavioral intentions), attitude object (a foster care plan), and thought induction (argument quality). As in Experiment 1, participants completed self-esteem and self-esteem certainty measures during prescreening, and several weeks later participated in the main experiment. As participants’ self-esteem certainty increased, the impact of message quality on participants’ behavioral intentions towards the advocacy increased. Again, this is consistent with the notion that self-related certainty was associated with perceived validity of participants’ thoughts. The findings from this experiment are noteworthy, because they provided a key demonstration that the effects of self-related certainty can extend to thoughts that are not necessarily related to the self.

In Experiment 3, the measurement of individual differences in confidence was expanded by examining confidence in evaluations of specific self-aspects and self-irrelevant attitudes. In this study, participants listed positive or negative thoughts about a novel attitude object, the University of Oregon Campus Beautification Plan, and indicated their attitudes towards the project. Later, participants completed measures of self-esteem, self-esteem certainty, and certainty in other targets (self-irrelevant attitudes
and other self-ratings). Overall, results indicated that as self-esteem certainty increased so did the impact of the thought direction manipulation on participants’ attitudes. There were mixed findings using other forms of certainty, because while certainty in self-related evaluations produced a marginal interaction in the self-validation pattern, certainty in self-irrelevant attitude objects did not moderate the impact of thought direction on attitudes.

Finally, Experiment 4 further expanded the measurement of certainty by directly measuring more general individual differences in self-confidence. In addition, in support of the meta-cognitive nature of these processes, this study sought to demonstrate that these effects would occur to a greater extent among individuals engaging in effortful thought. Participants in this study completed the same paradigm as in Experiment 3. Results indicated that as self-related confidence (whether assessed as trait self-confidence, judgmental self-confidence, self-evaluation confidence, or certainty in specific self-evaluations) increased so did the impact of the thought direction manipulation on participants’ attitudes. Furthermore, all measures of confidence/certainty moderated the impact of thought direction on attitudes when chronic individual differences in effortful thought were taken into account, such that high thought (i.e., high NFC) participants showed the self-validation pattern while low thought participants did not.

In addition, supplementary analyses on the data from Experiments 3 and 4 sought to establish the impact of self-confidence on thought certainty as the key mediator of the validation effects. Collapsing across these two studies, the effect of self-evaluation
certainty was partially mediated by the impact this variable had on thought confidence. In Experiment 4, the effect of global self-confidence was also partially mediated by the impact this variable had on thought confidence.

Together these results provide consistent support for the notion that self-related confidence can be an important factor to consider in determining whether a person will utilize their recently generated thoughts in making subsequent judgments. These results held after controlling for potentially related and confounding variables and did not appear to be due to differences in the content of participants’ cognitions. Furthermore, moderation by NFC and mediation by thought confidence both lend support to the proposed mechanism. However, these results raise a number of questions and must be reconciled with existing literature on self-esteem and certainty.

Effects of Certainty

In addition to self-validation, which is discussed in more detail shortly, certainty has been associated with resistance to change and decreases in information processing, among other roles (for further discussion of the multiple roles of confidence, see Briñol et al., in press; Briñol et al., 2004; Petty, Briñol, Tormala et al., 2007). As discussed in detail below, although past research has documented other roles of confidence, the current studies were designed to limit the likelihood of these roles operating.

A relatively large body of research indicates that a sense of certainty prior to information exposure is associated with decreases in information processing (Briñol, Petty, Gallardo et al., 2007; Briñol, Petty, Valle et al., 2007; Tiedens & Linton, 2001; Weary & Jacobson, 1997), probably because when certainty is attributed to a person’s initial attitude, the need for more information is reduced (Chaiken, Liberman, & Eagly,
Such effects are most likely to occur when the level of thought is not constrained to be either high or low (e.g., Petty & Cacioppo, 1986; Petty & Wegener, 1999), as these are the conditions under which movement in the level of processing is possible. In Experiments 1, 3 and 4, participants were forced to generate the thoughts, and as such, did not have much room for variability in the degree of thought. In Experiment 2, the importance of careful attention to the message was emphasized. Specifically, participants were told to “read all the information carefully, because the university takes the results from this research very seriously.” In addition, this study was conducted very early in the academic term, when participants may have been highly engaged in the research (e.g., due to lack of suspicion, fewer distractions, etc.).

Certainty is also most likely to reduce information processing when the certainty can be attributed to a pre-existing attitude. In Experiments 2-4, novel attitude topics were used and thus the certainty could not be misattributed to an already existing opinion. So instead, it was misattributed to their recently generated thoughts. Thus, although a great deal of research has found increases in certainty to be associated with decreases in information processing, the current studies were designed to test the self-validation role, and thus constrained information processing to be relatively high. This reduced the ability of confidence to operate by affecting the degree of thought.

Perhaps most surprising is that confidence was actually associated with more change in evaluations in these studies, whereas past research has generally viewed confidence, at least when it is associated with a specific evaluation, as inoculating that evaluation against change attempts (e.g., Gross et al., 1995; Swann & Ely, 1984; Swann et al., 1988; Tormala & Petty, 2002). This issue is particularly salient in Experiment 1.
where the attitude that was changed (self-esteem) was the same as the attitude that certainty was associated with. Although the change induction produced more change as self-esteem certainty increased, other evidence from the same data set indicated that self-esteem was more stable across a 6-week interval, at least when stability was conceptualized as within-person correlations of participants’ responses to RSE scale items. Of course, the interaction between condition, self-esteem level, and self-esteem certainty in that study further complicates matters, as high self-esteem appeared to be stable in that study, whereas low self-esteem was malleable to the extent that it was also associated with certainty. Earlier we discussed several reasons why this effect may have been obtained. One possibility is that it was only people low in self-esteem, who were also certain of their low self-esteem were motivated to change their self-views. Self-esteem is relatively unique among attitudes, as there is very clearly a “right” opinion to hold in Western society (i.e., high self-esteem). Because of this, people low in self-esteem might be motivated to change their evaluation, opening them up to their current thoughts.

So why does self-related certainty sometimes lead to more self-esteem change and sometimes lead to less self-esteem change? In part, this might depend on what the certainty is attributed to. When it is attributed to self-esteem related thoughts, these thoughts will evince the qualities of strength, even though this sometimes means more self-change. That is, whatever objects the feeling of certainty is currently attributed to will evince strength properties. In Experiment 1, participants’ thoughts during the self-presentation task may have been more accessible than their global self-esteem, and thus these thoughts may have seemed to be a plausible source of the certainty. Certainty,
because of its meta-cognitive nature, might be more subject to such misattributions of
source compared with other strength indicators, such as accessibility (see Fazio, 1995).
Misattributions should be most likely to the extent that the features associated with the
certainty are the same (Johnson et al., 1993). So, a person’s certainty about their self-
esteeem might be attributed to their own thoughts or attitudes, but might not be attributed
to certainty that an interaction partner has in their opinions. However, because of the
general nature of global self-confidence as assessed in Experiment 4, any mental content
in a person’s mind has the potential to be affected by it.

This last point is an interesting one to consider, because although self-validation
processes were examined in these studies – with confidence attributed to thoughts – other
targets of confidence are possible. For example, if global self-confidence (versus doubt)
is attributed a person’s personality traits, they might behave in a manner more consistent
with these dispositions (DeMarree et al., 2007). If it is attributed to a person’s attitudes,
as data from Experiment 3 indicate is possible, it might cause these attitudes to better
predict behavior. Recall also that certainty is associated with outcomes other than the
prediction of judgments and behavior. Biases in thought, resistance to change (e.g., by
counter-arguing attitude inconsistent information), and stability over time are all possible
effects of certainty (Krosnick & Petty, 1995; Petty, Briñol, Tormala et al., 2007). It is
unclear whether self-confidence could lead the global self-concept to exhibit these
features. Further, it is also unclear if the specific targets that general self-confidence
becomes associated with would exhibit these features. For example, would a person who
is generally self-confident be more resistant to changing an attitude that is not of great
personal importance to him or her (e.g., their attitude towards paper plates) than would
someone who is lower in self-confidence? Such possibilities are interesting to consider, and present an important direction for future research to examine. It is quite possible that among individuals who chronically consider meta-cognitive factors such as certainty (i.e., those high in NFC) the baseline validity of any mental content might vary as a function of self-confidence.

Self-Validation Processes

Results of the current studies repeatedly were consistent with self-validation effects of self-related certainty. This raises the important question of why self-confidence leads to self-validation effects. As described above, attributional processes are one potential mechanism. That is, a general feeling of self-confidence might be misattributed to other sources. The salience of a potential source is a critical determinant of whether an attribution will be made to that source (e.g., Schwarz & Clore, 1983; Zanna & Cooper, 1974). As such, a person’s self-evaluation is salient in their mind, participants might attribute their certainty to this, and their self-evaluation might then exhibit the properties of strength. If instead, the certainty is attributed to a person’s current thoughts about an advertisement, these thoughts are likely to be strong predictors of this person’s attitudes.

Global self-confidence, at least as operationalized by some of the measures in Experiment 4 (e.g., JSDS), may, to some extent, represent the confidence with which a person views their judgments or judgmental processes. In this case, participants trust any of their thoughts, as they view their thought processes as producing a valid basis for judgment. Such beliefs could develop because a person’s judgmental processes have consistently yielded favorable outcomes or because the person has successfully explained away unfavorable outcomes as due to external factors (cf. Mezulis, Abramson, Hyde, &
Regardless of the origin of such a judgmental self-confidence, any judgment made by the person is a relevant and applicable target for this confidence, and misattribution is not necessary. Critically, in these studies, when participants who were high in this form of confidence were instructed by the experimental manipulations to generate thoughts on a given topic, this thought generation represented yet another judgmental process in which they would be confident.

Finally, as discussed in detail below, one antecedent of confidence is the amount of thought devoted to a judgment (e.g., Barden & Petty, in press; Gross et al., 1995; Petty, Haugtvedt, & Smith, 1995; Rucker & Petty, 2004). It is possible that individual differences in thought are associated with increased feelings of self-confidence as well as confidence in a range of self-related and unrelated variables. However, in Experiment 4, which contained an individual difference associated with chronic thought, need for cognition (Cacioppo & Petty, 1982; Cacioppo et al., 1984), the correlations between NFC and measures of self-confidence were in the expected direction, but weak (see Table 2).

Instead of general differences in thought, perhaps paying attention to oneself leads to both greater self-confidence and also greater reliance on thought. For example, research indicates that people who tend to pay more attention to their emotional states also tend to be more influenced by these states (Gasper & Clore, 2000). However, an unrelated data set that contained individual differences in self-focused attention, as measured by the *private self-consciousness* scale (Fenigstein, Scheier, & Buss, 1975), and self-esteem certainty revealed no evidence of such an association, $r(158) = .05$, $p = .571$. It is important to note that thought about an object, such as the self, does not necessarily lead to confidence. It is likely to produce certainty when the thought
produces a clear conclusion about the object (e.g., DDT is bad). However, when
information is mixed (e.g., Nuclear power produces radioactive waste, but no carbon
emissions), and a clear conclusion is not possible, additional thought might instead
produce doubt, as the thoughts become recurrent and simply reiterate that no clear
judgment can be formed. Given the multidimensionality of the self (e.g., Markus &
Kunda, 1986; Markus & Wurf, 1987), clear global self-assessments might be difficult to
obtain. Because of this, individual differences in thought might only lead to increases in
self-related certainty among individuals for whom the self is evaluatively congruent (e.g.,

Because the current studies dealt with individual difference variables, it is
important to be sure that the manipulations were equivalent across all participants. If, for
example, people high in self-related certainty generated more extreme thoughts in
response to the thought inductions, it would present an alternative explanation for the
current findings. However, across all four studies, the extremity of participants’
responses did not vary as a function of any of the individual difference variables
assessed. Furthermore, in most cases, other manipulation checks, such as the number of
thoughts participants generated in Experiment 2 or the ease with which they generated
their thoughts in Experiments 1 and 4, revealed no systematic variability as a function of
the individual differences measured. In only one case, the ease with which participants
listed their thoughts in Experiment 3, was there a hint that self-related certainty covaried
with anything other than thought confidence that could account for the pattern of data
obtained. The ease with which thoughts are generated or come to mind is one factor that
can affect thought confidence (e.g., Tormala et al., 2002), so in Experiment 3, it could be
the ease with which participants listed their thoughts, and not their global feelings of confidence that produced the effect. However, as discussed in Experiment 3, while it is known that ease can lead to confidence, it might also be possible that self-reported ease can also serve as a measure of thought confidence, in which case these data would be consistent with the rest of the current findings. Also as noted above, if participants frequently experience ease in their thought processes, they might even develop increased levels of self-confidence, as their judgments, opinions, self-perceptions, and other mental contents all become associated with ease-driven certainty.

**Thoughtfulness of Self-Validation**

Thought validation processes, because of their meta-cognitive nature, are generally considered to be relatively resource demanding (Petty, Briñol, Tormala et al., 2007). That is, they are most likely to occur among people who are thinking a lot, because thinking about one’s thinking requires a lot of thought (Petty et al., 2002). Results from Experiment 4 build on this notion in that individual differences in self-confidence only predicted the use of thoughts among individuals who were high in NFC. This replicates previous research that demonstrates increased reliance on thought confidence among high NFC individuals (Briñol, Petty, & Barden, 2007; Petty et al., 2002), and provides an additional piece of evidence consistent with self-validation as the mechanism responsible for the effects obtained in this research.

In addition, the degree of thought is likely to be a critical determinant of when the different potential roles of confidence might operate (see e.g., Briñol et al., in press). By forcing participants to think carefully in these studies, we eliminated the possibility that self-related confidence could influence the amount of thought. In so doing, we made
individuals who were highly self-confident more susceptible to persuasion than individuals lower in confidence. However, under conditions where elaboration is not constrained to be high or low, confidence might decrease the likelihood of change due to its impact in decreasing thought in response to a persuasive message or other source.

**Self-Esteem Validation**

Readers might wonder why the current studies failed to replicate Harber’s (2005) finding, that self-esteem was associated with increased use of emotional responses in making judgments. That is, in all of the current studies, there was no significant interaction of self-esteem with the direction of participants’ thoughts. In additional analyses conducted with self-esteem and its interaction with condition, but excluding measures of self-related confidence, no significant interactions of self-esteem and condition were found in any individual study. However, consistently across studies, the self-esteem x condition interaction was in the expected direction (i.e., more thought-consistent judgments as self-esteem increased), but not at conventional levels of significance ($p$s = .17, .20, .19, and .087, for studies 1-4, respectively).

To examine whether self-esteem moderation of these effects could be obtained collapsing across studies, a meta-analysis was conducted combining the four data sets reported in this paper. For each study, self-esteem, self-esteem certainty, and the dependent variable were standardized before combining, to account for differences in the measures used in each study. Using this combined data set, a condition (coded as to whether it was expected to produce positive or negative thoughts) x self-esteem regression was conducted. This analysis revealed a significant interaction ($B = .18$), $t(315) = 3.43$, $p = .001$, such that the impact of condition was significant among high ($B =$
.47), $t(315) = 6.49, p < .001$, but not low ($B = .12), t(315) = 1.61, p = .108$, self-esteem participants. However, when self-esteem certainty and its interaction with condition were added into this model, the interaction of self-esteem with condition became non-significant ($B = .06), t(313) = .99, p = .332$, while the interaction of self-esteem certainty with condition was significant ($B = .20), t(313) = 3.21, p = .001$.

There are several potential reasons why self-esteem failed to moderate the impact of thoughts on judgment in any of the individual studies. The first possible reason is simply that Harber’s effect was actually due to self-related confidence, which, as was discussed earlier, is often strongly related to self-esteem (the correlation between self-esteem and self-esteem certainty was .574 in the meta-analysis data). The data from the meta-analysis reported above support this explanation, as self-esteem moderated the impact of condition only in the absence of self-esteem certainty. However, yet another possibility exists based on the differences between the current paradigms and Harber’s. Specifically, Harber examined the use of emotional reactions whereas the current studies examined the use of thoughts. It might be possible that self-esteem, which has affective inputs, is more relevant to the validation of affective responses than is self-confidence. However, it is now clear that affective responses can be validated by certainty just as can cognitive responses (Rucker et al., in prep). It might also be possible that global self-confidence is, at least for some people or in some situations, a “feeling” of confidence possessing affective qualities. These are interesting and important directions for future research to explore.
**Other Individual Differences**

The current studies explored individual differences in self-esteem and self-related certainty as potential individual differences in thought validity. Other individual differences might also be associated with the use of thoughts. For example, people high in narcissism (e.g., Raskin & Terry, 1988) might be more likely to utilize their thoughts than those low in narcissism for several reasons. First of all, people high in narcissism tend to exhibit overconfidence (W. K. Campbell, Goodie, & Foster, 2004), and this confidence could act as a source of validity, leading narcissists to utilize their thoughts more in making judgments. One component of narcissism is the feeling of and desire for power (Kubarych, Deary, & Austin, 2004), something that is itself associated with self-validation effects (Briñol, Petty, Valle et al., 2007). In addition, narcissists tend to be self-focused (e.g., Emmons, 1987; Raskin & Shaw, 1988), and this self-focus might cause them to rely on their thoughts more because these thoughts are salient guides for judgment.

Other individual differences might also be associated with the use of mental contents. Individual differences in feelings of power, such as social dominance orientation (Pratto, Sidanius, Stallworth, & Malle, 1994), might predict individuals’ thought usage. Similarly, people who chronically experience emotions and moods associated with certainty, such as anger (e.g., Edmondson & Conger, 1996) or happiness (e.g., Diener, Suh, Lucas, & Smith, 1999), might be more likely to rely on their mental contents (see also Briñol, Petty, & Barden, 2007). In the validation of the Judgmental Self-Doubt Scale, Mirels and colleagues (2002) found patterns of correlations consistent with this prediction. Individual differences in negative affect (e.g., depression,
neuroticism) were positively associated with judgmental self-doubt, while those associated with positive affect exhibited negative correlations (e.g., extraversion, openness to experience).

**Origins of Self-Related Confidence**

Another important question, given the strength and consistency of the self-related certainty findings, is what are the origins of this self-related certainty (for a review, see DeMarree et al., 2007)? Self-related certainty may have similar origins to other forms of certainty (see e.g., Gross et al., 1995). Already discussed are two well-known antecedents of certainty, social consensus or validation, and the degree of thought. Social validation of our beliefs is likely to increase individuals’ sense of conviction regarding their beliefs or the processes that produced them (see e.g., Festinger, 1954; Swann, Rentfrow, & Guinn, 2003; Visser & Mirabile, 2004). Thus, people high in self-confidence may have received consistent feedback from others about their traits and characteristics leading them to have confidence in these assessments.

In addition, the degree to which people think about an evaluation is associated with its strength (Barden & Petty, in press; Petty et al., 1995). However, when thought is relatively mixed, and a clear answer cannot result from the thought (e.g., as might be the case with rumination, see Petty, Jarvis, & Evans, 1996), such thought can lead to less certainty (for further discussion, see DeMarree et al., 2007). As already discussed,

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14 It is worth noting that Barden and Petty (in press) found that the perception of elaboration increased attitude certainty, even in the presence of mixed information.
confidence in one’s judgmental processes could also develop based on the consistency with which these processes have been effective in producing desired outcomes.\textsuperscript{15}

Related to the amount of thought is the amount and consistency of knowledge that people have in their self-beliefs. Knowledge, whether perceived or actual, is one antecedent of attitude certainty (Gross et al., 1995) and attitude strength-related outcomes (Wood, Rhodes, & Biek, 1995), and is likely to also be an antecedent of self-confidence. The more evidence a person has that indicates that they can make valid judgments, the more likely they are to hold their judgments with certainty, assuming the knowledge is consistent (Fabrigar, Petty, Smith, & Crites, 2006), and well organized (Gill, Swann, & Silvera, 1998; Smith et al., 2008).

Yet another potential source of self-confidence is the accessibility of the self (for reviews, see Fazio, 1995, 2000). Several studies have shown that the accessibility (Holland, Verplanken, & van Knippenberg, 2003) or ease with which mental contents come to mind (Haddock, Rothman, Reber, & Schwarz, 1999; Tormala et al., 2002) affects individuals’ subjective certainty. However, the research that has examined accessibility as a source of certainty has generally examined current levels of accessibility (often manipulated via repeated expression) or ease, and not \textit{chronic} differences. As such, the certainty examined in those studies might be transient and associated with on-line validity processes rather than stored confidence. It is unclear

\textsuperscript{15} This point might raise concern regarding the findings from Experiments 3 and 4. Specifically, if participants felt they had generated compelling thoughts that they viewed as valid guides for behavior, they could have used this experience to inform their responses on the measures of self-related confidence that were included later in the study. This reverse causal chain could then potentially explain the results in those studies. In those studies, we attempted to include filler questionnaires (Experiment 3) or to begin by assessing NFC and self-irrelevant attitudes & certainty (Experiment 4) to reduce this possibility; however, it is still plausible. While this presents a potential confound for Experiments 3 and 4, we do not feel it is likely to have occurred, as this was not an issue in Experiments 1 or 2 that assessed self-related certainty several weeks prior to the generation of thoughts and produced identical patterns of results.
from the existing data whether chronic differences in self accessibility could actually *cause* differences in self-confidence as examined in the present studies. It is particularly difficult to establish such a relationship because accessibility and certainty share many of the same antecedents (e.g., amount of thought). Nonetheless, it may still be possible that people with accessible self-views and judgments or people who frequently experience ease in their thought processes and judgments might increase their self-confidence over time.

In addition to the above origins of confidence, research has also found that feelings of confidence and the associated responses can occur as defensive or compensatory reactions to a threat to oneself or to otherwise high levels of uncertainty (e.g., McGregor, 2003; McGregor & Marigold, 2003; McGregor, Zanna, Holmes, & Spencer, 2001). Defensive confidence reactions have typically been studied in terms of transitory states, but there might be chronic individual differences associated with defensive confidence (e.g., Narcissism). Further, it is unclear whether compensatory confidence produces the same effects as confidence arising from other sources (van den Bos, 2001). However, confidence stemming from defensive processes is an interesting topic that warrants further investigation (for further discussion, see DeMarree et al., 2007).

**Implications**

A number of features of the present studies are consistent with the idea that the self-validating influence of self-confidence might have a pervasive and real impact on people’s day-to-day lives. Specifically, self-related certainty was found to validate thoughts that were relatively unrelated to the self (Experiments 2-4) and produce effects
on behavioral intentions (Experiment 2) as well as on attitudes (Experiments 1, 3 and 4). These effects occurred even when self-related certainty was measured several weeks before the experimental session, providing support for the stability of individual differences in self-related certainty over time. Furthermore, in all studies, self-related certainty was not made salient prior to the manipulations we employed. It appears that participants’ chronic level of self-related certainty produced these effects, with relatively little influence from the experimental context. This might mean that people high in self-related certainty chronically view their mental contents as more valid than those of people low in certainty. This will be particularly true for individuals who chronically engage in validation processes, such as people high in NFC. However, as noted above, other roles of certainty are possible. The current studies were designed to explore the self-validation role, but in the real-world, different situations might provide different constraints on participants’ cognition. As a result, other roles of self-confidence, such as influencing the amount of thought people engage in or affecting the resistance of their evaluations and beliefs, might also occur.
REFERENCES


Gasper, K., & Clore, G. L. (2000). Do you have to pay attention to your feelings to be influenced by them? *Personality and Social Psychology Bulletin, 26,* 698-711.


APPENDIX A

TABLES AND FIGURES
Table 1: Correlations among measures of certainty (Experiment 3)

<table>
<thead>
<tr>
<th></th>
<th>Self-Esteem Certainty</th>
<th>SAQ Certainty</th>
<th>Irr. Att. Certainty</th>
<th>Thought Certainty</th>
</tr>
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<tr>
<td>SAQ Certainty</td>
<td>.328**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Irr. Att. Certainty</td>
<td>.396**</td>
<td>.510***</td>
<td></td>
<td></td>
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<tr>
<td>Thought Certainty</td>
<td>.276*</td>
<td>.295**</td>
<td>.339**</td>
<td></td>
</tr>
<tr>
<td>Ore. Att. Certainty</td>
<td>.398***</td>
<td>.185</td>
<td>.362***</td>
<td>.451***</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001

Note: Irr. Att. Certainty is certainty in self- and focal attitude-unrelated attitude objects; Ore. Att. Certainty is certainty in participants’ attitude towards the University of Oregon Campus Beautification Project.
Table 2: Correlations among measures of certainty (Experiment 4)

<table>
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<tr>
<td>SAQ Certainty</td>
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<td></td>
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<td>Irr. Att. Certainty</td>
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<td>.262**</td>
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<td>Judg. Confid.</td>
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<td>.221*</td>
<td>.088</td>
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<td></td>
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<tr>
<td>Trait Confid.</td>
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<td>.158</td>
<td>.029</td>
<td>.656***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thought-Certainty</td>
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<td>.225*</td>
<td>.242**</td>
<td>.163</td>
<td>.184*</td>
<td></td>
</tr>
<tr>
<td>Need Cognition</td>
<td>.156</td>
<td>.103</td>
<td>.183*</td>
<td>.274**</td>
<td>.152</td>
<td>.061</td>
</tr>
</tbody>
</table>

*p < .05, **p < .01, ***p < .001

Note: S. Eval. Confid. is confidence in responses to self-evaluation items; SAQ certainty is certainty in participants’ responses to the individual items on the Self-Attributes Questionnaire; Irr. Att. Certainty is certainty in self- and focal attitude-unrelated attitude objects; Judg. Confid. is aggregate of Judgmental Self-Doubt Scale and the ad hoc judgmental self-confidence items; Trait Confid. is the general trait of being self-confident.
<table>
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<th>Loading</th>
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<td>Judgmental Self-Confid</td>
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<td>Judgmental Self-Doubt</td>
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<td>Self-Evaluation Confid.</td>
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<td>SAQ Certainty</td>
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<td>Irrel. Attitude Certainty</td>
<td>0.158</td>
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Table 3: Factor loadings for exploratory factor analysis on Experiment 4 measures of confidence / certainty.
<table>
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</thead>
<tbody>
<tr>
<td>Valence x Cert. x NFC</td>
<td>.015*</td>
<td>.021*</td>
<td>.020*</td>
<td>.018*</td>
<td>.012*</td>
<td>.024*</td>
</tr>
<tr>
<td>Val x Cert</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at high NFC</td>
<td>.35**</td>
<td>.43***</td>
<td>.41*</td>
<td>.32**</td>
<td>.59**</td>
<td>.68***</td>
</tr>
<tr>
<td>at low NFC</td>
<td>.03</td>
<td>-.02</td>
<td>-.02</td>
<td>.04</td>
<td>.21</td>
<td>.17</td>
</tr>
<tr>
<td>Valence</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>at high NFC &amp; high Cert</td>
<td>.89***</td>
<td>.95***</td>
<td>.78***</td>
<td>.92***</td>
<td>.87***</td>
<td>.93***</td>
</tr>
<tr>
<td>at high NFC &amp; low Cert</td>
<td>-.09</td>
<td>-.12</td>
<td>-.03</td>
<td>-.07</td>
<td>-.20</td>
<td>-.30</td>
</tr>
</tbody>
</table>

*p < .09, *p < .05, **p < .01, ***p < .001

Table 4: Thought Direction x Certainty x Need for Cognition regressions and decompositions by measure of certainty (Experiment 4). Entries are unstandardized regression coefficients. Lower order effects are reported at the level of the other variables as indicated (e.g., the last row is the main effect of valence among participants high in NFC and low in self-related certainty).

Note: SE Confid. is confidence in responses to self-evaluation items; SAQ Cert. is certainty in participants’ responses to the individual items on the Self-Attributes Questionnaire; Irr. Att. Cert. is certainty in self- and focal attitude-unrelated attitude objects; Judg. Confid. is aggregate of Judgmental Self-Doubt Scale and the ad hoc judgmental self-confidence items; Trait Confid. is the general trait of being self-confident; Global Confid. is the factor score from all of the above measure of confidence.
Figure 1: Post-manipulation self-evaluation (Experiment 1) as a function of self-presentation direction (positive vs. negative) and self-esteem certainty, controlling for prescreening self-esteem and its interaction with thought direction. Results plotted at +/- 1 SD on self-certainty.
Figure 2: Post-manipulation self-evaluation as a function of self-presentation direction (positive vs. negative) x self-esteem certainty x self-esteem interaction. Top panel is the self-presentation direction x self-esteem certainty interaction among low SE participants, where the bottom panel is the self-presentation direction x self-esteem certainty interaction among high SE participants.
Figure 3: Behavioral intentions toward foster care plan (Experiment 2) as a function of argument quality and self-esteem certainty, controlling for prescreening self-esteem and its interaction with argument quality. Results plotted at +/- 1 SD on self-certainty.
Figure 4: Attitudes towards campus beautification plan (Experiment 3) as a function of thought direction and self-esteem certainty, controlling for self-esteem and its interaction with thought direction. Results plotted at +/- 1 SD on self-esteem certainty.
Figure 5: Attitudes towards campus beautification plan (Experiment 4) as a function of thought direction and global self-confidence (aggregate of all self-related confidence items), controlling for self-evaluation and its interaction with thought direction. Results plotted at +/- 1 SD on global self-confidence.
Figure 6: Attitudes towards campus beautification plan (Experiment 4) as a function of thought direction, global self-confidence (aggregate of all self-related confidence items), and Need for Cognition. Top panel is the thought direction x global self-confidence interaction among low NFC participants (-1 SD) whereas the bottom panel is the thought direction x global self-confidence interaction among high NFC participants (+1 SD). Results plotted at +/- 1 SD on global self-confidence.
Figure 7: Mediated moderation analyses for Experiment 4. Value in parentheses represents the effects of the confidence/certainty measures remaining after controlling for each other. Sobel = 2.08, \( p = .038 \).

\[ B = .39^* \]

\[ B = .36^{***} \quad (B = .28^{**}) \]

\[ B = .26^{***} \quad (B = .23^{***}) \]
APPENDIX B

STUDY 1 MATERIALS
Study 1: Prescreening Materials

Using the scale below, please indicate the extent to which you agree or disagree with the following statements by placing the number corresponding to your response on the line next to each statement.

1 2 3 4 5 6
Disagree strongly Disagreesomewhat Disagree alittle Agree a little Agree somewhat Agree strongly

1. I feel that I am a person of worth, at least on an equal basis with others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel that I do not have much to be proud of.
6. I take a positive attitude toward myself.
7. On the whole, I am satisfied with myself.
8. I wish I could have more respect for myself.
9. I certainly feel useless at times.
10. At times, I think that I am no good at all.

Please answer the following statements by circling the number that corresponds to your response.

1. How confident are you of your feelings toward yourself?

1 2 3 4 5 6 7 8 9
Not at all Confident Extremely Confident

2. How certain are you of your feelings toward yourself?

1 2 3 4 5 6 7 8 9
Not at all Certain Extremely Certain
3. How sure are you that your feelings toward your self are accurate?

1 2 3 4 5 6 7 8 9
Not at all Sure Extremely Sure

**Self-presentation script**

For the first experiment, we’re looking to develop materials for use in training graduate students in clinical interviewing skills. Clinical interviews can occur for a number of reasons, including career counseling, adjustment counseling, or skill interviewing. The interviews usually include a live interview as well as questionnaires and other clinical assessment tools. For today’s experiment, we would like your help in the development of materials for training graduate students in the written component of these interviews.

In order to do this, we’d like you to role-play the interview questions. Basically what we’re looking for you to do is to answer the questions that are presented as if you were really the type of person that you are playing. At the end of the experiment, you can decide if you will allow your responses to be used for our clinical interview training. Please be assured that these responses would only be used for these purposes and that no identifying information would be included with your responses.

This task is completely voluntary, so if you do not want to role-play for any reason, please indicate so below by clicking the “no role play” button. [Participants who indicate “no role play” will be asked to answer the questions as they truly believe themselves to be]

**SELF-ENHANCING ROLE**
You are to play the role so as to give the interviewer a positive impression of yourself. By a positive impression, I mean think of yourself on a day when you are really up, when you are in a good mood, you feel really good about yourself, that after all you really are a pretty decent, competent, sensitive person. You can be most effective in playing the role if you really get yourself into it – you know, try to get yourself into one of those times when you felt really good about yourself. Now thinking of yourself in this way, simply answer the interviewer’s questions so that your feeling is conveyed in both your mood and the content of your answers. Do you think you can manage this?

**SELF-DEPRICATING ROLE**
You are to play the role so as to give the interviewer a negative impression of yourself. By a negative impression, I mean think of yourself on a day when you are really down, when you are in a bad mood, you feel really inadequate, unloved, incompetent, like anything you took on you’d likely mess up. You can be most effective in playing the role if you really get yourself into it – you know, try to get yourself into one of those times when you felt really bad about yourself. Now thinking of yourself in this way, simply
answer the interviewer’s questions so that your feeling is conveyed in both your mood and the content of your answers. Do you think you can manage this?

The interview will begin with several open-ended questions. Remember to answer these questions according to the role you are playing.

1. What is your major at OSU? How did you become interested in this? If you haven’t selected a major yet, what fields are you interested in?
2. Are there any special skills you feel you possess? Please tell us about them.
3. How would you describe your ability to get along with others?
4. Describe your study/work habits.
5. Do you maintain an active lifestyle? What sort of activities do you enjoy participating in, if any?

We will now switch to close-ended questions. Again, remember to answer these questions according to the role you are playing. (9-point scale – strongly disagree to strongly agree)

1. I feel that I am a person of worth, at least on an equal basis with others.
2. I feel that I have a number of good qualities.
3. All in all, I am inclined to feel that I am a failure.
4. I am able to do things as well as most other people.
5. I feel that I do not have much to be proud of.
6. When engaged in an important task, most of my thoughts turn to bad things that might happen (e.g., failing) than to good.
7. For me, avoiding failure has a greater emotional impact (e.g., sense of relief) than the emotional impact of achieving success (e.g., joy, pride).
8. More often than not I feel unsure of my abilities.
9. I sometimes find myself wondering if I have the ability to succeed at important activities.
10. I prefer complex to simple problems.
11. I like to have the responsibility of handling a situation that requires a lot of thinking.
12. It is good to have opinions that are changeable
13. Thinking is not my idea of fun.
14. I would rather be just like everyone else than be called a "freak."
15. It is foolish to claim that wisdom comes with old age.
16. It is important that I succeed in all that I do.
17. I appreciate art and music.
18. I do jobs or tasks automatically, without being aware of what I'm doing.
19. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there.
20. I prefer to socialize with familiar friends because I know what to expect from them.
21. I pay attention to, and am aware of issues related to the environment (e.g. pollution, wildlife preservation)?
22. I enjoy the uncertainty of going into a new situation without knowing what might happen.
23. It makes me mad that I don't get the affection and support I need from my partner.
24. I see myself as someone who is primarily striving to become the self I “ought” to be – to fulfill my duties, responsibilities, and obligations.
25. My opinions fluctuate a lot.
26. I have never changed the way I see most things.
27. I feel comfortable depending on romantic partners.
28. I frequently imagine how I will achieve my hope and aspirations.
29. I would rather do something that requires little thought than something that is sure to challenge my abilities.

Please rate yourself on the following traits. Remember to answer according to the role you are playing.
   1. Friendly
   2. Intelligent
   3. Reckless
   4. Independent
   5. Conceited
   6. Stubborn
   7. Self-confident
   8. Social
   9. Aloof
   10. Likeable

We are now done with the role-playing and have a few questions about your experience.
   1. How difficult was it to play the role in this study?
   2. How much freedom did you feel you had in playing the role you did?

Thank you for your completing this study. We would now like you to complete a short questionnaire packet for another study.

**Study 1: Dependent Measures** (in a separate questionnaire)

For the next set of statements, we're interested in knowing the extent to which you find it acceptable for these terms to be used as descriptors of you using the scale below

<table>
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<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not at all accurate of me</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Very accurate of me</td>
</tr>
</tbody>
</table>

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1. I find satisfaction in deliberating hard for long hours. ______
2. I only think as hard as I have to. ______
3. Persuasion in any context is bad. ______
4. It is good to have opinions that are changeable ______
5. I have never changed the way I see most things. ______
6. My opinions fluctuate a lot. ______
7. When someone challenges my beliefs, I enjoy disputing what they have to say. ______
8. I see myself as someone who is primarily striving to become the self I “ought” to be – to fulfill my duties, responsibilities, and obligations. ______
9. I frequently imagine how I will achieve my hope and aspirations. ______
10. I enjoy the uncertainty of going into a new situation without knowing what might happen. ______
11. My personal space is usually messy and disorganized. ______
12. I pay attention to, and am aware of issues related to the environment (e.g. pollution, wildlife preservation)? ______
13. I prefer to socialize with familiar friends because I know what to expect from them. ______
14. I have a positive view of vegetarianism. ______
15. I have a positive attitude toward working out. ______
16. I get so focused on the goal I want to achieve that I lose touch with what I am doing right now to get there. ______
17. I do jobs or tasks automatically, without being aware of what I'm doing. ______
18. I am a pleasant person to be around. ______
19. I appreciate art and music. ______
20. As I begin an important activity, I usually feel confident in my ability. ______
21. Sometimes I feel that I don't know why I have succeeded at something. ______
22. It is important that I succeed in all that I do. ______
23. Failure has its advantages. ______
24. It is foolish to claim that wisdom comes with old age. ______
25. Most elderly bore others by talking about the "good old days". ______
26. If I must die, let it be an unusual death rather than an ordinary death in bed. ______
27. I would rather be just like everyone else than be called a "freak." ______
28. I feel comfortable depending on romantic partners. ______
29. It makes me mad that I do not get the affection and support I need from my partner. ______
30. I try to act nonprejudiced toward Black people because of pressure from others. ______
31. I attempt to act in nonprejudiced ways toward Black people because it is personally important to me. ______
32. I like myself. ______
33. I have a positive attitude towards myself. ______
34. I am a bad person. ______
Rhode Island Foster Care Paradigm

THOUGHTS TOWARD SOCIAL PROGRAMS

For this study, you will be asked to provide your thoughts toward a social program, chosen from our database. There are several different programs, and the information about these programs can come from a variety of sources.

INSTRUCTIONS

We are now going to ask you to read the transcript of an editorial from a college radio station. The topic is a state foster care program. The foster care program is a system designed to take care of children who come from broken homes, as well as children whose parents abuse, neglect, or are unable to provide for them. Speaking on the topic for foster care is Joan Miller, who has been researching the foster care program.

Please, read all the information carefully, because the university takes the results from this research very seriously.

We are interested in your thoughts about this foster care program.

Rhode Island’s foster care program incorporates four principles.

[Strong arguments]

First, the Rhode Island program recognizes that siblings are important for the social development of the child. Brothers and sisters are also an additional source of love and support for the child. For this reason, Rhode Island believes that foster parents should have other children in the family.

Second, the Rhode Island program believes it is important for children to have the support of their family when dealing with life’s challenges. Therefore, in Rhode Island, children are required to stay with their foster parents until they are eighteen years old rather than the customary requirement of sixteen years.

Third, the Rhode Island program is concerned with the foster child’s well being. To aid the child’s development, Rhode Island has a policy requiring foster children to maintain good grades and good behavior. Good grades will boost their self-confidence and maintaining good behaviors will help provide the discipline necessary to deal with life’s stressors.

And fourth, the periodic oversight of a licensed social worker is critical to ensure that both the needs of the child and the concerns of the family are addressed in a timely manner. This is critical to head off any potential sources of conflict and to offer the parents and child with tools they need to ensure they make a good adjustment. The close relationship between family and child is the final component of the Rhode Island foster care program.

[Weak arguments]
First, the Rhode Island program recognizes that children need other children to fight with. Brothers and sisters provide an ideal opportunity for this to occur. For this reason Rhode Island believes that foster parents should have other children in their family.

Second, the Rhode Island program believes it is important for parents to have power and authority over the foster child for as long as possible. To accomplish this children are required to stay with their foster parents until they are eighteen years old rather than the customary requirement of sixteen years.

Third, the Rhode Island program is concerned with its appearance. To ensure that they look good, Rhode Island requires that foster care children maintain good grades and good behavior. Decent grades will make the program look good to school teachers and maintaining positive behaviors will cause the average citizen to think the foster care program is doing a good job.

And fourth, the periodic oversight of a licensed social worker is critical to ensure that both parents and child are always focused on the fact that this is a foster care placement. This is critical in dealing with any potential sources of conflict, because both the parents and child must be prevented from dealing with each other as they would under non-foster circumstances. The distanced relationship between family and child is the final component of the Rhode Island foster care program.

Below is the first of several boxes in which we would like you to record your thoughts about the RHODE ISLAND'S PROGRAM you just read about.

Simply type the thoughts that come to your mind, ignoring spelling, grammar, and punctuation (a phrase could be sufficient). Please be completely honest and list all thoughts you have. Also, please list AS MANY thoughts AS YOU CAN, but enter only one per box. Press ENTER after each one, and press 'escape' when you are done.

**Dependent Measure**

- In the future, we might be interested in finding people who would be willing to volunteer some time to make phone calls to students to tell them about the benefits of the RHODE ISLAND'S PROGRAM policy.
- Hypothetically, how much time would you be willing to devote to making these phone calls?
- Hypothetically, how many letters would you be willing to write to students to tell them about the benefits of RHODE ISLAND'S PROGRAM?
- Hypothetically, how willing would you be to sign a petition in favor of the RHODE ISLAND'S PROGRAM?
- Hypothetically, how willing would you be to let us add your name to the list of student in favor of the RHODE ISLAND'S PROGRAM?
- In general, how willing would you be to let us send you more information related with FOSTER CARE PROGRAMS?
- We would now like you to go back to the thoughts you just listed, and rate each one individually on the degree to which you think it is favorable, unfavorable, or neutral toward the proposal of Rhode Island's Foster Care Program.
APPENDIX D

STUDY 3 & 4 MATERIALS
Study Introduction

Please read the next information carefully because the university takes the results from this research very seriously. Very few participants are being asked to complete this study, so the responses of each and every one of you are especially important in this case.

In the next half hour, you are going to participate in two different research projects. To make the best use of your time, we have combined these two 15-minute studies in order to take up the minimum 30 minutes required for experimental credit.

The first one is part of an investigation for the University of Oregon. This part of the study is designed to examine thoughts and opinions towards a new program they are considering.

The second one is part of a larger investigation exploring personality variables, and how they related to each other

Oregon Beautification Paradigm

The goal of the present research is to gain ideas and feedback about the University of Oregon Campus Beautification Project.

This project proposes to spend an additional $3.5 million dollars over the next 3 years to improve the physical beauty of the University of Oregon campus, including additional trees, gardens, and other landscape improvements.

In the following screens, we are going to ask you some questions about this proposal.

Task instructions

Positive Condition

We would like you to type 3 GOOD ARGUMENTS you have for implementing the University of Oregon Beautification Project. Below is the first of 3 boxes you can use to list those 3 positive features. PLEASE LIST 3 STRONG ARGUMENTS with respect to this project, but enter only one argument per box. Press ENTER after each one.

Negative Condition

We would like you to type 3 GOOD ARGUMENTS you have AGAINST implementing the University of Oregon Beautification Project. Below is the first of 3 boxes you can use to list those 3 negative features. PLEASE LIST 3 STRONG ARGUMENTS OPPOSING this project, but enter only one argument per box. Press ENTER after each one.

Thank you for entering your thoughts. Please continue with the rest of the experiment.

Dependent Measures
Because your personal views might have influenced the thoughts you listed, additional information regarding your views of the University of Oregon's Beautification Project is desired.

- To what extent would you say that the University of Oregon Beautification Project is a good idea at this point?
- To what extent would you say that it is going to be easy for the University of Oregon to gain approval for this plan?
- To what extent would you say that the University of Oregon Beautification Project would pass in a vote among members of the University of Oregon community.
- To what extent would you say that the execution of the University of Oregon Beautification Project would go well?
- To what extent would you say that members of the University of Oregon community would be satisfied with the outcome of the project?
- Overall, how well do you think the University of Oregon Beautification Project will fit into the university's plans?
- Please rate your attitude toward the University of Oregon Beautification Project on the following scales: [Favorable-Unfavorable; Positive-Negative; In Favor-Against; Good-Bad]

- We would now like you to go directly back to each thought you listed, and rate it individually on the degree to which you have confidence in that thought.

Need for Cognition (Study 4)

Instructions: Please rate how characteristic each of the following statements is of YOU on a scale from 1 – 5 (extremely uncharacteristic to extremely characteristic).

- I would prefer complex to simple problems.
- I like to have the responsibility of handling a situation that requires a lot of thinking.
- Thinking is not my idea of fun.
- I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.
- I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something.
- I find satisfaction in deliberating hard and for long hours.
- I only think as hard as I have to.
- I prefer to think about small, daily projects to long-term ones.
- I like tasks that require little thought once I’ve learned them.
- The idea of relying on thought to make my way to the top appeals to me.
- I really enjoy a task that involves coming up with new solutions to problems.
- Learning new ways to think doesn’t excite me very much.
- I prefer my life to be filled with puzzles that I must solve.
• The notion of thinking abstractly is appealing to me.
• I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much though.
• I feel relief rather than satisfaction after completing a task that required a lot of mental effort.
• It’s enough for me that something gets the job done; I don’t care how or why it works.
• I usually end up deliberating about issues even when they do not affect me personally.

**Self-Attitudes** (Study 4)

1. Please rate yourself using the following scales:

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
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<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
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</thead>
<tbody>
<tr>
<td>Extremely Useless</td>
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<td>Extremely Negative</td>
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<td>Extremely Bad</td>
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<td>Extremely Worthless</td>
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<tr>
<td>Extremely Useful</td>
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<td>Extremely Positive</td>
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<td>Extremely Good</td>
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<td>Extremely Valuable</td>
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<tr>
<td>Extremely Superior</td>
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**Self-Irrelevant Attitudes**

Using the scale below, please indicate your attitude towards: (Anchored at Extremely Negative/Against-Extremely Positive/In Favor)

- Affirmative Action
- Mexican Food
- George W. Bush
- Tide Laundry Detergent
- Paper Plates
- Tanning / Sun Bathing
- Coffee
- The Pope
- Football
- Acid Rain

Certainty in each of these items was also recorded
SAQ and Certainty
Instructions:

This questionnaire has to do with your attitudes about some of your activities and abilities. For the items that follow, you should rate yourself relative to other college students your own age by using the scale provided.

An example of the way the scale works is as follows: if one of the traits that follows were "height", a woman who is just below average in height would choose "E" for this question, whereas a woman who is taller than 80% (but not taller than 90%) of her female classmates would mark "H", indicating that she is in the top 20% on this dimension. Complete the following scale for YOUR HEIGHT:

<table>
<thead>
<tr>
<th>Letter</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bottom 5%</td>
</tr>
<tr>
<td>B</td>
<td>Lower 10%</td>
</tr>
<tr>
<td>C</td>
<td>Lower 20%</td>
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<tr>
<td>D</td>
<td>Lower 30%</td>
</tr>
<tr>
<td>E</td>
<td>Lower 50%</td>
</tr>
<tr>
<td>F</td>
<td>Upper 50%</td>
</tr>
<tr>
<td>G</td>
<td>Upper 30%</td>
</tr>
<tr>
<td>H</td>
<td>Upper 20%</td>
</tr>
<tr>
<td>I</td>
<td>Upper 10%</td>
</tr>
<tr>
<td>J</td>
<td>Top 5%</td>
</tr>
</tbody>
</table>

Indicate your intellectual/academic ability
Indicate your social skills/social competence
Indicate your artistic and/or musical ability
Indicate your athletic ability
Indicate your physical attractiveness

Now rate how certain you are that your intellectual/academic abilities rate as <RATING FROM ABOVE> (you may choose any letter):
A-not at all certain to J-extremely certain

Judgmental Self-Doubt Scale

Please indicate the extent to which you agree or disagree with the following statements:

- I have difficulty making decisions.
- I have a tendency to change my mind according to the last opinion I hear.
- After deciding something, I tend to worry about whether my decision was wrong.
- I frequently find myself afraid of not doing the right thing.
- I often have the sense that others know better than I do.
- Often I put off making difficult decisions.
- I often don’t trust myself to make the right decision.
- I often trust the judgment of others more than my own.
- My judgments about situations often turn out to be mistaken.
- I often worry about whether a decision I made will have bad consequences.
• In making a decision, I often tire myself out by switching back and forth from one conclusion to another.
• I am inclined to have trouble knowing where to stand on an issue.
• When making a decision, I often feel confused because I have trouble keeping all relevant factors in mind.
• In almost all situations I am confident of my ability to make the right choices.
• I often don’t know what to feel or believe.
• I wish I were more confident in my opinions.
• Many times I don’t know what to do next.
• I have a great deal of confidence in my opinions.
• Frequently, I doubt my ability to make sound judgments.

**Judgmental Self-Confidence**

• I am always confident in my thoughts, no matter what I'm thinking about.
• I often feel unsure of my thoughts and opinions
• More often than not I feel confident in my opinions
• My thoughts and opinions are generally very clear in my mind

**Trait Self-Confidence**

• I am a confident person
• I am a doubtful person

On the following screens you will be presented with a number of traits. Please indicate on the scale provided the extent to which the traits are descriptive of you. [not at all-extremely]

• Please indicate how CONFIDENT you are:
• Please indicate how SELF-CONFIDENT you are:

**Filler items**

• Please indicate how POWERFUL you are:
• Please indicate how HONEST you are:
• Please indicate how OUTGOING you are:
• Please indicate how AGGRESSIVE you are:
• Please indicate how PEACEFUL you are:
• Please indicate how RELIGIOUS you are:
• Please indicate how LAZY you are:
• Please indicate how COOPERATIVE you are:
• Please indicate how COMPETITIVE you are:
• Please indicate how NICE to other people you are: