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Perceiving stability as a means to attitude certainty: The role of implicit theories of attitudes

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ABSTRACT

This research introduces the concept of implicit theories of attitude stability. Across three studies, individuals are shown to vary both naturally and situationally in their lay theories about the stability of attitudes. Furthermore, these general theories are shown to impact people's certainty in their specific attitudes by shaping their perceptions of the stability of the attitude under consideration. By affecting attitude certainty, implicit theories of attitude stability also influence the extent to which people rely on their attitude when committing to future attitude-relevant behavior. Moreover, following exposure to a persuasive attack, implicit theories are shown to interact with situational perceptions of attitude stability to determine attitude certainty. Collectively, these findings suggest that implicit theories of attitude stability have an important influence on people's attitude certainty, subsequent behavioral intentions, and resistance to persuasive messages. Future directions concerning the potential impact of these theories for other attitudinal phenomena are discussed.

In the last few decades, attitude certainty—defined as the subjective sense of conviction, correctness, or clarity one has about an attitude (Gross, Holtz, & Miller, 1995; Petrocelli, Tormala, & Rucker, 2007)—has stimulated considerable research interest. In part, this interest stems from the fact that certainty has a number of important consequences for attitude-relevant thought and action (for reviews, see Gross et al., 1995; Tormala & Rucker, 2007). For instance, increased certainty has been linked to greater attitude–behavior correspondence (Fazio & Zanna, 1978; Tormala, Clarkson, & Petty, 2006), greater attitude stability over time (Bassili, 1996), greater resistance to persuasion (Petrocelli et al., 2007; Tormala & Petty, 2002; Wu & Shaffer, 1987), and even greater self-certainty (Clarkson, Tormala, DeSensi, & Wheeler, 2009).

Of particular interest to the current investigation is the link between attitude certainty and attitude stability, the latter construct referring to the extent to which an attitude remains unchanged or consistent over time (Krosnick & Petty, 1995). Past research has explored attitude stability primarily as a *consequence* of certainty. As noted, the more certain people are of their attitudes, the more stable their attitudes tend to be as time passes (e.g., Bassili, 1996; Petty, Haugtvedt, & Smith, 1995). The current research investigates a new possibility. Based on recent work exploring metacognitive factors in attitudes and persuasion (see Petty, Briñol, Tormala, & Wegener, 2007), we consider whether *perceiving* stability in one's attitude can *affect* attitude certainty. That is, unlike past research suggesting that stability is a consequence of certainty, we propose that perceiving stability can function as an *antecedent* to certainty.

Our primary hypothesis is that the mere perception that one's attitude has been stable (versus unstable) over time should foster greater attitude certainty. In essence, we posit that perceived attitude stability promotes perceived attitude correctness and clarity, which boosts overall certainty (Petrocelli et al., 2007). For instance, perceived stability in one's attitude over time could be interpreted as indicating that one has expressed one's attitude, received support for that attitude, or perhaps even defended that attitude previously. These assessments, in turn, are all associated with increased attitude certainty (see Tormala & Rucker, 2007).

This reasoning is consistent with the *resistance appraisals hypothesis* (Tormala, 2008), which postulates that when individuals receive persuasive messages, they can observe their own responses to those messages and then form attributional inferences about their attitudes. Most germane to the current investigation, the attributions people make about their attitudes after resisting persuasion can affect their attitude certainty. For instance, Tormala and Petty (2002) showed that individuals who perceived that they had successfully resisted a strong counterattitudinal message became more certain of their initial attitude. The rationale is that when people attribute successful resistance to their attitude's validity (e.g., "I just resisted a strong

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attack, so my attitude must be correct."), they become more certain. Following a similar logic, individuals who perceive their attitudes to be stable over time—even in the absence of any influence attempt—might form inferences about their attitudes that boost perceived clarity or correctness (e.g., "I've held this same opinion for a long time – I must really know what I think on this issue." or "I really must be right."). Conversely, individuals who perceive their attitudes to be unstable over time might form inferences about their attitudes that undermine perceived clarity or correctness (e.g., "I've moved around a lot on this issue – maybe I don't really know where I stand." or "…maybe this isn't the correct way to think about the issue.").

An important question thus becomes: What determines people's perceptions of their own attitude's stability? While there might be a multitude of factors that could influence the perception of attitude stability over time, the current research focuses primarily on one possible antecedent: one's implicit theory of attitude stability. Building on prior work regarding people's implicit theories of trait stability (Dweck, 1999), we sought to assess the extent to which people vary in their general implicit theories of *attitude* stability and to gauge the impact of these general theories on perceptions of a specific attitude's stability and, ultimately, attitude certainty.

Implicit theories of attitude stability

Considerable research in person perception has explored people's implicit theories of trait stability (Dweck, 1999; Dweck, Chiu, & Hong, 1995; Sedikides & Anderson, 1994; Werth & Förster, 2002). Much of this research has demonstrated that some individuals endorse the lay belief that traits are inherently fixed, whereas others endorse the lay belief that traits are inherently malleable (Dweck, 1996; Dweck & Elliott, 1983). For instance, some people view intelligence as generally stable over time, whereas others view it as constantly changing, or at least changeable. Not surprisingly, these implicit theories have important implications for numerous social cognitive phenomena, such as impression formation, the acquisition of new trait information, and endorsement of stereotypes (for a review, see Molden & Dweck, 2006).

Do people hold similar implicit, or lay, theories about attitudes? That is, do some people view attitudes as inherently fixed, whereas others view attitudes as inherently malleable? In the current research, we explore the possibility that there is variation in people's general perceptions of attitudes as fixed versus malleable constructs. For instance, two individuals might hold similar attitudes toward a restaurant, artist, or social issue, but differ in the extent to which they perceive these attitudes as inherently stable or unstable. We contend that these general theories of attitudes, if they exist, can significantly impact people's perceptions of their attitudes' stability on specific issues, which in turn can shape their attitude certainty toward those issues.

Our hypothesis is that individuals holding the general theory that attitudes are stable will be more certain of their specific attitudes than individuals holding the general theory that attitudes are malleable. The rationale is that a general implicit theory of attitude stability (malleability) will foster the perception that any specific attitude one considers has been stable (unstable) over time, which in turn will lead to greater (less) certainty about that specific attitude. As noted, indirect evidence for the general link between stability and certainty comes from past research showing that people become more certain of attitudes when those attitudes successfully resist attack (Tormala, 2008). Also relevant, prior research has shown that other lay theories can impact attitude certainty. Rydell, Hugenberg, and McConnell (2006) manipulated people's beliefs that attitudinal resistance is either good (e.g., implies intelligence) or bad (e.g., implies close-mindedness), and then presented participants with a persuasive attack. Their findings revealed that people became more certain of their attitudes following successful resistance when they believed resistance was good but not when they believed resistance was bad. Thus, past research indirectly hints at the possibility that people's general theories about attitude stability might influence attitude certainty. However, there is no prior demonstration that in the absence of any new information or evidence that one's attitude is valid (e.g., perceiving that it has resisted a strong attack), mere perceptions of its stability over time can boost attitude certainty.

If true, this finding would expand existing understandings in several important areas of research. For instance, it would provide insight into potential individual differences in attitude certainty. Indeed, tapping general implicit theories of attitude stability and showing a link to attitude certainty on specific issues would identify a means of predicting, a priori, a particular individual's likelihood of holding a given attitude with certainty or uncertainty. This would provide an important step in a growing area of research that has had little success identifying individual difference predictors (see Tormala & Rucker, 2007). Also relevant, the predicted finding would help extend work on implicit theories into the attitudes domain. By demonstrating that general implicit theories affect the metacognitive inferences people form about their attitudes on specific topics, this work would highlight implicit theories of stability versus malleability as important to understanding attitude formation, maintenance, and change.

Overview

We conducted three studies exploring these issues. In Study 1, we sought to demonstrate that individuals naturally vary in their general theories of attitude stability, and that such theories predict attitude certainty on specific issues. We also investigated the possibility that the effect of general theories of attitude stability on specific attitude certainty is mediated by the perceived stability of the specific attitude in question. In Study 2, we manipulated people's general theories of attitude stability and tested the implications of their resulting attitude certainty for attitude–behavior consistency. Finally, given that people presumably experience moments of situational attitude stability and instability irrespective of their general beliefs about stability, we thought it important to investigate contexts in which general theories of attitude stability and specific situational perceptions of stability were at odds. We explored this issue in Study 3.

Study 1

The purpose of Study 1 was to investigate whether people naturally vary in their theories of attitude stability and, if so, whether these theories have consequences for attitude certainty. To address these questions, we asked undergraduates about their attitude toward a personally relevant issue (a campus bus system), their perceived attitude stability on that issue, and their attitude certainty. Participants then completed a measure of their general implicit theories of attitude stability. We predicted that individuals who endorsed a general theory of attitude stability (versus instability) would report greater perceived stability in their specific attitude toward the issue, which in turn would result in greater attitude certainty.

Method

Participants and procedure

Seventy-three Indiana University (IU) undergraduates participated for partial course credit. Each participant was escorted to a private cubicle equipped with a personal computer where all study materials were presented. Participants were informed there that we were interested in their reactions to an important campus issue. They were then presented with the issue of the campus bus system and asked to report their attitude toward it on a nine-point scale anchored at *against* (1) and *in favor* (9). We then asked participants to report

Table 1
Intercorrelations among study variables (Study 1).

Variable	1	2	3	4
1. Implicit theories of attitude stability	–			
2. Attitude ratings	.00	–		
3. Attitude certainty	.28*	.35**	–	
4. Perceived attitude stability	.23*	.36**	.72***	–

Note. Higher scores on the measure of implicit theories indicate greater endorsement of the inherent stability of attitudes.
* $p<.05$.
** $p<.01$.
*** $p<.001$.

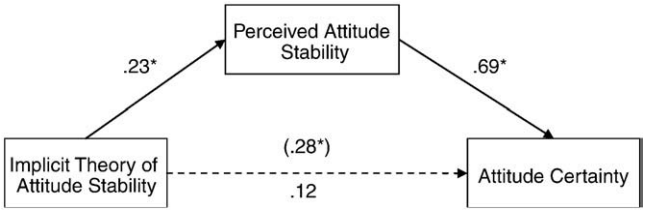

Fig. 1. Mediation model tested in Study 1. *Note*. Values displayed are standardized beta coefficients. The value in parentheses indicates the relationship between ITAS and attitude certainty without controlling for perceived attitude stability. Greater values on the ITAS scale indicate greater endorsement of an implicit theory of stability. *$p<.05$.

attitude certainty on a single item (adapted from Fazio & Zanna, 1978): "How certain are you of your attitude toward the IU campus bus system?" Responses were provided on a scale ranging from 1 (*not certain at all*) to 9 (*extremely certain*). Immediately thereafter, we assessed perceived attitude stability by asking participants to rate the extent to which they had consistently held their attitude toward the campus bus system since they began attending the university. Participants responded on a nine-point scale anchored at *not consistently at all* (1) and *very consistently* (9).

Implicit theories of attitude stability

Finally, following a ten-minute filler task in which participants responded to a variety of personality scales, participants completed an eight-item implicit theories of attitude stability (ITAS) questionnaire (Hendrix, Clarkson, & Tormala, 2009) adapted from Chiu, Hong, and Dweck (1997). This measure was intended to differentiate between individuals who believe attitudes are either inherently fixed or inherently malleable (see Appendix A). Items were rated on scales anchored at *strongly agree* (1) and *strongly disagree* (6). Responses were reverse-scored where appropriate and summed such that higher scores indicated greater endorsement of the inherent stability of attitudes and lower scores indicated greater endorsement of the inherent instability of attitudes ($\alpha = .82$). The sample range was 17 to 48 (possible range: 8 to 48).[1]

Results and discussion

We first examined the relationships between all study variables. As displayed in Table 1, ITAS did not correlate with participants' attitudes toward the bus system. However, the more participants viewed attitudes as generally stable constructs, the more stable they perceived their specific issue-relevant attitudes to be, and the more certain they were of those attitudes. To test the mediating role of perceived stability in the relation between ITAS and attitude certainty, we conducted a series of regression analyses following the recommendations of Baron and Kenny (1986; see Fig. 1). When both ITAS and perceived stability were entered into a simultaneous regression model predicting attitude certainty, perceived stability remained a significant predictor, whereas ITAS did not. Furthermore, the mediating pathway from ITAS to attitude certainty through perceived stability was significant ($z = 1.92$, $p = .05$). Thus, participants who endorsed the general belief that attitudes are stable reported greater attitude certainty toward a target issue than did those who held the general belief that attitudes are malleable, and this relation was mediated by the perceived stability of the specific attitude in question. This result is consistent with the notion that people do vary in their general theories of attitude stability, and that these variations have important implications for attitude certainty.

Of course, given the correlational nature of Study 1, it is theoretically possible that the causal chain could function in the opposite direction, such that feeling certain of an attitude fosters the perception that the attitude is stable and, consequently, that attitudes in general are stable. Although we intentionally included a filler task before the ITAS scale to separate it from the other indices, the order of the measures actually favored this alternative path (i.e., attitude certainty → perceived stability → ITAS). Thus, we tested the reverse meditation model. Although the relationship between attitude certainty and ITAS did decrease with perceived stability in the model ($\beta = .24$, $t(70) = 1.47$, $p > .14$), perceived stability failed to significantly predict ITAS in the simultaneous regression analysis ($\beta = .06$, $t(70) = .34$, $p > .73$). Additionally, the Sobel test for this pathway was not significant ($z = .33$). We view these results as supportive of the proposed causal sequence (i.e., ITAS → perceived stability of the specific attitude → specific attitude certainty) and not an alternative model based on the order of measures. In fact, these results arguably lend greater credence to the proposed model given that we obtained evidence for it despite ordering the measures in a way that might make the reverse sequence easier to obtain.

Study 2

The hypothesis that implicit theories of attitudes can impact attitude certainty rests on an assumption that people's general beliefs concerning attitude stability shape their perceptions of a specific attitude's stability which, in turn, affects certainty. We tested this possibility in Study 2 by experimentally manipulating participants' implicit theories. We hypothesized that individuals induced to endorse an implicit theory of attitude stability (versus malleability) would perceive their specific attitude on a given topic as more stable and, consequently, report greater certainty. Moreover, we expected perceived attitude stability to mediate this effect.

We also hypothesized that differences in certainty—induced by people's ITAS—would have important implications for behavioral intentions. In particular, previous research (e.g., Tormala & Petty, 2002) has demonstrated that attitude certainty can strengthen the link between attitudes and behavioral intentions. Thus, in Study 2 we assessed participants' intentions to engage in a particular attitude-relevant behavior and examined whether attitude-intention consistency differed across ITAS conditions. If our manipulation affected attitude certainty, as anticipated, then we further predicted greater attitude-intention consistency when participants were induced to endorse a general theory of stability (i.e., high ITAS) rather than malleability (i.e., low ITAS). If obtained, this effect would suggest that believing in stable (unstable) attitudes generally makes people more (less) certain of the specific attitudes they hold, and increases

[1] To assess the reliability of our scale, we asked 949 IU undergraduates (66% female, mean age: 19.04) to respond to an online questionnaire in which the ITAS scale was embedded ($\alpha = .88$). The recoded scale was submitted to a principal component analysis, which revealed a single dominant component (eigenvalue = 4.363) that accounted for 54.54% of variance in responses. Additionally, a second sample of 130 IU undergraduates (63% female, mean age: 19.67) completed the ITAS scale ($\alpha = .92$) and then returned two weeks later to complete the scale again ($\alpha = .93$). Test–retest analysis revealed that responses were significantly correlated across the two-week span (Pearson: $r = .53$, $p < .001$; Spearman: $r = .55$, $p < .001$).

(decreases) the impact of those attitudes on subsequent behavioral decisions.

Method

Participants and procedure

Forty-eight Wake Forest University undergraduates participated in return for course credit. The nature of participation was similar to that of Study 1. The experiment was introduced as a study of student opinions. Participants were informed that they would be asked numerous questions about their attitudes in general and on several specific issues. Participants were then randomly assigned to one of two ITAS conditions. Following this manipulation, participants reported their attitude, perceived stability, and attitude certainty about a campus issue—optional reporting of standardized test results. Participants were also asked to indicate their behavioral intention with respect to the issue, after which they were debriefed and thanked.

ITAS manipulation. Participants were randomly assigned to a high or low ITAS condition. In both conditions, participants responded to eight items surveying their perceptions about the general stability of attitudes. Importantly, though, the items and corresponding response scales were biased in different ways across conditions to induce the perception of either high or low ITAS. In the *high ITAS condition*, the wording of each item was biased to emphasize the inherent stability of attitudes (e.g., "People have a certain set of attitudes, and they can't really do much to change it."). In the *low ITAS condition*, the wording of each item emphasized the inherent instability of attitudes (e.g., "People have a certain set of attitudes, but they can do a lot of things to change it."). In both conditions, participants responded to these items using scales ranging from 1 (*agree somewhat*) and 6 (*agree completely*). The use of biased items and response scales was adapted from prior research (e.g., Petrocelli, Martin, & Li, 2010).

Manipulation check. To assess the efficacy of the ITAS manipulation, participants completed two items directly following the manipulation that were unbiased in content and wording: "Would you say that attitudes are things that tend to be stable or unstable?" and "Would you say that attitudes are things that are easy or difficult to change?" Responses, given on scales ranging from 1 (*very unstable/very easy*) to 9 (*very stable/very difficult*), were averaged ($r = .60$, $p < .001$). Higher values thus reflected greater ITAS.

Attitude. Participants were then introduced to the issue of optional reporting of standardized test results (e.g., SAT) as an admissions policy—a controversial issue being debated on participants' campus at the time of the study. As in Study 1, attitudes were assessed using a single nine-point semantic differential (i.e., *against–in favor*).

Perceived attitude stability. Following the attitude measure, participants reported the stability of their attitude on four items (e.g., "To what extent has your attitude toward optional reporting of standardized test results changed or remained the same since you started at Wake Forest University?") using nine-point response scales (e.g., *definitely changed* [1] to *definitely remained the same* [9]). These items were averaged ($\alpha = .90$).

Attitude certainty. Participants next reported their attitude certainty on three items adapted from Petrocelli et al. (2007; e.g., "How certain are you that your attitude toward optional reporting of standardized test results is the correct attitude to have?"). Participants responded to each item on a nine-point scale anchored at *not at all certain* (1) and *very certain* (9). These responses were averaged ($\alpha = .92$).

Behavioral intention. Finally, participants were asked how willing they would be to support a campus group promoting the new policy of optional reporting of standardized test results. Responses were provided on a nine-point scale anchored at *not at all* (1) and *very* (9).

Results and discussion

Manipulation check

Participants assigned to the high ITAS condition reported that, in general, they perceived attitudes to be more stable and difficult to change ($M = 6.72$, $SD = 1.55$) than did participants assigned to the low ITAS condition ($M = 5.71$, $SD = 1.37$), $F(1, 46) = 5.60$, $p < .05$.

Attitudes, perceived attitude stability, and attitude certainty

Next, we examined attitudes, perceived attitude stability, and attitude certainty. First, there was no difference in attitudes across the high ($M = 6.08$, $SD = 2.75$) and low ($M = 6.87$, $SD = 2.18$) ITAS conditions, $F(1, 46) = 1.19$, *ns*. In contrast, we did observe a significant effect on perceived attitude stability ($F(1, 46) = 4.22$, $p < .05$) and attitude certainty ($F(1, 46) = 6.01$, $p < .05$), such that participants reported both greater stability and certainty about their specific attitudes in the high ($M_{stability} = 7.58$, $SD_{stability} = 1.75$; $M_{certainty} = 7.76$, $SD_{certainty} = 1.53$) compared to low ($M_{stability} = 6.48$, $SD_{stability} = 1.98$; $M_{certainty} = 6.65$, $SD_{certainty} = 1.89$) ITAS condition.

Mediation. To test whether perceived attitude stability mediated the attitude certainty effect, we conducted a series of regression analyses using the approach recommended by Baron and Kenny (1986). First, as noted, the ITAS manipulation affected perceived attitude stability and attitude certainty, such that greater perceived stability and certainty were observed in the high ITAS condition. When the ITAS manipulation and perceived attitude stability were both included in a regression model predicting attitude certainty, perceived stability significantly predicted attitude certainty, but the ITAS manipulation did not (see Fig. 2). The indirect effect from ITAS to certainty through perceived stability was significant ($z = 2.11$, $p < .05$).

Behavioral intention

Our analysis of the behavioral intention data showed no difference across the high ($M = 5.00$, $SD = 2.93$) and low ($M = 5.91$, $SD = 2.52$) ITAS conditions, $F(1, 46) = 1.33$, *ns*. Our hypothesis, however, focused on differential attitude-intention *consistency*. Again, we expected greater consistency in the high compared to low ITAS condition, which would manifest as an interaction between attitude and the ITAS manipulation on behavioral intention.

Following the recommendations of Cohen, Cohen, West, and Aiken (2003), we conducted a hierarchical regression analysis treating attitude (continuous, mean centered) and ITAS condition (dummy coded: 0 = low, 1 = high) as predictors of behavioral intention. This analysis revealed a significant effect for attitude, $\beta = .39$, $t(45) = 2.61$, $p < .02$; more positive attitudes were associated with more favorable

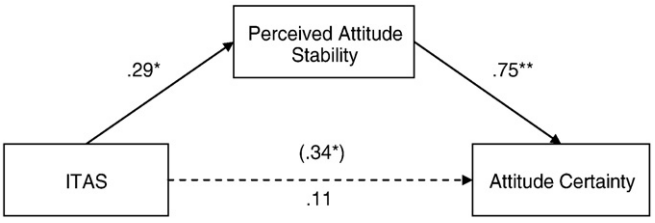

Fig. 2. Mediation model tested in Study 2. *Note*. ITAS = manipulated implicit theory of attitude stability. Values displayed are standardized beta coefficients. The value in parentheses indicates the effect of ITAS on attitude certainty without controlling for perceived stability. ITAS condition was dummy coded (0 = implicit theory of instability; 1 = implicit theory of stability). $^{*}p < .05$. $^{**}p < .01$.

intentions. However, this relation was qualified by the expected attitude × ITAS interaction, $\beta = 1.52$, $t(44) = 2.10$, $p < .05$. As illustrated in Fig. 3, there was significant correspondence between attitude and intention in the high, $\beta = .66$, $t(44) = 2.42$, $p < .02$, but not low, $\beta = .05$, $t(44) = .07$, *ns*, ITAS condition. Thus, participants showed significantly greater attitude-intention consistency under high ITAS conditions.

These findings help to elucidate the causal relationship between general theories of attitude stability and the perceived stability and resulting certainty of a specific attitude. Conceptually replicating Study 1, individuals who were induced to perceive attitudes as generally stable reported greater perceived stability and certainty about their attitude toward the specific issue raised in the experiment. Furthermore, this certainty had implications for people's willingness to base behavioral intentions on their attitudes. Participants who perceived attitudes to be stable (versus unstable) showed greater attitude-intention consistency. Thus, Study 2 provides evidence that ITAS can have a causal impact on attitude certainty and, consequently, dictate attitude–behavior consistency.

Study 3

Taken together, Studies 1 and 2 showed that people are more certain of their attitudes when they believe attitudes are generally stable rather than malleable. Moreover, this effect is mediated by the perceived stability of the specific attitude being considered. In general, then, people's theories of attitude stability seem to cause consistent perceptions with respect to specific attitudes, which in turn affect the level of certainty ascribed to those attitudes. Nevertheless, although it appears that general and specific perceptions of stability frequently are aligned, they can be conceptually distinguished. Indeed, it seems inevitable that situations will arise in which people's general theories of attitude stability and their perceptions of a specific attitude's stability are at odds. For instance, stability theorists might perceive that their attitude on a given issue has changed over time or in response to a recent influence attempt. Conversely, malleability theorists might perceive that their attitude on a particular issue has persisted over time, or withstood a recent influence attempt. What happens to attitude certainty when people's general theories and situational or issue-specific perceptions of stability are incongruent?

We propose that when people's situational perceptions of stability violate or mismatch their general theories, they will view this violation as unexpected, which will capture attention and perhaps heighten metacognitive reflection processes that result in attitude certainty adjustments. That is, we propose that situational perceptions of stability or malleability should be viewed as more surprising, informative, or diagnostic when they depart from general theories. Consequently, perceived situational stability should elicit greater attention and reflection when an individual holds an implicit theory of attitude malleability, whereas perceived situational malleability should elicit greater attention and reflection when an individual holds an implicit theory of attitude stability. Consistent with this reasoning, considerable evidence suggests that, all else equal, incongruent information tends to increase processing relative to congruent information. For instance, people have been shown to process or reflect more on information that violates their expectancies than information that fits with their expectancies (e.g., Gilovich, 1983; Wong & Weiner, 1981). Similarly, numerous studies have revealed that people process persuasive messages more carefully when the information in those messages is unexpected or somehow inconsistent (e.g., Karmarkar & Tormala, 2010; Maheswaran & Chaiken 1991).

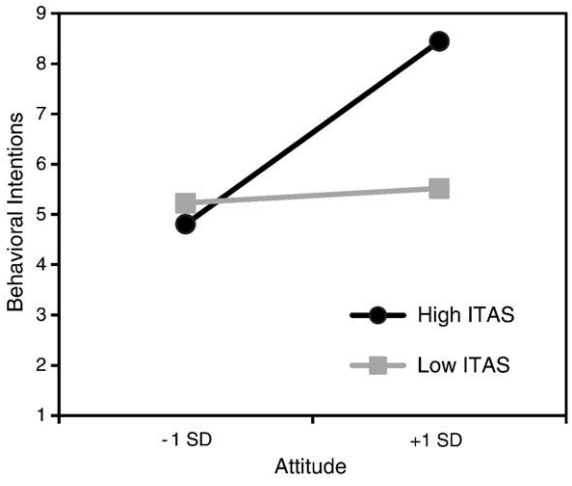

Fig. 3. Behavioral intentions (willingness to support policy) as a function of attitudes and implicit theory of attitude stability (ITAS) in Study 2. Plots depict predicted means at 1 *SD* above and below the mean on the attitude index.

Based on this logic, we hypothesize that people reflect more upon their perceived attitude stability versus change in a given situation, and form correspondent inferences about their attitude certainty, when these situational perceptions deviate from their general theories. Thus, the positive effect of perceived situational stability on certainty might be more likely to emerge when people endorse a general theory of malleability, whereas the negative effect of perceived situational instability on certainty might be more likely to emerge when people endorse a general theory of stability. The rationale is that inconsistency increases attention and reflection, which in turn can foster adjustments in attitude certainty (e.g., Tormala & Petty, 2004a,b). In essence, borrowing from attribution theory (e.g., Kelley, 1972), we posit that the effect of perceived situational stability on attitude certainty will be augmented and discounted by mismatches and matches with one's general implicit theory, respectively.

Furthermore, we postulate that these effects will be moderated by people's perceptions of the information that either changed or did not change their attitudes. Specifically, based on past research on resistance to influence (see Tormala, 2008), we propose that argument strength will moderate the extent to which people view their own situational stability or instability as diagnostic of their attitude's validity (high certainty) or invalidity (low certainty). Consider the situation in which a person holds the general theory that attitudes change, but perceives that his or her attitude on a specific issue has just resisted a persuasive message. This resistance should be noteworthy according to the expectancy-violation logic, but might only translate into greater certainty when the resisted message is perceived as strong, because resisting a strong message is more diagnostic of an attitude's validity than resisting a weak message (Tormala & Petty, 2002).

Conversely, a different pattern might emerge when a person holds the general theory that attitudes are fixed. In this case, perceiving situational change is noteworthy, but this perception of change might be most likely to translate into reduced certainty when it is perceived to have occurred in response to a weak message. Indeed, changing one's attitude in response to a weak attack is more diagnostic of the initial attitude's *invalidity* than is changing in response to a strong message (Tormala et al., 2006; see also Rucker & Petty, 2004).

If our reasoning is correct, we should find a three-way interaction among argument strength, perceived situational attitude stability, and general theories of stability on attitude certainty. We tested this prediction by presenting participants with a strong or weak persuasive message promoting a counterattitudinal issue (i.e., a proposed mandate for all seniors to pass a series of comprehensive exams as a graduation requirement), and measuring their perceived attitude stability on the issue as well as their general theories of stability.

Method

Participants and design

One hundred twenty-eight IU undergraduates participated for course credit. Participants were randomly assigned to receive a strong or weak persuasive message. They also reported their perceived attitude change in response to the message and completed the ITAS scale.

Procedure

The experiment was introduced as a study of student reactions to an important academic issue. The nature of participation was similar to that of Studies 1 and 2. Participants were led to believe that their university had recently begun to consider implementing senior comprehensive exams as a graduation requirement (see Petty & Cacioppo, 1986). Participants were told that all students would have to pass these exams in order to graduate, and that failure to do so would mean taking remedial coursework before a degree could be conferred. After this introduction, participants were presented with a persuasive appeal consisting of several arguments in favor of the policy. The strength of the arguments was varied across conditions. Following the message, participants responded to a series of measures—including attitudes, attitude certainty, and perceived attitude stability toward the issue. Finally, participants completed a ten-minute filler task of personality items before completing the ITAS scale.

Argument strength. Participants were randomly assigned to receive strong or weak arguments for comprehensive exams (see Petty & Cacioppo, 1986). In the strong argument condition, participants received a series of compelling reasons to implement the policy (e.g., comprehensive exams increased GPAs at another university). In the weak argument condition, participants received less compelling reasons to implement the policy (e.g., implementing comprehensive exams would help the university join a national trend).

Attitudes. Immediately following the message, participants reported their attitudes toward the comprehensive exam policy on a single scale anchored at *against* (1) and *in favor* (9).

Attitude certainty. After reporting attitudes, participants completed the attitude certainty measure, reporting how much confidence they had in their attitude toward senior comprehensive exams on a scale ranging from 1 (*no confidence at all*) to 9 (*very high confidence*).

Situational perception of stability. Next, participants were asked to report the stability of their attitude after exposure to the persuasive message. Specifically, participants were asked: "To what extent were you persuaded by the proposal in favor of senior comprehensive exams?" Responses were obtained on a single scale anchored at *not at all* (1) and *very much* (9). This item, which was reverse-scored, has been used in past research to assess people's perceived degree of attitude change following a persuasive message (e.g., Tormala & Petty, 2002).

Implicit theory of attitude stability. Finally, participants completed the same filler task and ITAS scale as that described in Study 1 ($\alpha = .87$).

Results

We submitted the attitude and attitude certainty data to hierarchical regression analyses using argument strength (dummy coded: 0 = weak, 1 = strong), perceived stability (continuous, mean centered), and ITAS (continuous, mean centered) as predictors.

Attitudes

The attitude data revealed that participants reported more favorable attitudes toward comprehensive exams as their perception of their own attitude change increased, $\beta = -.63$, $t(123) = -8.40$, $p < .001$. No other effects were significant (all $ps > .14$). Due to this main effect, we controlled for participants' attitudes in subsequent analyses.

Attitude certainty

We submitted the certainty data to the same analysis. A significant relation between situational perception of attitude stability was observed, $\beta = .36$, $t(119) = 4.65$, $p < .001$; the less individuals reported changing their attitudes, the more certain they were. No other main effects or two-way interactions emerged (all $ps > .44$). As expected, though, we did find a three-way interaction, $\beta = -.30$, $t(119) = -3.05$, $p < .01$ (see Fig. 4). Following simple slope analysis procedures recommended by Cohen et al. (2003) and Dawson and Richter (2006), we further examined this three-way interaction by assessing the two-way interactions between argument strength and situational perception of attitude stability at one standard deviation above and below the mean on ITAS. The three-way interaction involved two different two-way interactions.

First, among participants who endorsed an *implicit theory of attitude stability* (+1 *SD* on ITAS), there was a two-way interaction between situational perception of stability and argument strength, $\beta = .38$, $t(119) = 4.61$, $p < .001$. Consistent with our predictions, when these participants were exposed to weak arguments, they reported significantly less certainty in their attitude when they perceived that their attitude had changed as opposed to when it did not, $\beta = .99$,

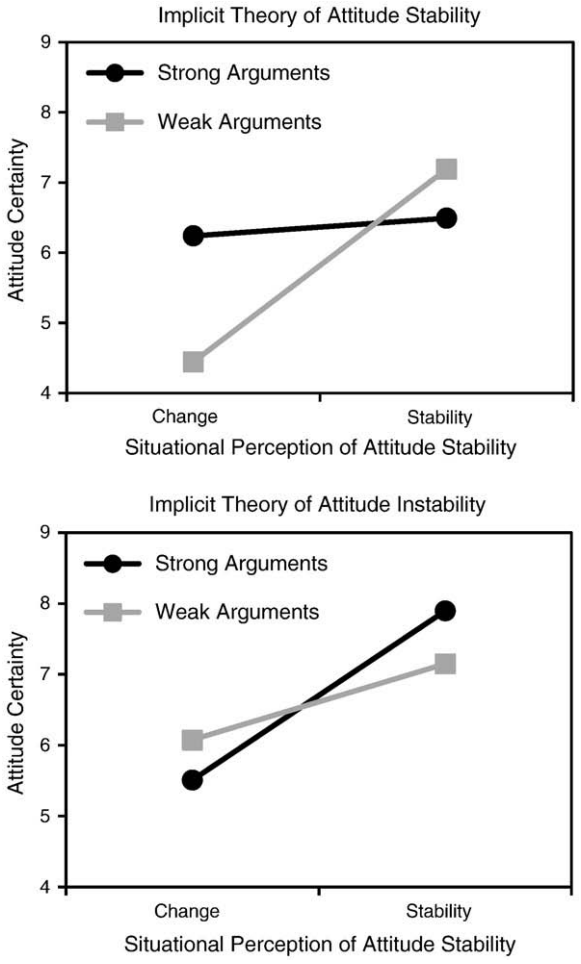

Fig. 4. Predicted means of attitude certainty regressed onto situational perception of attitude stability, implicit theory of attitude stability, and argument strength (Study 3). Plots depict predicted means at 1 *SD* above and below the means of the implicit theory and situational perception measures.

$t(119) = 5.41$, $p < .001$. However, when the arguments were strong, no relationship between certainty and situational perception of stability was observed, $\beta = .16$, $t(119) = 1.00$, *ns*. Viewed differently, participants who endorsed an general theory of attitude stability but perceived that their attitudes had changed reported lower attitude certainty in the weak as opposed to strong argument condition, $\beta = .60$, $t(119) = 4.30$, $p < .001$. In contrast, when participants endorsing a general theory of stability perceived that they resisted persuasion, there was a marginal tendency in the opposite direction, $\beta = -.23$, $t(119) = -1.87$, $p < .07$. Thus, perceived situational change was most detrimental to certainty among individuals who endorsed a general theory of stability but perceived change in response to weak arguments.

We also found a two-way interaction between situational perception of stability and argument strength when participants endorsed an *implicit theory of attitude instability* (−1 *SD* on ITAS), $\beta = -.20$, $t(119) = -2.34$, $p < .02$, but here it assumed a different form. When these participants were exposed to strong arguments, they reported greater attitude certainty when they perceived that their attitude had remained stable rather than changed in the situation, $\beta = .72$, $t(119) = 4.51$, $p < .001$. When the arguments were weak, however, no relationship between certainty and situational stability was observed, $\beta = .28$, $t(119) = 1.55$, $p = .13$. Viewed differently, participants who endorsed a general theory of instability but perceived that they did not change in the situation tended to report greater certainty in the strong as opposed to weak argument condition, $\beta = .25$, $t(119) = 2.23$, $p < .05$. In contrast, when participants endorsing a general theory of instability perceived that their attitude had changed in the situation, no difference was found between strong and weak argument conditions, $\beta = -.19$, $t(119) = -1.48$, *ns*. Thus, perceived situational stability was most beneficial to certainty among individuals who endorsed a general theory of instability but perceived no change in response to strong arguments.[2]

Discussion

The results of Study 3 are consistent with the notion that perceptions of a specific attitude's stability or instability in a given situation capture attention or are particularly noteworthy when they conflict with people's general theories of attitude stability or malleability. That is, people are more likely to reflect on the implications of recent stability or change for attitude certainty when that stability or change is incongruent with their general theories. Furthermore, in gauging the implications of recent stability or change for certainty, people take into account other situational factors—in this case, the strength of the persuasive message they received. We found that when people held the general theory that attitudes are malleable—meaning that at least in principle attitudes can change—they became more certain of their specific attitudes following perceived resistance to a strong rather than weak message. When people held the general theory that attitudes are stable—meaning that by and large attitudes tend not to change—they became less certain of their attitudes following perceived change to a weak rather than strong message. In each case, incongruence between general theories and specific situational perceptions appeared to prompt people to reflect on and adjust their certainty. The direction of adjustment was determined by the type of incongruence and strength of the message.

It is worth noting that the main effect of implicit theories on attitude certainty that was observed in Studies 1 and 2 was not replicated in Study 3. In Study 3, the effect of ITAS appeared to be more contextual in nature. What accounts for this discrepancy? We suspect that it stems from attentional differences across studies. Consider the fact that in every study, perceptions of the stability or instability of the specific target attitude did predict attitude certainty, whereby greater perceived situational stability was associated with greater certainty in each case. In Studies 1 and 2, there was no salient influence attempt to consider, leaving participants to infer their perceived situational stability from their general theory of stability—an inference which drove the certainty effect. By contrast, in Study 3 there was a salient situational influence attempt—the persuasive message—so perceived situational stability could be congruent or incongruent with general theories of stability. When there was incongruence, situational stability/instability appeared to capture more attention, prompt greater reflection, or feel more diagnostic or noteworthy, which set the stage for the interaction effects we observed. Thus, in general, people's implicit theories of stability seem to prompt consistent situational perceptions that affect certainty (Studies 1 and 2). However, situational perceptions and implicit theories might sometimes diverge (as when people are confronted with persuasive attacks), and when they do their effects become more interactive in nature (Study 3).

Although we did not obtain direct evidence for the attentional mechanism, our account fits with past research investigating the effects of incongruities or expectancy violations on attention and processing. Our account also fits with some work on implicit theories. In particular, Plaks, Grant, and Dweck (2005) and Plaks, Stroessner, Dweck, and Sherman (2001) found that incremental theorists (who believe traits are malleable) attended more to theory-inconsistent information than to theory-consistent information. However, Plaks et al. also found that *entity* theorists (who believe traits are fixed) attended *less* to theory-inconsistent information than to theory-consistent information. In other words, whereas in the current study both stability and malleability theorists appeared to take a relatively active route to processing theory-inconsistent information, Plaks et al. found that this was more likely among malleability than stability theorists.

Future research should examine this potential discrepancy. It could be that substantive differences between paradigms explain the different outcomes. For example, Plaks et al. (2001) dealt primarily with people's theories about how individuals in stereotyped groups change or do not change, whereas our paradigm dealt with people's theories about how they *themselves* change or do not change *their attitudes*. Perhaps when people process self-relevant information, any discrepancy or theory violation is perceived as personally important, which heightens attention and processing. When people process information about others, however, they presumably allocate cognitive resources somewhat differently. Perhaps stability theorists in this context prefer to avoid thinking deeply about theory violations, and thus take a more passive orientation toward solving them. These possibilities warrant attention in future research.

General discussion

Past research has shown that attitude certainty is a crucial antecedent to attitude stability. Taking a different direction, the

[2] We also analyzed the data from another angle by testing the effects at 1 *SD* above and below the mean on situational perceptions of stability. Among participants who perceived situational stability, an interaction between implicit theory and argument strength emerged, $\beta = .07$, $t(119) = 2.39$, $p < .02$. When these participants were exposed to strong arguments, they expressed greater attitude certainty when they endorsed a general theory of instability rather than stability, $\beta = -.39$, $t(119) = -3.82$, $p < .001$. No relationship was found between certainty and implicit theory when stability was perceived in the face of weak arguments, $\beta = .09$, $t(119) = .67$, *ns*. Viewed differently, among participants who perceived situational stability, those who endorsed a general theory of malleability showed marginally greater certainty when they resisted strong compared to weak arguments, $\beta = -.25$, $t(119) = -1.69$, $p < .10$. We also found an interaction between implicit theory and argument strength among participants who perceived situational change, $\beta = -12$, $t(119) = -3.91$, $p < .001$. When these participants perceived change in response to weak arguments, they expressed less certainty when they endorsed a general theory of stability rather than instability, $\beta = -.62$, $t(119) = -3.70$, $p < .001$. No relationship was found between certainty and implicit theory when arguments were strong, $\beta = .16$, $t(119) = 1.15$, *ns*. Among participants who perceived that their attitudes had changed, those who endorsed a general theory of stability showed less certainty when they changed in response to weak compared to strong arguments, $\beta = -.60$, $t(119) = -3.44$, $p < .001$.

current investigation explored whether *perceived* attitude stability also can function as a *source* of certainty. From prior studies on perceptions of personal and developmental stability, it might have been assumed that most people endorse the view that attitudes are stable. Indeed, even within the context of a single experimental session, people have been shown to underestimate how much attitude change they have experienced (see Ross, 1989). In contrast to this notion, our data suggest that there is natural variation in perceptions of attitude stability, and that this variation has important implications for attitude certainty.

Study 1 demonstrated that people differ in their general theories of attitude stability, and that these theories—by varying perceptions of attitude stability on specific issues—affect attitude certainty. Study 2 furthered these results by showing increased attitude certainty when ITAS was manipulated to be high rather than low. Expanding on past research, then, salient situational cues seem to influence the degree to which people view attitudes as stable (see also Tormala & Petty, 2002). Moreover, increased attitude certainty resulting from perceiving attitudes as stable appears to strengthen the link between attitudes and behavioral intentions. This latter finding is particularly noteworthy as it suggests that perceptions of attitude stability can influence strength-related consequences that have little or nothing to do with changing or not changing attitudes.

In Study 3, we explored the interaction between general theories of attitude stability and perceived situational stability. The results suggested that when people perceived either attitude stability or attitude change in response to a persuasive message, this perception was viewed as most noteworthy when it violated their implicit theories. We argue that this violation, or incongruity, captures attention and prompts people to reflect on their attitudes and adjust their attitude certainty accordingly. Consistent with this reasoning, we found that individuals viewed situational change (particularly in response to a weak counterattitudinal message) as particularly indicative of their attitude's invalidity—as indexed by reduced certainty—when they endorsed the general theory that attitudes were generally stable. Conversely, individuals viewed situational stability (particularly in the face of a strong counterattitudinal message) as particularly indicative of their attitude's validity—as indexed by increased certainty—when they endorsed the theory that attitudes were generally malleable. In both cases, discrepancies appeared to initiate adjustments in certainty. These results built on those from the first studies in showing that just as general theories can affect specific perceptions of attitude stability, general and specific beliefs can also be distinguished and, thus, interact as determinants of attitude certainty.

In addition to advancing our understanding of the metacognitive appraisals people form when they change or resist change in their attitudes, the current findings offer new insight into implicit theories. Research on this topic has traditionally focused on person perception. Our findings suggest that similar theories can have an important influence on attitudes. For example, it is well-established that attitude certainty tends to promote attitude stability (see Bassili, 1996; see Petty & Krosnick, 1995). By considering implicit theories, the current research suggests that the reverse effect is also possible—that is, perceived attitude stability can function as an *antecedent* of certainty. Thus, consideration of the implicit theories people hold about attitudes can expand existing understandings of the metacognitive factors that shape attitude certainty, and it can help build our knowledge of the effects of implicit theories of stability more generally.

Future directions

By highlighting new methods for increasing or decreasing attitude certainty, the current research has potentially important implications for a number of applied domains. In health behavior and social marketing, for instance, increasing people's certainty in their healthy or adaptive attitudes and reducing their certainty in their unhealthy or maladaptive attitudes might be a crucial step in inducing positive behavioral change. In addition to these applied directions, however, we see the current studies as opening the door to research designed to shed new light on issues of core theoretical relevance to attitudes and persuasion research.

Selective exposure and processing

It is well-established that people sometimes selectively "tune in" or "tune out" attitude-relevant information depending on whether that information is pro- or counterattitudinal (see Smith, Fabrigar, & Norris, 2008). Understanding people's implicit theories of attitude stability could prove useful in predicting the conditions under which people attend to information that is attitude-consistent versus inconsistent. For example, perhaps people who endorse an implicit theory of attitude stability are more likely to attend to attitude-inconsistent information. After all, if their attitudes are immutable, what value is there in attending to attitude-consistent information and what threat is there in attending to attitude-inconsistent information? Consistent with Albarracín and Mitchel's (2004) research on defensive confidence, people holding implicit theories of attitude stability might be quite comfortable attending to information that is inconsistent with their attitudes. Conversely, people who endorse implicit theories of attitude instability might be less likely to attend to attitude-inconsistent information. Indeed, if their attitudes are mutable, counterattitudinal information might pose greater perceived threat. Thus, perceived instability might lead one to selectively attend to attitude-consistent information, especially in situations in which the individual is motivated to maintain the current attitude. Alternatively, perhaps implicit theories of stability and instability increase preferences for attitude-consistent and inconsistent information, respectively, as this information has the best chance of confirming one's view that attitudes are generally stable or unstable. Such issues warrant attention in future research.

Direction of the certainty–stability link

Although the current research suggests that perceptions of attitude stability affect attitude certainty, other research suggests that people use their current self-perceptions as benchmarks for recalling the past (see Goethals & Reckman, 1973; Ross, 1989). Thus, it seems possible that once people become certain of their attitudes they perceive those attitudes as more stable. For example, if an individual comes to view a particular attitude as the correct one to endorse or as very clear in his or her mind, he or she might infer that this attitude has been consistent over time. Furthermore, this perception of a particular attitude's stability might induce a broader theory that attitudes in general tend not to change. If true, this would suggest that becoming more certain of one attitude could generalize to make people more certain of other attitudes, even unrelated ones, by fostering a general theory of stability. Such an effect would have profound importance for our understanding of how certainty might spread from one attitude or belief to another. We intend to explore this intriguing potential generalization effect in future work.

Global versus specific theories of attitude stability

Finally, although we measured general theories of attitude stability in the current research, it seems reasonable to speculate that there might be within-person variation in theories for different attitude objects. For instance, people might hold implicit theories of stability about their attitudes toward their political party, but implicit theories of instability about their attitudes toward individual politicians. Similarly, in light of multi-component theories of attitudes (i.e., affective, cognitive, and behavioral aspects; Breckler, 1984; Zanna & Rempel, 1988), it also seems possible to endorse different theories for different attitudinal bases. For example, one might endorse an implicit

theory of *affective instability* toward exercise (e.g., "Sometimes I can't wait to run, but other times I'm just not in the mood…"), yet endorse an implicit theory of *cognitive stability* toward the same issue (e.g., "… but I always know how good it is for me."). Also relevant, attitude importance (see Boninger, Krosnick, Berent, & Fabrigar, 1995; Thomsen, Borgida, & Lavine, 1995) might moderate implicit theories of attitude stability. For example, perhaps attitudes relating to core values evoke a theory of stability, whereas attitudes relating to peripheral issues (e.g., matters of "taste" or superficial opinions) evoke a theory of instability. We believe that potential distinctions in the specificity of people's theories warrant further attention.

Conclusion

This research explored perceived attitude stability as a source of attitude certainty. We found that individuals differ in the extent to which they believe attitudes are inherently stable, that these beliefs can be contextually manipulated, and that these beliefs affect attitude certainty. Thus, we have identified a new determinant of certainty that can be viewed as both an individual difference and a contextual variable. We believe that consideration of implicit theories of attitudes—and perceived attitude stability more broadly—can offer novel insight into the role of stability as both an antecedent and consequence of certainty. Our hope is that other researchers will further consider these issues in their own future work to help expand our collective understanding of the role of general theories of change versus stability in the attitudes domain. We also hope that this research will reignite interest in identifying general individual difference variables that help predict attitude certainty, or strength more broadly, on specific attitudinal issues.

Appendix A. ITAS scale items

1. You have a certain set of attitudes, and you can't really do much to change it.*
2. No matter who you are, you can significantly change your attitudes.
3. You can learn new things, but you can't really change your basic attitudes.*
4. Someone's attitudes are a part of them that they can't change very much.*
5. A person can do things to cover their attitudes up, but they can't change their real attitudes.*
6. People can always change their attitudes.
7. The kinds of attitudes someone holds are something that is very basic about them, and they can't be changed much.*
8. Everyone, no matter who they are, can significantly change their attitudes.

*Reverse-scored item.

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