

The role of faith in intuition, need for cognition and method of attitude formation in implicit–explicit brand attitude relationship strength[☆]

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Abstract

We tested the hypothesis that Faith in Intuition (FI) would moderate implicit–explicit attitude relationship strength for attitudes formed via associative processes, but not propositional processes. Experiments 1 and 2 demonstrated that FI moderated I–E relationship strength for attitudes formed via evaluative conditioning. High FI people had stronger I–E correlations. Experiment 2 showed that FI did not moderate I–E relationship strength for attitudes formed via propositional reasoning. Those low in Need for Cognition (NC), however, showed stronger I–E correlations than those high in NC. The importance of considering trait variables in combination with the method of attitude formation is discussed.

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A variety of dual process models of attitudes have recently emerged within social psychology (Gawronski & Bodenhausen, 2006; Greenwald et al., 2002; Wilson, Lindsey, & Schooler, 2002). A common thread among these models is that individuals possess both implicit and explicit attitudes, that these attitudes can be strongly or weakly related, that they can be altered independently of one another, and that they may predict different aspects of behavior. Implicit attitudes are often described as automatic, nonverbal, and potentially outside of conscious awareness. Explicit attitudes, in contrast, are more considered, verbal, and available for conscious consideration. Consumer psychologists have recently turned their attention to implicit attitudes in an attempt to understand how they function

in the consumer domain (Brunel, Tietje, & Greenwald, 2004; Forehand & Perkins, 2005; Friese, Wanke, & Plessner, 2006; Gibson, 2008; Maison, Greenwald, & Bruin, 2004; Redker & Gibson, 2009).

A common method for measuring implicit attitudes is the Implicit Association Test (IAT). Since the publication of the first study using the IAT as a measure of implicit attitudes (Greenwald, McGhee, & Schwartz, 1998) research using this measure has thrived. One of the enduring questions emerging from this body of research focuses on the relationship between measures of implicit and explicit attitudes. A recent large scale study examining 57 implicit–explicit relationship pairs found that correlations ranged from .70 on the high end, to virtually zero on the low end (Nosek, 2005). A recent meta-analysis found a similar diversity in the size of the implicit–explicit (I–E) relationship, with correlations ranging from .47 to 0, with an average correlation of .24 (Hofmann, Gawronski, Gschwendner, Le, & Schmitt, 2005). The variable size of this relationship has potential implications for consumer choice. For example, recent findings on the role of implicit attitudes in consumer choice suggest that implicit and explicit attitudes guide brand choice in different situations (Friese et al., 2006; Gibson, 2008). Further, a recent meta-analysis on the predictive validity of the IAT found

[☆] A mediation analysis similar to that carried out in Experiment 1 was undertaken for the evaluative conditioning group in Experiment 2, and this analysis did not show evidence of mediation. This may be the result of lowered power in the EC group of Experiment 2.

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that implicit consumer attitudes accounted for unique variance in consumer choice (Greenwald, Poehlman, Uhlmann, & Banaji, 2009). Given these findings, it becomes important to understand the situational and trait variables that lead to different degrees of relationship between implicit and explicit measures of brand attitudes. The goal of the current research is to explore how the method of brand attitude formation may interact with certain trait variables to lead to higher or lower I–E brand attitude correlations.

A number of factors have been proposed to explain the great variability and generally small size of I–E correlations (Hofmann, Gschwendner, Nosek, et al., 2005). For example, Nosek (2005, 2007) found that I–E correlations were stronger to the extent that: 1) self-presentational concerns were limited; 2) the evaluations of the attitude object were strong; 3) the attitude dimension was bipolar in structure (i.e., endorsement of one side of the continuum implied a lack of endorsement of the other side); and 4) individuals believed their attitude was distinctive (i.e., individuals believed that their assessment of the attitude object was not normative). In the consumer domain, however, implicit and explicit measures have tended to show relatively high correlations. High I–E correlations have been shown for attitudes toward juice drinks and soft drinks, low and high calorie foods (Maison, Greenwald, & Bruin, 2001), yogurt brands, fast food brands (Maison, Greenwald, & Bruin, 2004), and Macs and PCs (Brunel, Tietje, & Greenwald, 2004). In the cases outlined here, implicit and explicit attitudes for these products are likely to have come into close correspondence as a result of a lengthy history of direct product usage. The likes and dislikes are readily inferred from the individuals own response to the product as it is being used. When brand attitudes are just being formed, however, we may not always have a powerful direct experience on which to base our attitudes. Advertisements can attempt to form brand attitudes by associating the brand with positive stimuli, or by providing reasoned evidence regarding the quality of the brand. We propose here that the method of attitude formation can play an important role in determining the strength of the I–E relationship. We suggest that for attitudes formed associatively, Faith in Intuition (FI) will moderate I–E relationship strength. In contrast, when attitudes are formed propositionally through a more reasoned process, Need for Cognition (NC) will moderate I–E relationship strength. Before providing background on these individual differences, we first provide an overview of theory regarding the functioning of and relationship between implicit and explicit attitudes.

Qualities of implicit and explicit attitudes affecting the I–E relationship

Gawronski and Bodenhausen (2006) suggest that implicit attitudes are based primarily on automatic affective associations in memory. These associations can become active at a preconscious level potentially leading one to be unaware of the source of the attitude (Bargh, 1994). Thus, implicit attitudes can come into awareness without an accompanying

verbal representation of the rationale behind the attitude. This can lead to the experience of the implicit attitude as intuition (Holland & de Vries, 2010; Lieberman, 2000; Myers, 2002; Smith & DeCoster, 2000). Explicit attitudes, in contrast, are the results of propositional evaluation of evidence and the assignment of truth values to these propositions (Gawronski & Bodenhausen, 2006). The intuitions provided by implicit attitudes can potentially inform explicit attitudes. This leads to the prediction that I–E correlations will be higher to the extent that the implicit attitude is trusted and is seen as a valid source of input for the propositional process leading to the explicit attitude. Some research examining how situational variables impact I–E correlations would support this idea. For example, Hofmann, Gawronski, et al. (2005) showed that prompting people to provide their explicit evaluations more quickly led to stronger I–E correlations (see also Ranganath, Smith, & Nosek, 2008). Similarly, I–E correlations were higher when people were encouraged to consider their feelings toward the attitude object immediately prior to collection of the explicit measure (Gawronski & LeBel, 2008). Requiring a quick evaluation limits the number of propositions being considered, therefore increasing reliance on an implicit attitude. Similarly, asking people to focus on their feelings toward an attitude object leads them to consider their implicit attitude, making it more influential when subsequently reporting their explicit attitude. Both of these results suggest that relying on implicit attitudes to a greater extent when reporting an explicit attitude will lead to greater I–E correspondence.

Are there individual differences in people's tendency to rely on implicit attitudes as a valid source of input for the formation of explicit attitudes? Others have explored this possibility. For example, Hofmann, Gschwendner, and Schmitt (2005) explored trait differences in private self-consciousness as a potential moderator of I–E strength (see also, Gschwendner, Hofmann, & Schmitt, 2006). They reasoned that because of their tendency to self-evaluate to a greater degree, individuals high in private self-consciousness would become more aware of their implicit attitudes, and hence show greater I–E correspondence. Across three studies over the two articles, however, evidence for a direct moderating role of private self-consciousness on I–E relationship strength emerged in only one case. Although private self-consciousness may moderate I–E correspondence in some situations, there are reasons to believe that it may have only limited explanatory power. Specifically, even if individuals high in private self-consciousness self-reflect to a greater degree, and therefore may become more aware of their implicit attitudes, they may or may not trust them as valid. Further, during their increased self-reflection these individuals may sometimes recruit a variety of other propositions that would serve to draw their explicit evaluations away from their implicit evaluations. A cleaner trait moderator would identify individuals who not only are more aware of their implicit attitudes, but who also put more trust in the validity of these attitudes without the need to impose verbal explanations onto them.

Faith in intuition and need for cognition

Epstein's cognitive-experiential self-theory (Epstein & Pacini, 1999) proposes a dual processing model of thought, with the experiential mode of thinking being based on affective, associative means of processing information that don't rely on verbal reasoning. Faith in intuition (FI, Epstein, Pacini, Denes-Raj, & Heier, 1996; Pacini & Epstein, 1999) is an attempt to measure individual differences in the tendency to rely on and trust this experiential, automatic form of information processing. We propose that FI may be better suited to provide insight into who is most likely to rely on implicit attitudes when forming explicit attitudes. People high in FI are described as trusting and valuing intuitive feelings more than those low in FI. There is some recent evidence that this trait can help to understand variations in I–E relationship strength. Jordan, Whitfield and Zeigler-Hill (2007) examined the relationship of implicit and explicit measures of self-esteem, and found that those high in FI had a significantly stronger relationship between implicit and explicit self-esteem. They suggest that those high in FI are more likely to not only be aware of their implicit self-esteem, but to also see their implicit self-views as valid and subsequently incorporate these views into their explicit self-esteem. The current research explores similar notions as they apply to brand attitude formation.

In contrast to this automatic, associative means of processing information, Epstein also suggests that individuals differ in the extent to which they rely on rational or deliberative means of information processing. Pacini and Epstein (1999) use a modified version of the Need for Cognition Scale (Cacioppo, Petty, Kao, & Rodriguez, 1986) to measure this individual difference. Individuals high in NC enjoy deliberating and consciously processing information. Such evaluation of information has the potential to shift explicit attitudes away from implicit attitudes as more propositions (with potentially different implications) are considered (Gawronski & Bodenhausen, 2006; Wilson, Lindsey, & Schooler, 2002). In fact, there is some evidence that individuals high in NC show lower I–E correlations (Florack, Scarabis, & Bless, 2001). Thus, under some conditions, because they are less likely to consider information that potentially contradicts their implicit attitude we would expect those low in NC to have greater I–E correspondence.

Are the attitudes formed associatively or propositionally?

The research considered to this point has focused on existing attitudes. In the case of the Jordan et al. (2007) paper, this was self-esteem, and in the case of the Florack et al. (2001) paper, this was prejudice. For consumer psychologists, however, it may be particularly important to consider newly formed attitudes. For products just entering the marketplace, marketers need to create strategies to form positive brand attitudes in potential consumers. This can be done either associatively or propositionally. We propose that to understand when FI and NC will moderate the strength of the I–E relationship, we must first consider whether the attitude was formed associatively or propositionally. For attitudes formed primarily through asso-

ciative processes, we suggest that FI will play a major role in the subsequent strength of the I–E relationship. The prototypical case of attitude formation through associative processes is evaluative conditioning (EC, De Houwer, Thomas, & Baeyens, 2001; Gawronski & Bodenhausen, 2006). Evaluative conditioning occurs when a conditioned stimulus (CS) is paired with attitude objects or words that have a consistent positive or negative valence (US's). These pairings shift the valenced associations of the CS toward the valence of the US's. Traditional advertising strategies in which positive images or people are paired with brands is a form of evaluative conditioning. For example, Till, Stanley, and Priluck (2008) found that pairing images of celebrities with images of products produced more favorable attitudes toward the products. Further, Till et al. found these attitudes to be resistant to extinction, a feature of evaluative conditioning (Vansteenwegen et al., 2006). Forehand and Perkins (2005) found a positive correlation between implicit celebrity attitude and implicit product attitude even when participants could not identify the celebrity being used in a commercial voice-over. This showed that the simple favorable affective associations toward the celebrities led to the formation of favorable product attitudes.

Some evidence suggests that this change in evaluation can occur without conscious awareness of the CS–US contingency (De Houwer et al., 2001; Field & Moore, 2005; Olson & Fazio, 2001). Thus, this attitude formation process can potentially occur outside of conscious awareness, and hence, outside of propositional reasoning. Furthermore, implicit attitudes are affected more directly by evaluative conditioning than are explicit attitudes. Explicit attitudes may change following evaluative conditioning, but this change is likely to be the result of the implicit attitude being used as an input source in the formation of the explicit attitude (Gawronski & Bodenhausen, 2006). It is in these situations that we would expect FI to moderate I–E strength, because it is in these situations that implicit attitudes could most powerfully inform explicit attitudes.

When attitudes are formed via these associative processes, however, we would expect NC to play little role in moderating the I–E relationship. Though Florack et al. (2001) found that low NC individuals had higher I–E correspondence, this result was for implicit and explicit measures of prejudice. The individuals in this study were likely to have a wealth of propositional information that could be brought to bear on the question of their ethnic attitudes. This would lead those high in NC to consider information that could potentially contradict their implicit attitude, thereby shifting the explicit attitude away from the implicit attitude. In contrast, in a consumer setting in which attitudes are newly formed via evaluative conditioning, there will be little propositional information about the brand that could inform the construction of the explicit attitude. Therefore, those high in NC would have little basis for shifting their explicit evaluations away from their implicit evaluations, and NC should not moderate the strength of the I–E relationship.

Another implication of this line of reasoning is that since evaluative conditioning directly affects implicit attitudes, it will affect these attitudes similarly for both those high and low in FI.

People high in FI may then rely on their implicit attitude to help them form their explicit attitude. People low in FI, however, may be less likely to rely on the implicit attitude in this way. These individuals may instead seek an easy to verbalize rationale as a basis for their explicit attitude (Wilson, Hodges, & LaFleur, 1995). This process could lead their explicit attitude to stray from their implicit attitude. This leads to the prediction that FI will moderate explicit attitude formation, but not implicit attitude formation following evaluative conditioning.

Attitudes may be formed in other ways. In some cases, propositional reasoning may lead to attitude formation. Reading verbal descriptions of attitude objects highlighting their positive and negative attributes, for example, would likely lead to the direct formation of explicit attitudes. Further, some evidence suggests that such verbal descriptions simultaneously form associations in memory that are the basis of implicit attitudes (Gregg, Seibt, & Banaji, 2006). Recent research suggests that persuasion that occurs through such verbal reasoning can alter implicit attitudes in a spreading activation manner (Horcajo, Brinol, & Petty, 2010). Thus, attitude formation based on verbal, propositional reasoning will create similar implicit and explicit attitudes simultaneously. In this case, when asked to express an explicit attitude, the individual can access the attitude directly from memory and need not rely on the implicit attitude as a source of input. This suggests that in these cases FI will not moderate I–E correspondence. The additional propositions available in such cases, however, suggest that NC may instead moderate I–E correspondence. This might be particularly true when the verbal description includes a variety of attribute descriptions and a summary evaluation. The summary evaluation may help shape the implicit attitude, but when a person considers attribute information more thoroughly, this could shift the explicit attitude away from the summary evaluation. For example, Sanbonmatsu and Fazio (1990) showed that when given sufficient time to make a judgment, participants relied on individual attributes of a department store that were most informative for the judgment at hand. In contrast, when forced to make a quick judgment, the summary evaluation of the store was more likely to be used. We would propose that NC would have similar effects on the likelihood that individual attributes would be considered when reporting an explicit attitude. Those high in NC may weight and evaluate different attribute information to a greater or lesser extent, potentially shifting their explicit attitudes away from their implicit attitudes. Those low in NC will be less likely to consider individual attribute information thoroughly, and will therefore report an explicit attitude that is more in line with their implicit attitude. Thus, we predict that the strength of I–E correlations for attitudes formed via propositional reasoning will be moderated by NC, such that those low in NC will have greater I–E correspondence.

Two experiments were carried out to test these hypotheses. In Experiment 1, participants underwent an evaluative conditioning procedure designed to create positive and negative attitudes toward novel brands of root beer. Implicit brand attitudes, explicit brand attitudes, FI and NC were measured. In Experiment 2, some participants again experienced the

conditioning procedure, but others had attitudes formed by reading expert reviews of the root beer brands. Again, implicit and explicit attitudes were measured, as well as FI and NC.

Experiment 1

Method

Participants

Participants were 105 undergraduate students (59 females and 46 males) who participated to receive extra credit in their psychology class.

Procedure

The experiment was described as a test of reaction time and attention. After signing the informed consent form, participants were administered the Rational-Experiential Inventory (REI, Pacini & Epstein, 1999), which consists of two subscales of 20 items each. The Faith in Intuition scale is made up of 20 items assessing the degree to which the participant trusts and relies upon his or her intuition. The Need for Cognition scale (NC, Petty & Cacioppo, 1981) is made up of 20 items assessing the degree to which the participant trusts and relies on more deliberative cognitive processing. After completing the REI, participants underwent an evaluative conditioning procedure based on Olson and Fazio (2001). In their research, Pokemon characters served as CS's and distracter images. In the current research, novel soft drink brands served as CS's and distracter images. Images used as US's were identical to the Olson and Fazio study. Participants were informed they would view hundreds of words, brand images, and other pictures presented over five blocks of trials. Each block of trials contained 80 slides. Imbedded within the presentation were images of Fizz's Root Beer and Sparky's Root Beer. In one condition, Fizz's was consistently paired with positive US's (e.g., a beautiful mountain scene, a smiling older couple, the words awesome, delightful, etc.) and Sparky's was paired with negative US's (e.g., a couple standing at a gravesite, exhaust from a car, the words terrifying, upsetting, etc.). A second condition, experienced by different participants, reversed the pairing of Fizz's and Sparky's with negative and positive US's. Eight CS–US pairings were spaced evenly within each block, leading to a total of 40 CS–US pairings overall (20 of one brand with positive US's, and 20 of the other brand with negative US's). These pairings occurred on the same slides (i.e., simultaneous conditioning). The words and images presented between the critical CS–US pairings consisted of other novel soft drink brands (e.g., Weinhard's Root Beer, Cosmic-X Cola) and other neutral images and words (e.g., a picture of a motorcycle rider, a picture of an electrical outlet; the word "Perry," etc.). Some of these slides presented images or words individually, others had images paired with other images or words. In all cases, however, these images and words were neutral. The exact order of presentation of these images was randomly selected. All words and images were presented for 1.5 s with a 0 s intertrial interval. To ensure attention to the screen during presentation, participants were given the task of pressing the spacebar when a

specified target soft drink brand appeared on the screen. Different target brands were selected for each block of trials, but the target brand was never Fitz's or Sparky's. These other brands were never paired with valenced pictures or words. After completing the evaluative conditioning procedure, participants completed a familiarity measure and explicit attitude measures for the various soft drinks that appeared during the conditioning procedure. Explicit attitude measures toward five distracter brands and Fitz's and Sparky's were collected at this time. The explicit attitude measure was comprised of items measuring the perceived attractiveness of the packaging (from 1 "very unattractive" to 6 "very attractive"), an estimate of the success of the brand if introduced into the local market (from 1 "very unsuccessful" to 6 "very successful"), and their level of agreement with a statement that they would try the brand if it were available locally (from 1 "disagree very much" to 6 "agree very much"). Using a more traditional explicit measure, such as asking participants directly how much they liked the brands, was impractical since brands were chosen for their unfamiliarity to our participants. After completing these explicit measures, participants were administered an IAT designed to measure implicit preference for Fitz's versus Sparky's. The IAT used the typical seven block presentation developed by Greenwald, McGhee, and Schwartz (1998). After completing the IAT, participants were probed for suspicion, debriefed, and excused.

Results

Preliminary analyses

Contingency awareness. Overall, 9 participants expressed the belief that there was a pattern in how the words and images were presented within the EC procedure, with 5 of these individuals expressly identifying the CS–US contingency. Because so few participants identified the CS–US contingency, and because of data suggesting that evaluative conditioning can occur with or without contingency awareness, we retained these participants in our data analysis. We should note that removal of these participants from the analyses reported below does not change the overall pattern of results, however.

Brand familiarity. Evaluation of the brand familiarity items confirmed that both Fitz's ($M=1.12$) and Sparky's ($M=1.14$) were unfamiliar brands to our participants.

Gender. In neither Experiment 1 nor Experiment 2 did gender lead to significant main or interactive effects, and is not discussed further.

Attitude formation

To test whether the conditioning procedure successfully altered attitudes toward Fitz's and Sparky's, separate t -tests were carried out on the implicit and explicit attitude measures. The explicit measure was created by combining the 3 Likert-type items for Fitz's and for Sparky's, and then subtracting the value for Sparky's from the value for Fitz's. This provided a relative preference measure with negative values indicating a

preference for Sparky's and positive values indicating a preference for Fitz's. The separate scales proved reliable, Cronbach's $\alpha = .86$ for Fitz's and Cronbach's $\alpha = .89$ for Sparky's.

Explicit attitude formation. The conditioning procedure led to the predicted difference in explicit preference for Fitz's versus Sparky's, $t(103)=2.29$, $p < .03$. When paired with positive US's, Fitz's was preferred more ($M=.56$, $SD=4.20$), and when paired with negative US's, Fitz's was preferred less ($M=-1.31$, $SD=4.14$).

Implicit attitude formation. The IAT score was calculated using the D procedure outlined by Greenwald, Nosek, and Banaji (2003). This score was calculated such that, as with the explicit measure, negative values indicated an implicit preference for Sparky's and positive values indicated an implicit preference for Fitz's. Analysis of the IAT also indicated a successful conditioning effect, $t(103)=2.50$, $p < .02$, such that when Fitz's was paired with positive US's, Fitz's was preferred more ($M=.08$, $SD=.46$), and when Sparky's was paired with positive US's, Sparky's was preferred more ($M=-.15$, $SD=.46$).

Implicit attitude's mediation of explicit attitude formation. Baron and Kenny's (1986) mediation procedure was used to test the hypothesis that treatment affected implicit attitudes, which in turn affected explicit attitudes. A regression was conducted in which explicit attitudes were entered as the criterion and condition was entered as a predictor on the first step and condition and IAT scores were entered as predictors on the second step. This analysis revealed a significant effect on the first step, $F(1, 103)=5.27$, $p < .05$. There was a significant ΔR^2 after the second step, $F(1, 102)=12.81$, $p < .01$. Examination of the betas at this step showed that IAT scores significantly predicted explicit attitudes, $\beta=.34$, $p < .01$, however condition did not, $\beta=-.14$, $p > .05$, showing evidence of full mediation. A procedure adopted from Preacher and Hayes (2004) was used to directly test the significance of the mediation effect. Sobel's test showed $z = 1.99$, $p < .05$, indicating that the mediated relationship between condition and explicit attitudes was significant. The 95% confidence interval (CI) showed that explicit attitudes ranged from .0135 to 1.3488 (higher scores indicate a preference for Fitz's). A bootstrap estimate showed with 95% confidence that the true indirect effect ranged between .1186 and 1.4189, which was consistent with the 95% CI obtained by Sobel's test.

The implicit–explicit attitude relationship

Analysis strategy. The manipulated root beer valence information (i.e., whether Fitz's and Sparky's were associated with positively or negatively valenced information) was intended to create variance in attitudes toward Fitz's and Sparky's, allowing us to then examine the strength of the I–E relationship. The t -tests carried out on the explicit and implicit attitudes demonstrates that this manipulation was successful.

Because we had no reason to believe that the particular brand paired with positive or negative information should impact the I–E relationship, and in order to simplify the regression analyses, we did not include the root beer valence variable in our analyses to evaluate this relationship.

The role of FI and NC. Our analysis strategy was to conduct a moderated regression, with explicit attitude as the criterion variable, centered score on the IAT, centered score on FI, and centered score on NC entered as predictor’s on the first step, the 3 two-way interaction terms entered on the second step, and the three-way interaction term entered on the third step. This analysis revealed a significant effect on the first step, $R = .37$, $F(3,101) = 5.34$, $p < .002$. Examination of the betas revealed that this effect was driven by the IAT, $\beta = .37$, $t = 3.96$, $p < .001$. The direct effect of FI and NC on explicit attitude was nonsignificant. There was a significant ΔR^2 after the second step, $F(3,98) = 2.91$, $p < .05$. This was driven by the interaction of IAT and FI, $\beta = .23$, $p < .02$. Neither the interaction of FI and NC nor the interaction of NC and the IAT were significant. The 3-way interaction also did not significantly improve the model. Simple slopes analyses (Aiken & West, 1991) were conducted to probe the interaction between the IAT and FI. The two-way interaction term was probed at high (1 SD above mean) and low (1 SD below mean) FI. The simple slopes suggested that IAT scores were strongly associated with the explicit measure for those high in FI, $\beta = 5.18$, $t(102) = 4.68$, $p < .001$, but not for those low in FI, $\beta = 1.25$, $t(102) = 1.07$, *ns* (see Fig. 1).

Moderation of explicit attitude formation

The role of FI and NC. Our initial analyses demonstrated an effect of our evaluative conditioning manipulation on both implicit and explicit measures. We propose that the conditioning procedure produces a direct effect on the implicit measure. The explicit measure, however, should shift as a result of the conditioning procedure primarily for those high in FI. It is these people, we argue, that access their implicit attitudes as a valid source of information when forming their explicit attitude.

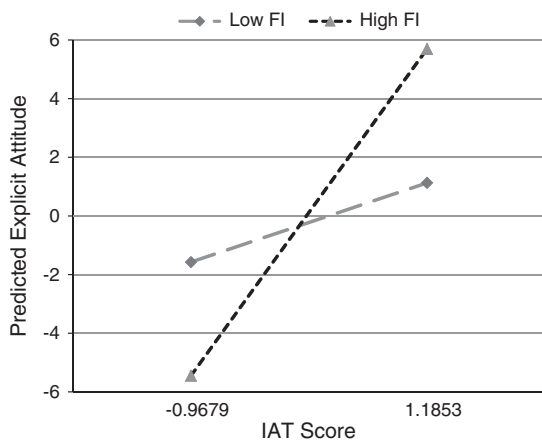


Fig. 1. Simple slopes of IAT score predicting explicit attitude at low (-1 SD) and high (+1 SD) Faith in Intuition (FI).

Therefore, we conducted another moderated regression, this time using the explicit measure as the criterion variable, experimental condition, FI and NC as predictor variables on the first step, and the 3 2-way interaction terms on the second step, and the 3-way interaction on the third step. After the first step, experimental condition was the only significant predictor of the explicit attitude, $\beta = .22$, $p < .03$. On the second step, although the overall change in R^2 was not significant, $F(3,98) = 1.92$, the interaction between experimental condition and FI was significant, $\beta = -2.02$, $p < .02$. None of the other 2-way interactions, or the 3-way interaction were significant. To probe the significant 2-way interaction, simple slope analyses were again conducted. The simple slopes suggested that explicit attitudes significantly shifted as a result of the conditioning procedure, but only for those high in FI, $\beta = 3.75$, $t(101) = 3.30$, $p < .01$. Explicit attitudes did not shift as a result of the conditioning procedure for those low in FI, $\beta = .03$, $t(101) = .02$, *ns* (see Fig. 2).

A similar regression was carried out using the IAT as the criterion variable, and the manipulated variable, centered FI, centered NC, and their interaction terms as predictor variables. This analysis was significant after the first step, $F(3,101) = 2.81$, $p < .05$. This was due to the effect of the experimental manipulation on implicit attitude, $\beta = .24$, $p < .02$. There was no significant change in R^2 on the second step, however, $F(1,101) = 1.77$, *ns*. This shows that FI did not moderate implicit attitude formation following evaluative conditioning.

Discussion

The results of Experiment 1 provide initial support for our hypotheses. The I–E relationship following the conditioning procedure was moderate. This was the result, however, of a strong I–E relationship for those high in FI. Further, the conditioning procedure produced significant effects on both implicit and explicit attitudes. For explicit attitudes this effect only emerged for those high in FI. For implicit attitudes, however, FI did not moderate the effect of the conditioning

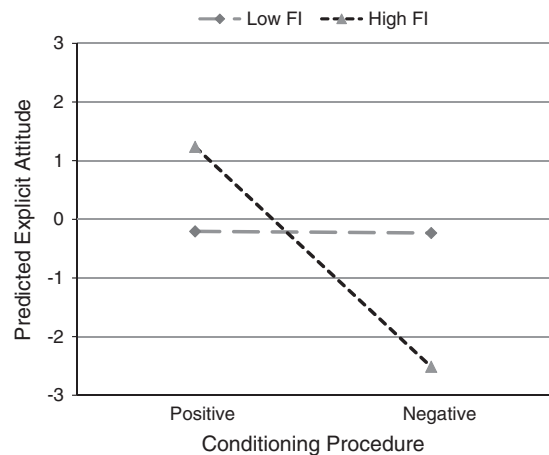


Fig. 2. Simple slopes of conditioning procedure predicting shift in explicit attitude at low (-1 SD) and high (+1 SD) Faith in Intuition (FI).

procedure. This is the pattern one would expect if the higher I–E correlation for those high in FI is the result of their reliance on their implicit attitude as a foundation for the formation of their explicit attitude. NC played no role in either the formation of the implicit and explicit attitudes or the strength of their relationship.

There are some questions that remain unanswered by Experiment 1. The results we report cannot rule out the possibility that those high in FI will always show a greater I–E correspondence than those low in FI. We propose that the greater I–E correspondence for those high in FI is the result of the conditioning procedure creating the implicit attitude directly, and people high in FI then basing their explicit attitude on the shifted implicit attitude. If implicit and explicit attitudes are created via propositional reasoning, however, evidence suggests that both implicit and explicit attitudes are formed in concert (Gregg et al., 2006; Horcajo, Brinol, & Petty, 2010). Thus, even those low in FI should show a high I–E correlation as both of these attitudes would already exist at the time of measurement, and they would not have to rely on an implicit attitude to infer their explicit attitude. For attitudes created propositionally, however, NC may play a more prominent role in I–E relationship strength. Attitudes created by the evaluation of various brand attributes provide a variety of propositional factors to be considered by someone high in NC. For example, a summary evaluation of a particular brand of root beer may be positive, but if there is one attribute that is negative (lack of a good head, for example), then this could be weighted more heavily by some individuals. If the person in question is high in NC, then they may consciously consider this drawback, and form an explicit attitude that goes against the generally positive implicit attitude they hold. Someone low in NC, however, would likely rely on the summary evaluation, and therefore show higher correspondence between their implicit and explicit attitudes. Experiment 2 was undertaken to replicate the findings of Experiment 1, and in addition to evaluate I–E correlations for attitudes formed via propositional processes, and the role of NC in the strength of these correlations.

Experiment 2

Method

Participants

Participants were 117 students (68 female and 49 male) who participated to earn extra credit for their psychology classes.

Procedure

As in Experiment 1, all participants completed the REI at the beginning of the experiment. We again attempted to create either positive or negative attitudes toward Fitz's and Sparky's Root Beer. In Experiment 2, however, we used two distinct strategies for attitude formation. Some participants went through the evaluative conditioning procedure identical to that described in Experiment 1. As in Experiment 1, some of these participants were exposed to Fitz's paired with negative US's and Sparky's paired with positive US's, while others had these

pairings reversed. Participants in the propositional attitude formation condition read reviews of root beer brands rather than going through the conditioning procedure. In order to ensure that they would process this information thoroughly, they were told that they would later be asked questions about these brands. All participants in this condition read about seven novel root beer brands. Each brand was described in some detail, covering issues of color, flavor, scent, aftertaste, head, and so on. At the end of each review each brand was given a letter grade. The brands used were the same seven brands that appeared in the conditioning procedure for participants in the evaluative conditioning group (five as distracters and two that served as CS's). The five distracter brands (Rawhide Root Beer, Briar's Root Beer, Dad's Root Beer, Hank's Root Beer, and Weinhard's Root Beer) were described slightly differently in terms of their flavor, appearance, and so on, but each of these brands was given letter grades of B. The descriptions of Fitz's and Sparky's were varied. Some participants read Fitz's described in a positive fashion and given a letter grade of A-, while Sparky's was described more negatively and given a letter grade of C. Other participants had these descriptions reversed. Thus, the study was a 2 (Fitz's/Sparky's: positive/negative) × 2 (attitude formation technique: conditioning/propositional) factorial design. Following either the conditioning procedure or reading the root beer reviews, participants completed measures of familiarity, explicit attitude measures, and the IAT. They were then debriefed and excused.

Results

Preliminary analyses

Contingency awareness. Overall, 5 participants identified a pattern in the manner in which the words and images were paired in the EC procedure, with 4 of these individuals expressly identifying the CS–US contingency. Again, since contingency awareness was relatively low, and conditioning can occur with or without contingency awareness, we retained these participants in all analyses. Removal of these participants, however, does not change the overall pattern of results.

Brand familiarity. Evaluation of the brand familiarity items again confirmed that both Fitz's ($M=1.04$) and Sparky's ($M=1.05$) were unfamiliar brands to our participants.

Attitude formation

To evaluate whether our attitude formation procedures successfully altered attitudes toward Fitz's and Sparky's, we carried out separate 2 (root beer valence) × 2 (attitude formation technique) ANOVA's on the explicit and implicit measures. Both measures were calculated as in Experiment 1. The internal consistency of the explicit measures for Fitz's, Cronbach's $\alpha = .68$, and Sparky's, Cronbach's $\alpha = .75$, were adequate.

Explicit attitude formation. The ANOVA on the explicit measure produced a significant main effect for valence of the information, $F(1,113)=12.84$, $p = .001$. Participants exposed to

positive information about Fitz's and negative information about Sparky's reported more positive attitudes toward Fitz's ($M=1.07$, $SD=3.39$) while those exposed to negative information about Fitz's and positive information about Sparky's reported more positive attitudes about Sparky's ($M = -1.37$, $SD = 3.90$). Neither the main effect for method of attitude formation, nor the interaction between information valence and method of attitude formation were significant, both F 's < 1.

Implicit attitude formation. The ANOVA on the IAT produced similar results, with information valence producing a significant main effect, $F(1,113)=8.71$, $p < .005$. Those exposed to positive information about Fitz's and negative information about Sparky's had more positive attitudes toward Fitz's ($M = .14$, $SD = .42$) while those exposed to negative information about Fitz's and positive information about Sparky's had more positive attitudes about Sparky's ($M = -.12$, $SD = .52$). Again, neither the main effect for method of attitude formation, nor the interaction between information valence and method of attitude formation were significant, both F 's < 1. These analyses confirm that both the evaluative conditioning and propositional reasoning methods of attitude formation were successful in creating implicit and explicit attitudes toward the brands, and that neither method created more extreme attitudes.

The implicit–explicit attitude relationship

Analysis strategy. As in Experiment 1, the manipulated root beer valence information (i.e., whether Fitz's and Sparky's were associated with positive or negatively valenced information) was intended to create variance in attitudes toward Fitz's and Sparky's. Again, the ANOVA's carried out on the explicit and implicit attitudes demonstrates that this manipulation was successful. Therefore, we do not include the root beer valence variable in our regressions to evaluate the implicit–explicit attitude relationship.

The role of FI and NC. We carried out a moderated regression, regressing the explicit attitude onto centered IAT score, the centered FI score, the centered NC score, and the method of attitude formation on the first step, the six two-way interaction terms on the second step, the four three-way interaction terms on the third step, and the four-way interaction term on the fourth step. The analysis was significant after the first step, $R = .38$, $F(4,111)=4.79$, $p = .001$. This effect was driven by the relationship between the IAT and the explicit measure, $\beta = .35$, $p < .001$. The FI, NC, and method of attitude formation main effects were non-significant. There was a significant ΔR^2 after the second step, $R = .52$, $F(6,105)=2.98$, $p = .01$. The only two way interaction that was significant was the IAT by FI interaction, $\beta = .29$, $p = .001$. There was also a significant ΔR^2 after the third step, $R = .60$, $F(4,101)=3.21$, $p < .02$, indicating a significant three-way interaction. This was due to a significant interaction between FI, the IAT, and method of attitude formation, $\beta = .25$, $p < .02$. The model was not significantly changed by the addition of the four-way interaction term. To follow up the three-way interaction, we ran two separate

regressions, one on only those experiencing the evaluative conditioning procedure, and one on only those experiencing the propositional attitude formation procedure.

For those in the evaluative conditioning group, the regression was not significant after the first step, $R = .20$. The second step led to a significant change in R^2 , however, $R = .50$, $\Delta R^2 F(13,52)=4.95$, $p < .005$. The effect for the IAT by FI interaction was significant, $\beta = .48$, $p < .001$. Simple slopes analyses were conducted to probe this significant interaction effect. The simple slopes suggested that IAT scores were strongly associated with explicit attitudes, but only for those high in FI, $\beta = 6.52$, $t(112)=4.06$, $p < .001$. For those low in FI, IAT scores did not significantly correlate with explicit attitudes, $\beta = -1.74$, $t(112) = -1.35$, ns (see Fig. 3).

In contrast, the regression carried out on the propositional attitude formation group identified a significant effect after the first step, $R = .53$, $F(3,53)=6.92$, $p < .001$. The IAT was a significant predictor of explicit attitude, $\beta = .49$, $p < .001$, as was, unexpectedly, FI, $\beta = .26$, $p < .05$. After the second step there was a significant ΔR^2 , $R = .66$, $F(3,50)=4.46$, $p < .01$. This was driven by a significant interaction between the IAT and NC, $\beta = -.26$, $p < .05$. Simple slopes analyses revealed that the IAT was a significant predictor of explicit attitude for those low in NC, $t = 4.91$, $p < .001$, but not for those high in NC, $t < 1$, ns (see Fig. 4).

Moderation of explicit attitude formation

The role of FI and NC. We conducted another moderated regression using explicit attitude as the criterion variable, valence of soft drink information, mode of attitude formation, centered FI and centered NC as predictor variables on the first step, the two-way interaction terms on the second step, the three-way interaction terms on the third step, and the four-way interaction term on the final step. This analysis was significant after the first step, $R = .36$, $F(4,112)=4.30$, $p = .003$. The valence of the root beer information significantly predicted explicit attitude, $\beta = .33$, $p < .001$. Unexpectedly, FI was

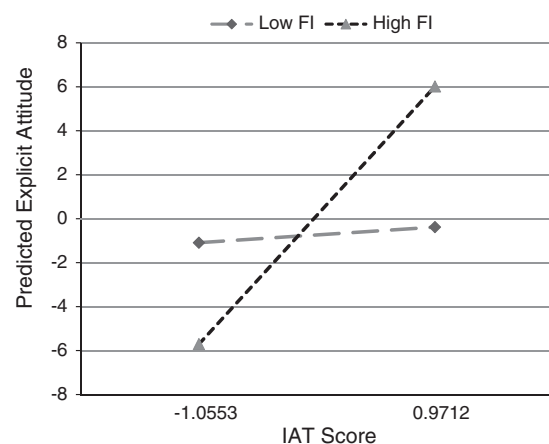


Fig. 3. Experiment 2: Simple slopes of IAT score predicting explicit attitude at low (-1 SD) and high ($+1$ SD) Faith in Intuition (FI) in the evaluative conditioning group.

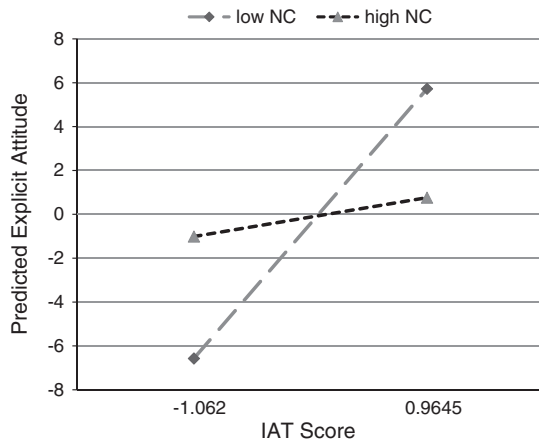


Fig. 4. Experiment 2: Simple slopes of IAT score predicting explicit attitude at low (-1 SD) and high ($+1$ SD) Need for Cognition (NC) in the propositional reasoning group.

marginally related to explicit attitude, $\beta = .17$, $p < .07$. There was no significant ΔR^2 after any of the next 3 steps.

Discussion

As in Experiment 1, Faith in Intuition moderated the I–E relationship for attitudes formed via evaluative conditioning. Experiment 2, however, did not show direct evidence that FI moderated the formation of explicit attitudes following evaluative conditioning. In addition, the results of Experiment 2 suggest that the role of FI is unique to attitudes formed via associative processes. When attitudes were formed via verbal descriptions, the I–E correlation was high for both those high and low in FI. The strength of the I–E relationship for attitudes formed via these propositional processes, however, was moderated by NC. Those low in NC showed evidence of stronger I–E correlations when attitudes were formed via propositional reasoning.

General discussion

The results of our studies suggest that the strength of the I–E relationship depends importantly on an individual's level of Faith in Intuition and Need for Cognition. Although other research has shown the importance of FI (Jordan et al., 2007) and NC (Florack et al., 2001) in moderating the strength of the I–E relationship, our work is the first to identify the method of attitude formation as a crucial moderating variable in this process. This could be particularly important in consumer research since attitudes toward new brands are often formed through advertisements that rely on associative or propositional reasoning. When attitudes were formed via evaluative conditioning, those high in FI demonstrated greater I–E correspondence. When attitudes were formed by reading a verbal description of the brands, and hence attitude formation was more reliant on propositional reasoning, FI played no role in the I–E relationship. In this case, however, NC did moderate the strength of the I–E relationship. Those low in NC showed

greater I–E correspondence than those high in NC. This overall pattern suggests that trait variables can help us understand the I–E relationship when considered in conjunction with the method of attitude formation. It is important to note, as well, that although propositional reasoning clearly played a greater role in attitude formation for participants reading the verbal description of the brands, this does not mean that associative processes played no role. For example, the assignment of a letter grade to the brands provides an association between the meaning of those letters learned through years of academic outcomes and the brands associated with those letters. Thus, in such verbal descriptions, both associative and propositional processes are likely at work (see also Horcajo et al., 2010). The key finding is that because both implicit and explicit attitudes are formed more directly via these verbal descriptions, FI does not moderate the I–E relationship.

One question that our method cannot address is whether the explicit attitudes we measured for participants in our propositional attitude formation group were formed online or were memory based (Hastie & Park, 1986; Mackie & Asuncion, 1990). In other words, did our participants form brand attitudes as they were reading the root beer reviews (online) or did they form brand attitudes only when prompted to do so by the explicit attitude questions (memory-based)? We suspect that, given that the reviews they were reading were making explicit attitudinal judgments of the brands, most participants were forming attitudes online as they read the descriptions. Whether these attitudes were based on online judgments or later memory for attributes, however, it seems clear that reading the reviews led participants to form attitudes based on propositional reasoning.

Another important issue to consider would be whether situational factors could potentially overcome the individual differences we have identified in the current research. In other words, are there circumstances in which those high in FI will show low I–E correlations even when their attitudes were formed via associative processes? We would speculate that the answer to this question is yes. For example, Wilson and his colleagues (Wilson et al., 1993; Wilson, Hodges, & LaFleur, 1995) have shown that introspecting about the reasons for your preferences can alter them, particularly when it is difficult to verbalize the reasons behind the preferences. This would lead us to believe that forcing those high in FI to provide reasons for their explicit evaluations may lead them to form evaluations that are incongruent with their implicit evaluations (see also Gawronski & LeBel, 2008). It is just this process, in fact, that we would speculate is leading those high in NC to show lower I–E correspondence for attitudes formed via propositional reasoning. These individuals are more inclined to bring more propositions to bear on their explicit evaluations, hence making the explicit evaluation more likely to stray from the implicit evaluation.

Another circumstance that might lead those high in FI to show lower I–E correspondence could be self-presentational concerns. If attitudes were being formed about a consumer product that was stigmatized, even those high in FI might not use their implicit attitudes to inform their explicit attitudes. This

might happen, for example, if evaluative conditioning led to favorable implicit attitudes toward a novel brand of cigarettes. Because smoking carries a significant stigma (e.g., Gibson, 1994, 1997) such positive implicit associations may not be reported in an explicit measure. This idea is similar to the results of Brunel, Tietje, and Greenwald (2004), who found that participants implicitly preferred a white advertising spokesperson, though explicitly they did not.

On the other side of this issue is the question of whether those low in FI may be led to have higher I–E correlations when their attitudes were formed through associative processes. For this issue, we believe, arguments could be made for either outcome. First, there may be circumstances that will lead such individuals to rely more on their implicit evaluations when forming their explicit evaluations. For example, others have noted that responding quickly or focusing on affective properties of your attitude can increase I–E correspondence (Gawronski & LeBel, 2008; Hofmann, Gawronski, et al., 2005). If those low in FI are prompted to provide explicit evaluations in these ways, it may be that their I–E correlations would increase. This assumes, however, that those low in FI have just as much access to their implicit attitudes as those high in FI, and the primary difference between them is that those low in FI do not trust these attitudes as much. Another possibility, however, is that those low in FI are less adept at accessing their implicit attitudes. If this is the case, then even requiring quick responding or focusing them on their feelings toward the attitude object would not increase the magnitude of the I–E correlation.

Another question of theoretical interest is whether the effects of FI and NC will persist over time. We examined only newly formed attitudes. Other research suggests that FI and NC can moderate the I–E relationship for more mature attitudes as well (Florack et al., 2001; Jordan et al., 2007). Under some conditions, however, greater experience with the attitude object may wash out the effects of FI and NC on I–E correspondence. For example, some research suggests that implicit attitudes predict more impulsive behavior (Dovidio, Kawakami, & Gaertner, 2002; Gibson, 2008). If someone low in FI forms an implicit attitude via evaluative conditioning, and consistently behaves in ways that correspond with this implicit attitude, self-perception may lead them to infer that they hold an explicit attitude that is similar to their implicit attitude (Bem, 1967). It may be, however, that only those high in FI would be likely to act on that implicit attitude. Other research has shown that only those high in Preference for Intuition (a related trait construct) based their spontaneous choices on their implicit attitude (Richetin, Perugini, Adjali, & Hurling, 2007). This would suggest that those low along these dimensions may not act on them, and therefore may not be prompted by self-perception to bring their explicit attitudes in line with their implicit attitudes. This question awaits further research. Alternatively, someone high in FI who initially has closely corresponding implicit and explicit attitudes following evaluative conditioning may receive persuasive new propositional information that immediately shifts their explicit attitude. If this occurs, the correspondence between their implicit and explicit evaluations should drop as their

explicit attitude shifts while their implicit attitude remains unchanged (see Gregg et al., 2006).

Our findings have implications for other attitude formation situations as well. For example, a good deal of consumer research has focused on evaluative conditioning as a means to create brand attitudes (Allen & Janiszewski, 1989; Allen & Madden, 1985; Gibson, 2008; Redker & Gibson, 2009; Shimp, Stuart, & Engle, 1991; Stuart, Shimp & Engle, 1987). In many cases, commercial advertisements rely on simple pairings of a brand (CS) to a variety of positive stimuli (US's). Our data suggest that these pairings are equally likely to create implicit attitudes in those high and low in FI, but more likely to create explicit attitudes in those high in FI. This has implications for consumer behavior. Those high in FI may be affected by such pairings both for quick, impulsive purchases, and for more considered, deliberate purchases. Those low in FI, in contrast, may still be affected for quick, impulsive purchases, but not for considered and deliberate purchases. This would be due to quick purchase decisions being based on implicit attitudes and more deliberative decisions being based on explicit attitudes (Friese, Hofmann, & Wanke, 2008; Friese, Wanke, & Plessner, 2006; Gibson, 2008).

In summary, our research demonstrates that Faith in Intuition and Need for Cognition play important roles in determining I–E relationship strength for brand attitudes. They do so, however, only when the cognitive style measured by the trait matches the method of attitude formation. Associative processes form implicit attitudes directly, and when asked to report an explicit attitude, those high in FI trust their intuition and report an explicit attitude that corresponds with their implicit attitude. Propositional processes form implicit and explicit attitudes simultaneously, and when asked to report an explicit attitude in these cases, those high in NC may recruit additional propositions that lead their explicit attitudes to move away from their implicit attitudes. When considered in the context of past research on the role of structural and normative variables on I–E strength, the current research adds another piece to the puzzle of the variable nature of I–E correlations. Further, our data have implications for identifying who will be more affected by a brand advertisement based on the associative or propositional nature of that ad.

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