

## Personality Certainty and Politics: Increasing the Predictive Utility of Individual-Difference Inventories

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*Research on political psychology has benefitted from using individual-difference measures to predict political attitudes and behavior. And, previous research has further identified a number of specific variables that enhance the predictive utility of individual-difference scales. However, a potentially important factor that has been overlooked is the certainty with which people make their responses. The present research establishes that the certainty with which people respond to scales is associated with stability of the scale responses over time and correspondence between the scale and related outcomes. In addition, the effects of certainty in political ideological identification in predicting politically relevant outcomes hold when controlling for a number of previously established moderators. This research suggests that measuring certainty in answers to individual-difference scales can be a useful and efficient way to increase the predictive utility of those scales within the political domain and beyond. This benefit is demonstrated with need for cognition (Study 1), need to evaluate (Study 2), and ideological identification (Studies 2 and 3).*

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Research on political psychology has long used individual-difference measures in order to predict variability in a variety of political behaviors (Duncan, Peterson, & Zurbriggen, 2010). Among the most widely used individual-difference predictors of political attitudes and behavior are ideological identification (Jost, 2006; Jost, Federico, & Napier, 2009), right wing authoritarianism (Altemeyer, 1981, 2007), and social dominance orientation (Pratto, Sidanius, Stallworth, & Malle, 1994). In addition, political interest and involvement are related to a large number of other individual-difference measures such as authoritarianism (e.g., Peterson, Smirles, & Wentworth, 1997), need to evaluate (e.g., Bizer et al., 2004; Tian, 2011), and need for cognition (e.g., Ahlering, 1987; Tian, 2011),

Although individual differences clearly relate to political behavior, the magnitude of these relationships is often not very large. As early as 1931, Newcomb noted that in many situations, the general correspondence between self-reports of individual differences and relevant behavior is surprisingly low, prompting a debate over the validity and practical utility of such assessments (e.g., Mischel, 1968). Contemporary research suggests that one possible approach is to abandon the issue of *whether* individual-difference measures predict behavior strongly or weakly and to determine instead *when* and *for whom* these assessments are most predictive. Researchers have examined moderators of individual-difference effects on behavior such as the accessibility of participants' responses to inventories (e.g., Mellema & Bassili, 1995; Neubauer & Malle, 1997), the variability of an individual's responses to the scale (e.g., Baumeister, 1991; Bem & Allen, 1974), and self-reports about the personal importance or self-relevance of the trait assessed by the scale (e.g., Cheek, 1982; Markus, 1977; Zuckerman, Bernieri, Koestner, & Rosenthal, 1989). We bring this moderation approach to the study of the impact of individual differences to political outcomes.

### *Attitude Certainty*

In the present research, we import an approach that has proven useful in the social-psychological literature on attitudes, where researchers have also abandoned the question of whether attitudes predict behavior and turned to the "when" and "for whom" questions (see Fazio, 1995). Notably, researchers have argued that attitudes can be weak or strong (Petty & Krosnick, 1995), and the strength of an attitude has implications for whether an attitude is stable over time, resistant to change, and most importantly, influences other judgments and behavior (Krosnick & Petty, 1995). Although there are many properties of an attitude that are associated with its strength, the focus here is on one indicator that has proven particularly useful—certainty.

Attitudes held with high certainty are more durable and impactful than attitudes held with low certainty (see Petty, Briñol, Tormala, & Wegener, 2007; Tormala & Rucker, 2007). Specifically, research has shown that as attitude certainty increases, attitudes are more stable over time (e.g., Bassili, 1996), resistant to change (e.g., Petrocelli, Tormala, & Rucker, 2007), and more likely to predict and guide behavior (e.g., Fazio & Zanna, 1978; Rucker & Petty, 2004; see also Swann & Ely, 1984). The purpose of the present research is to determine whether people's certainty in their answers to individual-difference measures is as important as people's certainty in their attitude reports in helping to predict relevant outcomes in the political domain.

### *Present Research*

In the present research, we examine certainty in individuals' responses to inventories that have proven useful in the political domain. Psychometrically validated multiresponse individual-difference inventories may already have maximized predictive utility and therefore might not benefit much, if at all, from the measurement of certainty compared to the ad hoc items that are sometimes used to assess traits, abilities, and attitudes. To address these possibilities, the present research examines whether taking into account a person's certainty regarding responses to established individual-difference inventories can enhance both the stability of individual-difference scale responses as well as the utility of scale responses in predicting relevant political outcomes (e.g., issue attitudes).

In assessing and introducing the notion of individual-difference certainty, this research offers several important advances. First, this is the only research to examine the certainty of individuals' responses to well-validated individual-difference inventories. Second, because political psychologists are often interested in better predicting *future* behavior, this research examines whether certainty in inventory responses predicts the stability of these responses over time (Study 1). Third,

we examine the specificity of certainty to the scale of measurement (Study 2) as opposed to more global self-certainty or self-confidence. Finally, this research compares certainty in ideological identification to a number of previously established moderators of ideology-behavior effects (Study 3) to demonstrate the additional utility of assessing certainty. Across studies, we expected that as participants' certainty in their answers to the inventories increased, so would the stability of their responses (Study 1) and correspondence of these responses with relevant outcomes, such as number of opinions expressed (Study 2) and issue attitudes (Studies 2 and 3).

### Study 1

The goal of this study was to examine whether an individual-difference variable used in past research on political behavior is more stable over time when held with high certainty. Stability is one of the hallmarks of strong attitudes (Krosnick & Petty, 1995) and demonstrating that certainty predicts stability of responses to an individual-difference inventory over time will provide initial evidence that certainty has important consequences. In addition, Study 1 also aimed to determine for the first time whether judgments of certainty in individual differences are themselves stable over time. The more stable certainty is itself, the more likely it should be to serve as a moderator of individual differences on behavior over time.

In this study, we investigated certainty in individuals' responses to the need for cognition (NFC) inventory (Cacioppo & Petty, 1982; Cacioppo, Petty, & Kao, 1984). The NFC scale assesses peoples' enjoyment of and tendency to engage in thought. People high (versus low) in NFC like to think and deliberate. The inventory (see Cacioppo, Petty, Feinstein, & Jarvis, 1996; Petty, Briñol, Loersch, & McCaslin, 2009) has been investigated in a number of political contexts and has been found to be a unique predictor of political outcomes (e.g., see Ahlering, 1987; Arceneaux & Vander Wielen, in press; Bullock, 2011). Some research, however, has failed to find predicted relationships between political behavior and NFC (e.g., Holbrook, 2006; Kam, 2005). If some individuals are more stable in their NFC than others and this can be indexed with a measure of certainty, then measuring certainty in NFC responses could improve its predictive utility for a variety of political behaviors as well as other domains.

In this study, we had participants complete the 18-item NFC inventory and the certainty of their responses to the inventory at two points in time, one week apart. The expected results were that NFC would be relatively stable over time because the NFC inventory measures people's general tendency across situations and environments to engage in more or less thought (see Cacioppo et al. 1996). While NFC certainty is not a chronic individual difference, we assumed that NFC certainty would also be at least in part a chronic concept. However, more importantly, we predicted that certainty in the initial NFC inventory would moderate the stability of NFC responses such that increased certainty would predict greater stability of NFC responses.

### Method

*Participants.* Two-hundred-and-four introductory psychology students participated in partial fulfillment of a course requirement at The Ohio State University in 2010. Of these 204 participants, 64 returned to the lab for the second session and served as the study sample. There was a marginal tendency for those high in NFC certainty to return to the lab than those low in NFC certainty ( $B = .50$ ,  $SE = .28$ )  $Wald = 3.16$ ,  $p = .08$ .

*Procedure.* The two sessions were identical: participants completed the NFC inventory in each. After every third item, participants indicated their certainty in the previous items. In the second session, participants completed the NFC inventory and indicated their certainty after completing unrelated tasks.

### Measures

*Need for cognition.* Participants responded to the 18-item NFC inventory (Cacioppo et al., 1984) on a 5-point response scale (1 = extremely uncharacteristic, 5 = extremely characteristic). Items include “I prefer complex to simple problems,” and “Thinking is not my idea of fun” (reverse coded). Higher scores indicate higher NFC. Responses at each time were averaged to form an index of NFC ( $\alpha = 0.89$  at Time 1 and  $0.91$  at Time 2). Scores ranged from 1.83 to 4.78 with a mean of 3.53 ( $SD = 0.67$ ) at Time 1 and 3.46 ( $SD = 0.72$ ) at Time 2.

*Need for cognition certainty.* After every third NFC item, participants answered one question—“How certain are you in the responses you just gave to the enjoyment of thought inventory?”—using a 5-point scale (1 = extremely uncertain, 5 = extremely certain). Because preliminary analyses indicated that there were no effects for the order of measurement at either administration, responses at each time were averaged to form two separate indices of NFC certainty ( $\alpha = 0.86$  at Time 1 and  $0.89$  at Time 2). Scores ranged from 2.83 to 5 with a mean of 4.33 ( $SD = 0.59$ ) at Time 1 and 4.43 ( $SD = 0.56$ ) at Time 2.

### Results

*Analysis of NFC Stability.* Prior to analysis, all predictor variables in this and all other studies were centered by subtracting the sample mean to aid in interpretation (Aiken & West, 1991). To determine whether NFC stability was moderated by initial NFC certainty, we submitted Time Two (T2) NFC to a Time One (T1) NFC  $\times$  T1 NFC Certainty regression analysis. There was a main effect of T1 NFC, ( $B = 0.95$ ,  $SE = 0.07$ ),  $t(61) = 13.37$ ,  $p < 0.01$ , such that participants who reported higher NFC at T1 had higher NFC at T2. More interestingly, the predicted interaction of NFC and NFC certainty also emerged, though it was marginal in statistical significance ( $B = 0.22$ ,  $SE = 0.13$ ),  $t(60) = 1.69$ ,  $p = 0.10$ .<sup>1</sup>

There was no main effect of T1 NFC certainty on T2 NFC ( $t < 1.0$ ). A decomposition one standard deviation above and below the mean of NFC certainty suggested that stability was greater at high, ( $B = 1.02$ ,  $SE = 0.08$ ),  $t(60) = 12.47$ ,  $p < 0.01$ , versus low NFC certainty ( $B = 0.76$ ,  $SE = 0.13$ ),  $t(60) = 5.71$ ,  $p < 0.01$ .

An alternative way to examine stability other than regression is to examine the correlations between T1 and T2 as a function of certainty. This can be done by splitting T1 certainty at its median and comparing correlations between T1 and T2 NFC for each group. Although median splits are generally discouraged (see McCallum, Zhang, Preacher, & Rucker, 2002), there is no simple way to perform a correlation analysis without doing so as the analysis requires distinct groups. Furthermore, concerns with the median split are attenuated as this merely provides an alternative analysis in the context of the regression. Consistent with the regression, the correlation was higher for high certainty ( $r = 0.92$ ) than for low certainty participants ( $r = 0.74$ ). Using Fisher’s  $r$ -to- $z$  transformation (Cohen & Cohen, 1983; Preacher, 2002), this difference was significant,  $z = -2.49$ ,  $p = 0.01$ .

One possible alternative explanation for this finding is that NFC and NFC certainty are simply highly correlated, and this caused the greater correspondence between NFC measurements at high certainty. Indeed, NFC and NFC certainty are correlated, albeit modestly, with one another at both measurement periods ( $r = 0.45$ ,  $p < 0.01$  at T1;  $r = 0.36$ ,  $p < 0.01$  at T2). If NFC and NFC certainty were redundant, however, one might expect that T2 NFC *certainty* could be predicted by T1 NFC and NFC certainty. Thus, NFC certainty was analyzed next.

<sup>1</sup> Of course, since only one direction of effect is plausible based on past research, a one-tailed test is justified in this instance which would produce a significance level of  $\leq 0.05$ .

*Analysis of NFC Certainty.* The scores on T2 NFC certainty were submitted to the same analysis conducted on the T1 NFC score: a T1 NFC  $\times$  T2 NFC Certainty regression analysis. There was only a main effect of T1 certainty, ( $B = 0.76$ ,  $SE = 0.09$ ),  $t(61) = 8.64$ ,  $p < 0.01$ , showing that NFC certainty was stable over time. The correlation between T1 and T2 NFC certainty was strong ( $r = 0.77$ ). Critically, the interaction of T1 and T2 NFC Certainty was not significant, ( $B = -0.09$ ,  $SE = 0.15$ ),  $t(60) = -0.61$ , *ns*, nor was the main effect of T2 NFC on T1 NFC certainty ( $t < 1.0$ ). In sum, although initial NFC certainty influenced the stability of NFC scores as hypothesized, initial NFC did not moderate the stability of NFC certainty.

### Discussion

Experiment 1 demonstrates certainty can help predict for whom individual-difference measures will be more stable and did so using a well-validated individual-difference inventory commonly used in the political domain, NFC. Specifically, we found greater correspondence between T1 and T2 NFC scores when people were highly certain. Furthermore, the relationship between T1 and T2 NFC certainty could not account for this effect. Additionally, in this study, certainty was fairly stable over time. These findings suggest that, for political psychologists interested in stable individual differences, measuring certainty might be useful because people who are certain of their responses are likely to have similar responses in the future.

As mentioned above, although some researchers have used NFC with success, others have not found NFC to predict political outcomes. Measuring certainty might help researchers determine for whom NFC will be predictive. That is, we would expect to find that NFC is a better predictor among people who are certain of their answers to the NFC inventory.

### Study 2

The primary purpose of Study 2 was to investigate whether an individual-difference inventory would predict relevant political outcomes to a greater extent when people were certain of their scale responses. A second question unaddressed by Study 1 is whether certainty is inventory-specific or whether a more global sense of certainty is responsible for the effects observed. We hypothesize that certainty is at least in part inventory-specific. That is, just as people can be dramatically more certain in some attitudes or self-views than others (Pelham, 1991; Pelham & Swann, 1994), so too are they likely to be more certain in their responses to some individual-difference measures than others.

To examine this second issue, in Study 2 we used two individual-difference measures and two different outcomes, one relevant to each measure. The first variable was need to evaluate (NE), which assesses individual differences in propensity to spontaneously form opinions (Jarvis & Petty, 1996). NE is an important predictor of political thought and behavior (e.g., see Druckman & Nelson, 2003). For example, people high in NE tend to have opinions for most topics, whereas those low in NE have fewer opinions, both in general (e.g., Tormala & Petty, 2001) and regarding political issues (Bizer et al., 2004). Those high in NE also tend to be more likely to act on their opinions than those low in NE (Bizer et al., 2004). For the current study, we focus on the finding that those higher in NE are less likely to report “no opinion” to items in political opinion surveys (Bizer et al., 2004; Jarvis & Petty, 1996). Our prediction is that this effect should be stronger as NE certainty increases.

The second individual-difference variable we used was ideological identification in the form of liberalism-conservatism. Liberalism is characterized by seeking change to society and elimination of social inequality, whereas conservatism is characterized by preventing change, preserving tradition, and tolerating inequality (e.g., Jost et al., 2009). Self-reported ideological identification has been shown to predict voting behavior (e.g., Jost, 2006; Knight, 1985; Levitin & Miller, 1979; Sears, Lau, Tyler, & Allen, 1980) and political attitudes (e.g., Jacoby, 1991; Knight, 1985; Levitin & Miller,

1979; Sears et al., 1980), although the usefulness and existence of stable ideology has sometimes been questioned (e.g., Converse, 1964). We used political ideology to predict relevant political attitudes by adapting items from the American National Election Studies (ANES) 1990s question file related to classic conservative and liberal issues such as civil rights, abortion, and military spending, among others. We expected that political attitudes would become more conservative as self-reported conservatism increased, particularly among participants who were certain of their ideology. We also hypothesized that certainty in one inventory would not moderate the effect of the other inventory. In other words, NE certainty should not moderate the effect of ideology on endorsement of conservative attitudes, and political ideology certainty should not moderate the effect of NE on the number of “no opinion” responses given. This would indicate that it is beneficial to assess certainty with respect to each construct rather than an overall sense of self-certainty.

### *Method*

*Participants.* Two-hundred-and-eighty Ohio State undergraduate students completed this study as part of a research requirement for an introductory psychology course in 2004. Six participants selected “no opinion” so often that their total was more than three standard deviations above the mean for the sample; they were excluded from analyses for NE. Including their data does not change the pattern of results. Because two participants provided ratings of NE, but not ideological identification, degrees of freedom vary below.

*Procedure.* Participants were told the experimenters were interested in a variety of social and political issues. They completed a political-attitudes questionnaire first, followed by a number of filler tasks. Then, participants indicated their ideology immediately followed by items assessing ideology certainty. They then completed the NE inventory followed by NE certainty.

### *Predictor Variables*

*Ideology.* We used a single-item measure of ideology based on the ANES questionnaire (see also Jost, 2006). Although some have raised the question of whether liberalism-conservatism should be treated as a bipolar scale (e.g., Conover & Feldman, 1981), this single-item measure has proven useful in prior research (e.g., Jost, 2006; Jost, Glaser, Kruglanski, & Sulloway, 2003). Participants indicated their position on a 7-point scale of ideology with responses ranging from extremely liberal (1) to extremely conservative (7), with the middle position labeled “moderate.” Thus, higher scores indicate greater conservatism (range 1–7,  $M = 4.05$ ,  $SD = 1.60$ ).

*Ideology certainty.* Following the ideology measure, participants indicated their certainty in their answers to the scale. Three questions paralleled those used in Study 1, but in addition to being asked about certainty, we also included two additional items that assessed participants confidence and surety in their ideology response ( $\alpha = 0.95$ , range 1–5,  $M = 4.14$ ,  $SD = 0.91$ ). We did this for two reasons. First, we wanted to have more than one certainty item for ideology certainty because ideology was measured with one item. Second, questions about the entirety of the scale are easier to administer than repeating one item multiple times.

*Need to evaluate.* The NE inventory is a 16-item measure of people’s propensity to form attitudes and opinions (Jarvis & Petty, 1996). Participants respond on a 5-point scale from *extremely uncharacteristic* (1) to *extremely characteristic* (5) to items such as “I form opinions about everything,” and “I prefer to avoid taking extreme positions” (reverse coded). Higher scores indicate higher NE. The average of these items served as an NE index ( $\alpha = 0.85$ ; range 1.81–4.94,  $M = 3.22$ ,  $SD = 0.62$ ).

*Need to evaluate certainty.* Need to evaluate certainty was measured in the same manner as ideology certainty, except that the items followed the NE measure ( $\alpha = 0.91$ , range 1–5  $M = 4.05$ ,

$SD = 0.74$ ). Note that whereas in Study 1, we asked participants to report their certainty after every third item in the scale, in this study, they only reported their certainty on three questions after completing all scale items.

### *Dependent Variables*

*Policy attitudes.* Participants' conservative attitudes were measured by their endorsement of 28 political and social issues adapted from the 1990s question panel for the ANES. Issues included military intervention in the Middle East, welfare spending, policies designed to ensure equal rights for minorities and women, defense spending, abortion rights, environmental protection, and socialized health care. Responses to these issues were scored so that higher scores indicate more conservative attitudes. Scores on each item could vary from 0 to 100. The maximum conservative responses were coded as 100, the maximum liberal responses as 0, and the coding of intermediate responses was determined based on the number of response options for each item. "No opinion" responses were not included in this aggregate. The average of the 28 items was calculated to form an index of conservative attitudes ( $\alpha = 0.80$ , range 12.68–83.36  $M = 43.74$ ,  $SD = 13.91$ ).

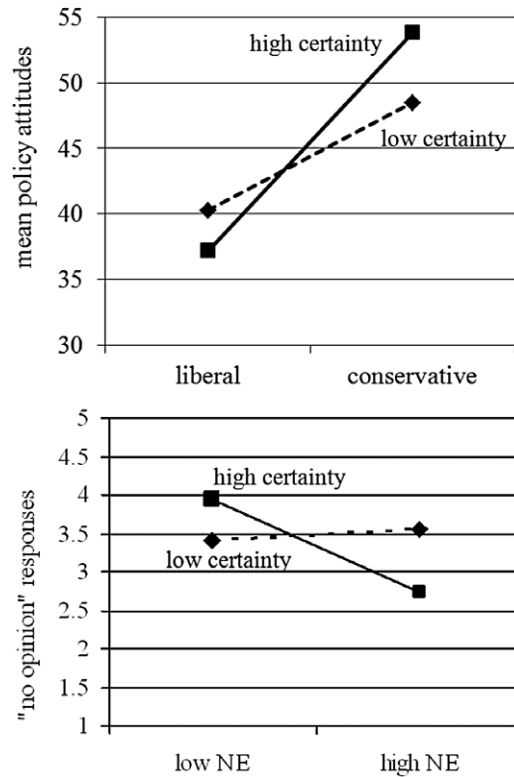
*Number of "no opinion" responses.* On each item of the 28 political attitudes questionnaire, participants could select a "no opinion" response option. The number of times participants selected "no opinion" served as the index of "no opinion" responses (range, 0–10;  $M = 2.79$ ,  $SD = 2.17$ ).

### *Results*

*Ideology and policy attitudes.* Policy attitudes were submitted to an Ideology  $\times$  Ideology Certainty regression analysis. Not surprisingly, we found a significant main effect of ideology, such that higher levels of conservative ideology were associated with more conservative policy attitudes ( $B = 5.75$ ,  $SE = 0.40$ ),  $t(275) = 14.57$ ,  $p < 0.01$ . More importantly, the predicted interaction between ideology and ideology certainty was significant ( $B = 1.20$ ,  $SE = 0.53$ ),  $t(274) = 2.26$ ,  $p = 0.02$ . Decomposing this interaction at one standard deviation above the mean for certainty was not possible because that value exceeded the maximum-scale value in this sample, so the analysis for "high certainty" was instead conducted at the maximum-scale value and one standard deviation below the mean for certainty. This analysis showed that the effect of ideology was stronger for those higher in ideology certainty, ( $B = 6.49$ ,  $SE = 0.51$ ),  $t(274) = 12.70$ ,  $p < 0.01$ , than those lower in certainty ( $B = 4.38$ ,  $SE = 0.72$ ),  $t(274) = 6.05$ ,  $p < 0.01$  (see Figure 1, top panel).

Because ideology certainty and NE certainty were significantly correlated ( $r = 0.38$ ,  $p < 0.01$ ), it is important to demonstrate that the effects of certainty are specific in nature and not solely indicative of a more general form of certainty. Consequently, we submitted the policy attitudes to an ideology  $\times$  NE certainty (i.e., unrelated certainty) regression analysis. This analysis revealed no effects of NE certainty ( $p$ 's  $> 0.5$ ). As an additional test of the specific nature of certainty, we also reran the primary analyses with the addition of NE certainty and the interaction of NE certainty with ideology and replicated the primary analyses. Specifically, both the main effect of ideology, ( $B = 5.74$ ,  $SE = 0.40$ ),  $t(274) = 14.53$ ,  $p < 0.01$ , and the interaction of ideology and ideology certainty remained significant ( $B = 1.13$ ,  $SE = 0.57$ ),  $t(272) = 1.99$ ,  $p < 0.05$ .

*Need to evaluate and "no opinion" responses.* We submitted the number of "no opinion" responses to a NE  $\times$  NE Certainty regression analysis. There was a main effect of NE, ( $B = -0.47$ ,  $SE = 0.21$ ),  $t(271) = -2.18$ ,  $p = 0.03$ , such that those higher in NE chose fewer "no opinion" responses, replicating prior research. More uniquely, but consistent with our theorizing, there was a marginally significant interaction of NE and NE certainty ( $B = -0.57$ ,  $SE = 0.31$ ),  $t(270) = -1.81$ ,  $p = 0.07$ . To decompose this interaction, we conducted the analysis at one standard deviation above and below the mean of NE certainty. Whereas the effect of NE was significant for those higher in



**Figure 1.** Study 2: Top panel: Mean conservative attitudes as a function of political ideology and ideology certainty. Bottom panel: Number of “no opinion” responses as a function of need to evaluate and need to evaluate certainty.

certainty, ( $B = -0.75, SE = 0.27$ ),  $t(270) = -2.83$ ,  $p < 0.01$ , there was no significant effect of NE among those lower in certainty ( $B = 0.10$ ,  $SE = 0.39$ ),  $t(270) = 0.25$ ,  $ns$  (see Figure 1, bottom panel).

As with the ideology and ideology-certainty analyses, we also submitted the number of “no opinion” responses to an NE  $\times$  ideology-certainty analysis to determine whether certainty is specific to the inventory. The interaction of NE and ideology certainty was not significant ( $t < 1$ ); however, there was a main effect of ideology certainty, ( $B = -0.34$ ,  $SE = 0.15$ ),  $t(270) = -2.34$ ,  $p = 0.02$ , indicating that those who were more certain in their ideology had fewer “no opinion” responses. In addition, we reran the primary analysis with the addition of ideology certainty and ideology certainty by NE. Both the main effect of NE, ( $B = -0.45$ ,  $SE = 0.21$ ),  $t(269) = -2.10$ ,  $p = 0.04$ , and the NE  $\times$  NE-certainty interaction remained as in the original analysis ( $B = -0.60$ ,  $SE = 0.33$ ),  $t(267) = -1.80$ ,  $p = 0.07$ .

### Discussion

In the current study, we showed that certainty moderates the effects of individual-difference measurements on political attitudes. First, we found that ideology predicted political attitudes to a greater extent if participants were certain in their reported ideology. To our knowledge, the utility of assessing ideology certainty has not been shown previously. Second, we found that NE predicted the number of “no opinion” responses on political attitudes to a greater extent if participants were certain of their answers to the NE inventory. As with ideology, the impact of NE certainty is a new effect.



Thus, as certainty in two different individual differences increased, the ability of these individual differences to predict political judgments also increased.

One critical advance is that for both of these results, the effects of certainty were inventory-specific. NE certainty did not moderate the effect of ideology on holding conservative attitudes, and ideology certainty did not moderate the effect of NE on the number of “no opinion” responses expressed. Furthermore, the effect of both of the certainty measures remained significant when controlling for the other certainty measure. The certainty scores were mildly correlated, which suggests the possibility of some shared underlying influences, but the small correlation, coupled with the independent consequences, suggest that specificity matters. This indicates that researchers interested in assessing certainty in individual differences should assess and examine certainty specific to each inventory.

### Study 3

Although certainty is a potentially important but overlooked moderator of individual-difference effects, it is not the only possible moderator. Thus, the main goal of the third study is to determine the predictive power of certainty relative to other moderators that have been examined in the political domain. Much prior research has successfully identified moderators of political behavior that are specific to ideological identification, so we sought to determine whether certainty could predict relevant responses over and above these established variables.

In this study, as in Study 2, political ideology was used to predict relevant political attitudes by adapting items from the ANES 1990s question file. We changed the order of the measurements so that ideological identification and certainty were measured prior to policy attitudes rather than after, as was the case in Study 2. We also measured a number of moderators that have been examined with respect to political ideology, such as political knowledge (Holm & Robinson, 1978; Stimson, 1975), interest (Judd, Krosnick, & Milburn, 1981; Nie, Verba, & Petrocik, 1976), and involvement in politics (Judd et al., 1981; Nie et al., 1976).

We expected that political attitudes would become more conservative as self-reported conservatism increased and that this relationship would increase to the extent that participants were certain in their ideology. The same was expected for the other moderators. Uniquely, we also hypothesized that certainty would exert its moderating influence on political attitudes over and above any influence of these previously examined variables, demonstrating the novelty of considering ideology certainty.

### *Method*

*Participants.* One-hundred-and-fifty Ohio State undergraduates participated in partial fulfillment of a research requirement for their introductory psychology course in 2011. Ninety-six participants completed the survey online on their own time outside the lab. Fifty-four participants completed the same survey in the lab. The only difference between the groups was the location in which they participated. Three participants were removed from the knowledge analyses because their scores were over three standard deviations higher than the other participants. Including their data does not affect the significance of the results. They are included in all other analyses, so the degrees of freedom differ. Additionally, one participant did not report any policy attitudes and was eliminated from these analyses.

*Procedure.* Participants were told that the researchers were interested in political beliefs and actions. First, participants indicated their ideology and their certainty in their ideology. They completed the panel of moderator questions (described shortly). Next, they indicated their attitudes to a variety of policy issues.

### *Predictor Variables*

*Ideological identification.* Ideological identification was measured identically to Study 2, although a 5-point scale was used (range 1–5,  $M = 3.01$ ,  $SD = 1.10$ ).

*Ideology certainty.* Similarly to Study 2, participants were asked about their certainty and confidence (but not surety) in their ideological identification. These items were combined into a certainty index ( $r = .59$ , range 1–5,  $M = 3.78$ ,  $SD = 1.00$ ).

*Political interest.* Participants were asked five questions about their interest in politics (see Judd et al., 1981; Krosnick & Brannon, 1993; Lusk & Judd, 1988; Nie et al., 1976). The questions asked them how interested they were in the 2012 presidential campaign (1 = extremely disinterested; 6 = extremely interested), how much they had been watching debates (1 = none; 5 = a lot), how much they thought about the election, how much they watched news programs for political information, and how much they read articles for political information (for latter 3:1 = never; 7 = multiple times per day). Responses were standardized and averaged so that higher scores indicate greater interest ( $\alpha = 0.86$ ). Previous research has shown that ideology predicts political attitudes better among participants who are more rather than less interested in politics (e.g., Federico & Schneider, 2007; Judd et al., 1981). Additionally, interest is related to political sophistication, another moderator of ideology on political behavior (Knight, 1985).

*Political involvement.* Five questions were used to assess political involvement, which were modified from prior research (e.g., Judd et al., 1981; Nie et al., 1976). Participants were asked how often they had tried to persuade someone to their political orientation, how many political petitions they had signed, how often they had contacted a newspaper or politician about a political issue, how often they shared articles about political issues with others, and how often they made political comments on articles on websites or social networking sites. Responses ranged from *never* (1) to *every day* (6) or *multiple times per day* (7). The multiple-times-per-day response option was only used where sensible (e.g., sharing articles and commenting on websites). Responses were averaged so that higher scores indicate greater involvement ( $\alpha = 0.73$ , range 1–4.4,  $M = 1.85$ ,  $SD = 0.76$ ). Higher levels of involvement have been linked to greater correspondence between ideological identification and policy attitudes (e.g., Judd et al., 1981).

*Political knowledge.* Political knowledge was assessed in two ways: First, participants were asked a single question about how knowledgeable they thought they were about politics (1 = not at all knowledgeable; 5 = extremely knowledgeable; range 1–5,  $M = 2.56$ ,  $SD = 0.98$ ). Participants were also asked 15 questions about current state and national politicians (e.g., president, cabinet, congress, supreme court, etc.) and their political parties, where relevant. Participants got a point for each correct answer (range 1–26,  $M = 8.06$ ,  $SD = 6.03$ ). For simplicity, these two measures were standardized and combined into a single index ( $r = 0.46$ ). They were also analyzed separately; the results were similar to those found for the index. Enhanced political knowledge increases the relationship between ideology and voting behavior and policy attitudes (e.g., Federico & Schneider, 2007; Holm & Robinson, 1978; Stimson, 1975).

### *Dependent Variable: Policy Attitudes*

Participants' policy attitudes were measured similarly to Study 2, although we updated the items based on current issues (e.g., an item asking participants about the Persian Gulf was removed; several questions about civil rights for minorities were added) and response options of some items were changed from 2- to 4-point scales. Responses were scored as in Study 2 and averaged to form an index of policy attitudes, with higher scores indicating greater conservatism ( $\alpha = 0.61$ , range 12.60–78.35,  $M = 42.12$ ,  $SD = 14.85$ ). "No opinion" responses were excluded from this index.

Results

*Ideology certainty moderation.* First, the index of policy attitudes was submitted to an Ideology × Ideology Certainty regression analysis. Replicating Study 2, there was a main effect of ideology ( $B = 8.86, SE = 0.85, t(146) = 10.45, p < 0.01$ ), such that the more participants self-identified as conservative, the more conservative their attitudes were. Importantly, the predicted interaction between ideology and ideology certainty also emerged ( $B = 2.42, SE = 0.93, t(145) = 2.61, p = 0.01$ ). There was no main effect of ideology certainty ( $t < 1$ ). A decomposition of this interaction revealed that the effect of ideology was stronger among participants who were more certain, ( $B = 10.43, SE = 1.03, t(145) = 10.15, p < 0.01$ ), than those who were less certain ( $B = 5.58, SE = 1.51, t(145) = 3.71, p < 0.01$ ).

Next, the moderators of ideology based on prior research were examined. These moderators were only modestly correlated with certainty (see Table 1). The same analyses were performed as with certainty by replacing certainty with the other moderators.

*Political interest.* In the analysis involving political interest, there was again a strong main effect of ideology, ( $B = 8.29, SE = 0.85, t(146) = 9.80, p < 0.01$ ), and a main effect of interest, ( $B = 3.15, SE = 1.12, t(146) = 2.81, p = 0.01$ ), such that greater interest was associated with more conservative attitudes. There was also a marginally significant interaction between ideology and interest ( $B = 1.93, SE = 1.06, t(145) = 1.83, p = 0.07$ ). Decomposition analyses paralleled the analysis for certainty: the effect of ideology was stronger among more interested participants, ( $B = 9.84, SE = 1.02, t(145) = 9.64, p < 0.01$ ), than less interested participants ( $B = 6.75, SE = 1.35, t(145) = 5.00, p < 0.01$ ).

When both certainty and interest and the interaction of each with ideology were included in the same model, the interaction of ideology and certainty, ( $B = 2.17, SE = 0.91, t(143) = 2.38, p = 0.02$ ), remained significant and the interaction of ideology and interest, ( $B = 1.74, SE = 1.05, t(143) = 1.66, p = 0.10$ ), remained marginally significant.

*Political involvement.* Political involvement had a main effect on policy attitudes, ( $B = 4.15, SE = 1.17, t(146) = 3.54, p < 0.01$ ), such that greater involvement was associated with more conservative attitudes. There was also the main effect of ideology ( $B = 9.07, SE = 0.81, t(146) = 11.24, p < 0.01$ ). However, in this analysis, political involvement and ideology did not interact ( $t < 1$ ). Unsurprisingly, including certainty and involvement in the same model showed an unchanged interaction between ideology and certainty, ( $B = 2.40, SE = 0.90, t(143) = 2.68, p < 0.01$ ), and the interaction between ideology and involvement remained nonsignificant ( $t < 1$ ).

*Political knowledge.* A regression analysis was conducted using ideology and the index of perceived and actual knowledge as predictors of policy attitudes. There was again a strong main effect of ideology, ( $B = 7.90, SE = 0.86, t(142) = 9.22, p < 0.01$ ), and a main effect of knowledge, ( $B = 2.84, SE = 1.08, t(142) = 2.62, p < 0.01$ ), such that greater knowledge was associated with more conservative attitudes. In addition, there was an interaction between ideology and knowledge ( $B = 2.58, SE = 0.98, t(142) = 2.63, p < 0.01$ ). Decomposition analyses revealed that the effect of ideology was stronger among more knowledgeable participants, ( $B = 10.08, SE = 1.03, t(142) = 9.80, p < 0.01$ ), than among less knowledgeable participants ( $B = 5.72, SE = 1.34, t(142) = 4.27, p < 0.01$ ).

**Table 1.** Correlations Among Predictor Variables in Study 3

	1	2	3	4	5
1. Ideological Identification	–				
2. Ideology Certainty	0.14	–			
3. Political Interest	0.09	0.28**	–		
4. Political Involvement	–0.06	0.08	0.51**	–	
5. Political Knowledge	0.20*	0.25**	0.73**	0.40**	–

\* $p < .05$ . \*\* $p < .01$ .

As with the other moderators, we also compared knowledge and certainty by including them in the same model. The interaction involving certainty remained significant, ( $B = 2.49$ ,  $SE = 0.91$ ),  $t(140) = 2.74$ ,  $p < 0.01$ , as did the interaction involving knowledge ( $B = 2.95$ ,  $SE = 0.98$ ),  $t(140) = 3.00$ ,  $p < 0.01$ .

*Comparing moderators.* To provide an even stronger test of the predictive utility of certainty, we sought to determine whether it predicted above and beyond an aggregate of the other significant moderators of the relationship between ideology and political attitudes. To perform this analysis, the other moderators for which we found successful moderation (i.e., political interest and political knowledge) were standardized and then averaged ( $\alpha = 0.89$ ). There was a main effect of this index on policy attitudes, ( $B = 3.48$ ,  $SE = 1.22$ ),  $t(143) = 2.86$ ,  $p < 0.01$ , such that higher scores were associated with more conservative attitudes. The index also interacted with ideology to predict policy attitudes ( $B = 2.65$ ,  $SE = 1.11$ ),  $t(142) = 2.38$ ,  $p = 0.02$ . When this index was included in the same model as certainty, the interaction of certainty and ideology remained significant, ( $B = 2.26$ ,  $SE = 0.91$ ),  $t(140) = 2.49$ ,  $p = 0.01$ , and the interaction of this index and ideology remained significant ( $B = 2.77$ ,  $SE = 1.10$ ),  $t(142) = 2.51$ ,  $p = 0.01$ .

Another method for comparing moderators would be to include all of them and their interactions with ideology in a single model. In this model, two significant interactions emerged: the first with certainty, ( $B = 2.68$ ,  $SE = 0.91$ ),  $t(136) = 2.95$ ,  $p < 0.01$ , the second with knowledge ( $B = 3.68$ ,  $SE = 1.53$ ),  $t(136) = 2.41$ ,  $p = 0.02$ . Neither the interaction with interest nor the interaction with involvement was significant ( $t$ 's  $< 1.5$ ,  $p$ 's  $> 0.2$ ).

### Discussion

As was the case in Study 2, participants' self-reported ideology predicted their policy attitudes to a greater extent as certainty increased. Additionally, we compared certainty to several previously used moderators of ideological identification. All of the previously studied moderators had main effects on policy attitudes, such that more knowledge, involvement, and interest all predicted more conservative attitudes. More pertinent to the primary hypotheses, political interest and political knowledge moderated the effects of ideology on policy attitudes, although political involvement did not. Critically, the moderating effect of certainty remained significant when controlling for each of these other moderators. This is especially impressive because the certainty measure was composed of just two questions, whereas the other moderators included five to 16 items. Taken together, these analyses suggest that certainty interacts with ideology independently of the other moderators, so certainty might be a novel and useful variable to consider in predicting politically relevant outcomes.

### General Discussion

In three studies, assessing people's certainty in their responses to standard individual-difference measures predicted whether responses were stable over time and predictive of individual-difference-relevant political outcomes. In Study 1, there was greater correspondence between measurements of need for cognition one week apart when answers to the first measurement were held with greater certainty. In Study 2, participants' attitudes towards political policy issues were better predicted by their identification as liberal or conservative when they were certain of this ideological identification. Similarly, the number of times participants reported having no opinion to the policy issues was better predicted by the need to evaluate when they were certain of their responses to the NE scale. In Study 3, certainty predicted attitudes as well as a number of prior ideology moderators. Political interest and political knowledge moderated the effect of ideology on attitudes to a similar extent as certainty, although certainty predicted over and above these moderators.

Consistent effects were found across a variety of individual differences and political outcomes. Although the strength of the results varied from study to study, the overall pattern is consistent with the idea that certainty is a useful moderator of the effects of individual-difference inventories on politically relevant outcomes. Certainty moderated for a single-item construct (i.e., ideology identification) and even for longer and presumably more reliable individual-difference inventories (e.g., need to evaluate). As noted in the article's introduction, it was possible that with longer inventories meant to assess stable constructs, the enhanced reliability of the inventory itself would render certainty unimportant. The current research clearly shows this is not the case and that certainty is a potentially important addition to research using individual-difference inventories.

We found significant moderation on a variety of outcomes as well, such as stability (Study 1), opinion expression (Study 2), and policy attitudes (Studies 2 and 3). Accordingly, certainty seems likely to increase the predictive validity of a variety of individual-difference inventories in a variety of situations and cannot be dismissed as only being applicable to a narrow set of circumstances. Nevertheless, future research should address an even wider variety of inventories (e.g., the Big Five; Digman, 1990).

Because this research involved only measured variables, it is correlational in design. Although one might raise concerns about reverse causality (i.e., that instead of certainty creating more stability or more relevant judgments, stability and relevant judgments lead people to infer certainty), a reverse causal interpretation is most plausible when the measure of certainty follows the key dependent variable and when the relationship among the variables is obvious. In these studies, certainty moderated outcomes whether measured before or after the key dependent measure. For example, in Study 1, certainty measured one week before the criterion was useful as a moderator of stability in need for cognition. It is not clear how certainty measured one week before the criterion variable could be an effect rather than a cause of that outcome. Additionally in Studies 2 and 3, the order of measurement of dependent variable and individual differences varied. Thus, the most reasonable conclusion is that certainty at one time plays a core role in determining how useful that variable is at a subsequent point in time.

One open issue concerns why certainty is so useful, besides being relatively easy to measure. In the attitudes literature, certainty has been associated with attitude accessibility (e.g., Petrocelli et al., 2007), perceived ease of retrieval (e.g., Haddock, Rothman, Reber, & Schwarz, 1999), and actual and perceived elaboration (e.g., Barden & Petty, 2008). Certainty is also related to stability (see Study 1). Certainty might be useful in part because it offers a summary of a number of distinct judgments related to strength, whereas perhaps some of the other moderators do not. It might even be the case that the reasons for certainty differ depending on other variables such as political sophistication. For example, we found in our college-aged sample that certainty, interest, and knowledge moderated effects of ideology on issue attitudes. Certainty and knowledge were both significant predictors controlling for the other, suggesting that they are independent predictors. This indicates that some participants may have been certain but not knowledgeable. However, perhaps people with greater political sophistication would be more likely to base their certainty on objective knowledge. If so, the moderating effect of knowledge on issue attitudes could be further mediated by certainty (for similar analyses involving attitude strength, see Barden & Petty, 2008).

Finally, we advocate the use of certainty as a moderator because of its ease of use and efficiency. Questions about certainty are easy for researchers to use; they require only a few additional questions, and participants should find them easy to answer. In addition, many of the other moderators of ideological identification effects are rather general in nature, meant to apply across a wide range of politically relevant outcomes. Certainty, in contrast, can be asked specifically about particular variables. This may be an advantage in the same way that increasing the specificity of attitude measurement increases the ability to predict behavior from attitudes.

## Conclusion

In summary, across three studies we demonstrated that people's certainty in their answers to individual-difference inventories is consequential in predicting politically relevant outcomes. Certainty moderated the stability of the inventories and the extent to which those inventories predicted individual-difference-relevant political outcomes. Moreover, the effects of certainty generally held when controlling for other previously examined moderators of ideological identification. The use of certainty as a moderator of individual-difference effects is advocated for several reasons. First, certainty is relatively independent of other moderators often examined in political science, and it was as good or superior to the other moderators, suggesting that certainty is a unique and useful moderator. Additionally, certainty might be a particularly efficient variable for researchers to measure, as it is easy for participants to interpret and only requires a small number of items.

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