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Joanne M. Miller, *University of Minnesota*

David A. M. Peterson, *Texas A&M University*



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Theoretical and Empirical Implications of Attitude Strength

Joanne M. Miller
University of Minnesota

David A. M. Peterson
Texas A&M University

Attitude strength is defined as the extent to which an attitude is stable, resistant to change, impacts information processing, and guides behavior. Several concepts, such as accessibility, ambivalence, and importance relate to the broader concept of strength. For many years, both social psychology and political science ignored the differences across these various concepts, though in different ways. Social psychologists treated them as interchangeable, as indicators of the same latent concept. Political scientists treated them in isolation, focusing on one type of strength and ignoring the other, possibly relevant types. Recent research in both fields, however, challenges these approaches. Indicators of attitude strength are distinct concepts, and these differences are important empirically and theoretically. In this essay, we review the developments in both disciplines and make suggestions for how scholars should use and operationalize these concepts.

Since Converse coined the term “issue publics” in the 1960s (Converse 1964), political scientists have endeavored to develop measures aimed at identifying issue public members. Namely, researchers have worked to distinguish between citizens whose political attitudes have important implications for their political behaviors and those whose attitudes and behaviors are unrelated. A parallel line of inquiry began in social psychology around the same time, sparked by a crisis of confidence in the attitudes literature. This crisis was summarized by Wicker (1969), when he concluded that attitudes are poor predictors of behavior, less than 40 years after Gordon Allport’s bold pronouncement,

Attitudes determine for each individual what he will see and hear, what he will think and what he will do . . . They draw lines about, and segregate, an otherwise chaotic environment; they are our methods for finding our way about in an ambiguous universe. (1935, 806)

Against this backdrop, political scientists and social psychologists began to ask a different question—instead of asking “Do attitudes predict behavior?” they began to ask “*When* do attitudes predict behavior?” or “*Which* attitudes predict behavior?”

The general conclusion from these literatures, which developed virtually independently, is that strong attitudes are predictive of behavior, whereas weak ones are not. Although a plethora of measures of attitude strength have been developed within the two disciplines, until recently little conscious effort has been made to determine whether these operationalizations are really measuring the same construct. In this paper we review the development of the conceptualization and operationalization of four measures of attitude strength (importance, accessibility, ambivalence, and certainty) paying particular attention to the political science literature. Although these concepts are often treated as interchangeable, they are not, in fact, indicators of a single underlying construct. We demonstrate this by reviewing new research in psychology that demonstrates quite convincingly that common measures of attitude strength have very different causes and consequences. Simply put, the differences between the types of attitude strength matter. Identifying the appropriate type is essential to understanding how people think and act in relation to politics. Perhaps more importantly, because these concepts have different causes and consequences, which type of strength matters most under what conditions has important normative and political implications.

The paper proceeds as follows. In the next section we provide a conceptual definition of attitude strength and briefly review the meta-attitudinal/operative framework for categorizing measures of attitude strength. Next, we discuss the development of various measures aimed at identifying strong attitudes, focusing on importance, accessibility, certainty, and ambivalence. From there, we review research in social psychology regarding the dimensionality of indicators of attitude strength. A brief disclaimer: our goal in this paper is not to provide a comprehensive review of the vast attitude strength literature in political science and psychology, nor is it to provide new empirical findings. Given our read of the literature, our experience in dealing with these topics, and very recent research in social psychology, our goal is to synthesize the major work in this area for a broader audience in an effort to begin a dialogue between the two disciplines that generates interesting theoretical and empirical advances in the attitude strength literature.

Definition and Measurement of Attitude Strength

Krosnick and Petty define attitude strength as “the extent to which attitudes manifest the qualities of durability and impactfulness” (1995, 3)—namely, the extent to which an attitude is persistent, is resistant to change, impacts information processing, and guides behavior. In other words, attitudes are strong to the extent that they possess these features. The measurement of attitude strength begins by identifying attributes of attitudes that are related to these defining features of attitude strength. According to Krosnick and Petty,

these strength-related attributes can be viewed as falling into four categories: (a) aspects of the attitude itself, (b) aspects of the cognitive structure associated with the attitude and attitude

object in memory, (c) subjective beliefs about the attitude and attitude object, and (d) cognitive processes by which an attitude is formed. (1995, 5)

Researchers have identified a number of strength-related attributes, such as importance, accessibility, certainty, ambivalence, extremity, and knowledge, just to name a few (see Krosnick and Petty 1995). In political science, four of these concepts, importance, accessibility, ambivalence, and certainty have extensive literatures—literatures that, until recently, have developed largely in isolation. Before moving to a discussion of these four measures, we first describe one way to categorize strength-related constructs, by distinguishing between operative and meta-attitudinal measures of strength. Using this broad framework, we then turn to each of the strength-related constructs in turn.

Meta-attitudinal vs. Operative Measures

Not surprisingly, psychologists have spent a lot more time, energy, and resources on how one should measure dimensions of attitude strength, and this literature is quite extensive. Bassili (1996) provides one framework for categorizing measures of attitude strength by dividing them between “meta-attitudinal” and “operative” measures (see Wilson, Lindsey, and Schooler 2000 for a review of a different framework, namely the explicit or implicit nature of the attitude). By meta-attitudinal, Bassili means measures that are based on the person’s own assessment of his or her attitude. Operative measures, in contrast, are “linked to the judgment processes responsible for attitude responses” (1996, 638). For a measure to be operative, it must tap either the properties of the judgmental process or the retrieval of information from memory. Essentially, operative measures focus on how the respondent uses the attitude, and meta-attitudinal measures are based on a subjective assessment made by the respondent.

The operative/meta-attitudinal distinction applies to both measures and the underlying concepts. As we shall see, many attributes of attitude strength can be measured meta-attitudinally or operatively. In fact, Bassili suggests that every operative measure can also be conceived of as a meta-attitudinal measure, but that some concepts can only be conceptualized and measured as meta-attitudinal, including certainty and importance. He suggests that these are inherently subjective and, therefore, must be measured meta-attitudinally. The political science literature, however, provides counter examples, which we will describe below. Thus, it appears that the concept one chooses may or may not provide insight into whether one should use an operative or meta-attitudinal measure.

This distinction is more than semantic. The indirect, operative measures have the advantage of being untainted by the self-perception process, do not suffer from the standard difficulties in survey measurement, and can tap the unconscious elements of cognition that may drive the processes we care about. Additionally, these measures are often easier to get. They do not require additional questions of the respondents and minimize the time involved to administer the questionnaire. Bassili (1993, 1996) goes so far as to conclude that operative measures are

better measures of attitude strength and should be the preferred choice among scholars. We would argue against such a strong assertion. As Holbrook and Krosnick (2003) note, a great deal of psychological research shows that individuals' subjective assessments can be quite meaningful, even if they are factually inaccurate (e.g., Fried and Aronson 1995; Wegener et al. 2000).

Another important question with regard to this distinction is whether it is merely a methodological one, or whether meta-attitudinal and operative measures of the same construct are conceptually distinct. If this is only a methodological distinction, then researchers can choose which measure to use based on idiosyncratic preferences, use in past research, ease of data collection, and the like. However, if the distinction is a conceptual one, then researchers need to pay attention to the match between their theoretical constructs of interest and their measures.

Bassili (1996) examined the impact of meta-attitudinal and operative measures of attitude extremity, ambivalence, and accessibility on resistance to counterarguments and stability. He found that an index of the three operative measures had more predictive validity than a similar index of the meta-attitudinal measures. More important for the present discussion, however, is whether meta-attitudinal and operative measures of the *same* construct are correlated with one another and have similar predictive validity. Other analyses reported by Bassili (1996) indicate that this may not be the case. Holbrook and Krosnick (2003) conducted a comprehensive comparison of meta-attitudinal and operative measures of knowledge, ambivalence, and accessibility. Their results show quite convincingly that the meta-attitudinal/operative distinction is more than just methodological—meta-attitudinal and operative measures of the same construct are virtually uncorrelated with one another (we will have more to say on this point when we move to a discussion of specific attitude strength attributes).

Moreover, in contrast to Bassili's (1996) conclusion that operative measures have more predictive validity across the board, Holbrook and Krosnick (2003) show that meta-attitudinal and operative measures of the same construct predict different outcomes (such as selective exposure, candidate evaluations, and activism; see Holbrook and Krosnick 2003 for a detailed discussion of the conceptual and theoretical import of these findings). The authors conclude that:

when applied to strength-related attitude features (at least knowledge volume, ambivalence, and accessibility), [meta-attitudinal and operative] appear not simply to be different types of measures, but different constructs. This finding has implications for the way that strength-related attitude features . . . are measured. Specifically, our results suggest that [researchers] should be careful to choose their measures based on their conceptualizations and theories, not simply on convenience. (2003, 66)

We echo this conclusion, which is a running theme throughout our paper. We now turn to a discussion of the four most common measures of attitude strength in the political science literature: importance, accessibility, ambivalence, and certainty.

Attitude Importance—Conceptualization

The earliest works on importance in political behavior focused on the effect of issue attitudes on voting, with mixed results.¹ Much of this work was motivated by Converse's (1964) inability to find evidence of either widespread issue voting or even the presence of a large number of issue publics in America. Repass (1971), for instance, suggested that instead of looking at all voters on all issues, scholars would be more successful if they only focused on the issue the respondent thought was the most important problem. Given this distinction, Repass found that citizens do see differences between the parties on the issues that are important to them and use these issues when voting. Using a more direct measure of importance, Rabinowitz, Prothro, and Jacoby (1982) also found strong, but not overwhelming, evidence of the role importance plays in issue voting. Similarly, Krosnick (1988) concluded that attitude importance plays a fundamental role in moderating the link between issues and vote choice. In contrast, Markus and Converse (1979) found that allowing importance to moderate the impact of issues on voting decreased the explanatory power of their model. Niemi and Bartels (1985) reported that the variety of importance measures included in the National Election Studies consistently underperform. Using a variety of question formats, samples, and measurement techniques, they failed to find any evidence that the issue-vote choice link is moderated by the importance of the issues. In their review of the literature on issue voting, Miller and Shanks declared that they are "reluctant to trust voters' self-reports concerning the impact of specific factors on their own choice . . ." (1996, 206).

A second, and largely separate, literature on importance in political attitudes developed because of the study of the media's agenda-setting abilities (Iyengar and Kinder 1987; Iyengar, Peters, and Kinder 1982; MacKuen and Coombs 1981). Essentially, when the media covers an issue, the public reacts by believing the issue is more important for the nation. At the early stages of the research, a theoretical distinction was made between the media affecting the importance of citizens' attitudes (agenda setting) and the use of these attitudes to evaluate political attitude objects (priming). The initial work, especially by Iyengar, Kinder, and colleagues, separated the two concepts theoretically if not empirically, suggesting that priming worked largely by altering the accessibility of attitudes in citizens' minds.² Unfortunately, this distinction was not always clear in the literature that followed, and importance and accessibility have been conflated, a point to which we will return later.

¹ Political scientists often use the term "salience" to refer to how important an attitude is to an individual. However, salience is also used to refer to how quickly an attitude comes to mind, or its accessibility. Given the multiple uses of this term, we strongly urge for the use of more specific terms aimed at conveying exactly what is being measured. Therefore, we argue for the use of the terms of importance and accessibility, rather than the more all-inclusive term salience.

² This has since been tested directly, a point we will return to.

Attitude Importance—Measurement

The measures of importance used in political science are all meta-attitudinal.³ They explicitly ask the respondent to report how important an attitude or issue is. One such meta-attitudinal measure entails asking respondents how important an issue is for the *country as a whole* (e.g., Almond 1950, 70–80; Jackson and Vinovskis 1983, 68–69; Maggiotto and Piereson 1978; Neuman 1986, 72; Repass 1971; Sears et al. 1980). As typically operationalized, the “most important problem” question asks respondents in an open-ended format to list the most important problems currently facing the country.

Assessing the national importance of an issue is not the only meta-attitudinal measure of attitude importance. An alternative approach has been to ask respondents how important an issue is to them *personally* (e.g., Aldrich and McKelvey 1977; Aldrich et al. 1982; Rabinowitz, Prothro, and Jacoby 1982; Shapiro 1969). The typical question format asks the respondent “How important is [attitude/issue/concept] to you personally?” (e.g., Krosnick 1988).

It turns out that this distinction between national and personal importance is quite consequential. Miller, Krosnick and Fabrigar (2003) reviewed the research on the cognitive and behavioral consequences of personal and national importance and concluded that the bulk of the extant work suggests that national importance judgments are *not* cognitively and behaviorally impactful, whereas personal importance judgments are. However, Miller, Krosnick and Fabrigar (2003) point out that the differences in documented effects of national importance and personal importance could be attributable to measurement differences. As mentioned above, nearly all studies of national importance assess the construct via open-ended questions asking respondents to cite the most important issues facing the nation. In contrast, studies of personal importance nearly uniformly employ closed-ended questions that asked respondents to rate the importance of various specified issues. Thus, method of measurement is confounded with target (the nation or the individual).

In a series of studies, Miller, Krosnick and Fabrigar (2003) examined the cognitive and behavioral consequences of national and personal importance judgments, unconfounding issues of measurement (by using open- and closed-ended measures of both). They found that policy voting, writing letters, and making phone calls to express policy preferences to politicians and the news media, contributing money to lobbying organizations, and attending group meetings are all inspired by citizens’ ascribing personal importance to an issue but are not inspired at all by the belief that an issue is important for the country as a whole. Moreover, attaching personal importance to an issue appears to be behaviorally consequential because it instigates vigorous cognitive and emotional issue

³Rivers’ (1988) work on the heterogeneity of issue voting, though complex, may provide an operative measurement of the importance of issues to different respondents. However, this can become tautological, because use of the issue in candidate evaluations and vote choice is often treated as a dependent variable that meta-attitudinal measures of importance are used to explain.

engagement, whereas national importance does no such thing. Therefore, measures of personal importance seem to be more appropriate for gauging a dimension of attitude strength, whereas measures of national importance are not.

Attitude Accessibility—Conceptualization

While importance may have the longest history in political science, accessibility is by far the most ubiquitous measure of attitude strength in political science. Axelrod (1973), in his development of a schema-based theory of political perception and cognition, may have been the first to apply the idea in political science. He suggested that the order in which schema were used depended on their accessibility in memory. While schema theory has waxed and waned in political science, the role of accessibility has certainly increased.

This growth is attributed to the impact of two main works. Accessibility plays a prominent role in both Iyengar and Kinder's (1987) development of media priming and Zaller and Feldman's (1992; Zaller 1992) RAS model of the survey response.⁴ The first of these, Iyengar and Kinder's work on media priming, suggested that the media could alter the foundation of political evaluations by making different attitudes or information accessible in a citizen's memory. Thus, when asked to express the evaluation, citizens will recall what is easiest to remember and use that as the basis for the evaluation. Priming is widely accepted as an important influence of the media on citizens (Krosnick and Brannon 1993; Krosnick and Kinder 1990), and the conventional wisdom, until Miller and Krosnick's (2000) experimental evidence to the contrary, had been that media priming occurs because of the media altering the accessibility of attitudes and information in citizen's minds.

Zaller and Feldman's work on survey response and attitudes (Feldman 1995; Zaller 1992; Zaller and Feldman 1992) has been even more influential. The model has three basic assumptions. First, citizens are ambivalent about most issues. They hold considerations in their head that support either side of an issue. Second, a person's attitude about an issue is shaped by whatever considerations are accessible in his or her memory. When asked to express a political attitude people quickly canvas their memories for the most accessible considerations and put them together. Third, the accessibility of these considerations is shaped by the recency of use. These relatively simple assumptions generate an incredibly powerful model of survey response and attitude formation that is the starting point for much of the work on microlevel policy attitudes in political science.

Scholars have also relied on accessibility to explain campaign effects (Johnston et al. 1992), rights and liberties determinations (Chong 1993), the use of party and ideology (Huckfeldt et al. 1998), attitude stability (Huckfeldt and Sprague 2000), and the heterogeneity of voter decision making (Lau 1989). In

⁴It should be noted that Fazio's (e.g., 1995) work in social psychology has also been an extremely important influence on much of the political science literature.

short, accessibility has quickly become the dominant, and seemingly default, indicator of attitude strength in political science.

Attitude Accessibility—Measurement

The measurement of accessibility is well defined, largely due to the work of Fazio (see Fazio 1995 for a review of this work). In contrast with the measure of importance, the standard measurement techniques appropriate to tap an attitude's accessibility are operative. The basic approach is known as response latency—the time it takes the respondent to respond. In telephone surveys, this involves measuring the length of time between the end of the question and the beginning of the respondent's answer (Bassili and Fletcher 1991). In experimental work, a more indirect measure is often used. Response latency is often taken as a follow-up task, where the respondent is presented with a series of letter strings and is asked to identify the string as a word or not a word. To test the accessibility of some attitude in the respondent's mind, the researcher embeds a series of words related to the attitude in the study. If the experimental conditions alter the accessibility of the attitude, the response time associated with related words should differ across experimental conditions. For instance, in their work on tolerance, Nelson, Clawson, and Oxley (1997) include words related to free speech and public order. Valentino, Hutchings, and White (2002), in studying the priming of racial attitudes, use "race-relevant" words. It is possible to use more direct measures of response latency with experiments as well. That is, instead of relying on a separate task that gauges how accessible attitudes are, the accessibility measures can be directly incorporated into the measurement of the attitude itself. To the best of our knowledge, there is no strong empirical evidence suggesting one approach is preferable to the other. The choice of using a separate task to gauge an attitude's accessibility has the disadvantage of lengthening the time it takes the respondent to complete the study. Still, the choice seems to be one of preference and not science.

When measuring accessibility using response times, researchers have to choose between latent or active timers. The fundamental difference between the active and latent timers is when the timer starts. In a survey setting, a latent timer is one that begins when the surveyor begins asking the question and stops when the respondent answers. The active timer begins when the question stops and only times how long before the respondent answers. The use of a latent timer is contentious. One scholar has suggested that latent timers should be "shunned by academic researchers" (Bassili 2000, 2). Bassili's objection, however, seems to be based more on anecdotal experience than on a systematic analysis of the differences between the two timers. On its face, active timers seem superior, and the argument he makes is persuasive. At no time, however, does he present any empirical evidence of a systematic bias induced by the latent measures. The only study that has looked for these differences (Mulligan et al. 2003) found no systematic difference between latent and active timers. Their conclusion, based on the only

empirical analysis to date, is that the latent timers are an acceptable measure of accessibility. Thus, we believe the necessity of an active timer may be exaggerated.

One can also measure accessibility meta-attitudinally, as the subjective experience of ease of retrieval of the attitude or attitude-relevant information. For example, Holbrook and Krosnick (2003; see also Bassili 1996) asked respondents three questions to assess accessibility meta-attitudinally: "How long did it take you to think of your opinion about issue X?" "Did your opinion come to mind slowly, quickly or neither slowly nor quickly?" and "Compared to your opinion about other issues, how quickly did your opinion about legalized abortion come to mind?" As mentioned above, both Bassili (1996) and Holbrook and Krosnick (2003) find that operative measures of accessibility (namely, response time measures) and meta-attitudinal measures of accessibility are, in fact, separate and unrelated constructs and therefore should not be used interchangeably.

Attitude Ambivalence—Conceptualization

Unlike the research regarding some of the other indicators of attitude strength that focus on the consequences of the indicator for individuals, the simple presence or absence of ambivalence seems to be the most important question regarding this measure. Part of this may stem from the type of work being done. Instead of experiments or surveys, the best empirical evidence for citizen's ambivalence comes from in-depth interviews about politics (Hochschild 1981; Chong 1993). The essential conclusion is that when a researcher allows a person to talk about politics, his or her responses will be contradictory, shaded, qualified, and corrected.

Large portions of the survey-based research on ambivalence examine the same question. Alvarez and Brehm (1995, 1997, 1998, 2002), in their discussions of abortion and euthanasia attitudes, focus more on the presence of ambivalence and its import for representation and democracy than on the impact on the individuals who are experiencing the ambivalence.⁵ Zaller and Feldman (1992) depict the degrees of ambivalence in responses to open-ended questions about the welfare state, but not how the differing degrees of ambivalence influence the individuals' cognitions and behavior.

The role of ambivalence in the RAS model described above fits this pattern as well. It is largely treated as something of a stylized fact: The assumption is that voters are ambivalent, thus we see a series of relationships. We know, however, that not all citizens are equally ambivalent. That should imply that the patterns Zaller and Feldman uncover should not apply equally to all citizens. Take, for instance, a person who disagrees with everything the president has done. He or she feels the economy is doing poorly, disagrees with the president's foreign policy, does not like the changes to environmental law, and so on. If every con-

⁵These are not unimportant questions, merely different ones.

sideration in the person's memory is negative, then this person should be completely consistent across time, regardless of which considerations are accessible. In short, the importance of accessibility in the RAS model depends entirely on the degree of ambivalence in the person in question. For a person who is entirely univalent, which consideration is accessible makes no difference; for a person who is completely ambivalent, which considerations are accessible make all the difference.

Lavine (2001) makes this point most clearly, noting that ambivalence drives one's susceptibility to persuasion (Bassili 1996), determines the accessibility of considerations (Huckfeldt and Sprague 1998), opinion stability (Zaller and Feldman 1992), and context dependence. Furthermore, Lavine's results indicate that ambivalence affects vote choice as well as policy opinions, noting that the effect of both issues and character traits on vote choice is moderated by the degree of ambivalence the respondent has about the candidate.

Attitude Ambivalence—Measurement

There are several approaches, both operative and meta-attitudinal, to measuring ambivalence in the literature. Alvarez and Brehm (2002) use the patterns of the error variance in the estimation as an operative estimate of the degree of ambivalence. They use a heteroskedastic model to estimate the effects of various predictors (such as the amount of information the person has received or the person's sophistication) on the error variance in their attitudes. They then use the relationships between these predictors and the attitudinal error variance to determine if the sample is ambivalent, uncertain, or equivocal. If the error variance is driven by information levels (the more informed the more variance) then the public's opinion is said to be ambivalent. One can then predict the value of the error variance for each individual and use this inferential measure to tap the individual's ambivalence. Presumably, if one can diagnose the source of the heterogeneity of the variance terms, and determine that it is driven by ambivalence and not uncertainty, one could use this procedure for most cases. The downside is that it is difficult to know ahead of time whether the error variance will be driven by ambivalence, equivocation, or uncertainty. If one were interested in measuring ambivalence, this would be a risky strategy.

Lavine (2001), following Thompson, Zanna, and Griffin (1995), uses an operative approach. He relies on the open-ended likes and dislikes questions about candidates included in the NES. The basic measure is to sum the positive and negative responses and divide by the two. Then Lavine subtracts the absolute value of the difference between the number of positive and negative responses from this initial term. This second step controls for the intensity of the attitudes and provides a straightforward means of measuring the ambivalence of the person's attitudes towards, in this case, presidential candidates. This measure is general enough to work with any set of questions that allow a person to express both positive and negative thoughts or feelings about the attitude object.

This measure also works to compare across attitude objects or components of attitudes. For instance, Lavine (2001) creates a larger measure of overall ambivalence between the two candidates based on the summation of the positive and negative evaluations of both. Lavine et al. (1998b) create an affective-cognitive ambivalence measure by examining the overall positivity and negativity of the affective and cognitive components of overall candidate evaluations (as opposed to the degree of ambivalence within either cognitive or affective reactions). In essence, this measurement strategy provides a simple, flexible, unobtrusive way to measure ambivalence.

Ambivalence can also be measured meta-attitudinally, by asking respondents to report the degree to which they feel ambivalent, or conflicted, about an attitude object. For example, Priester and Petty (1996) and Holbrook and Krosnick (2003) asked respondents how much they felt conflict, indecision, and mixed reactions toward an object: “How mixed are your thoughts and feelings about issue X?” “How much conflict do you feel about your opinion about issue X?” and “How indecisive are your thoughts and feelings about issue X?” Bassili (1996) asked respondents “How much conflict do you feel about the good and bad aspects of issue X?” Bassili (1996) and Holbrook and Krosnick (2003) both find that operative and meta-attitudinal measures of ambivalence are separate, albeit moderately correlated, constructs.

Attitude Certainty—Conceptualization

The final concept to be discussed here may have the greatest disjuncture between the treatment by social psychologists and political scientists. As a trivial example, even the language that is used is different, with social psychologists emphasizing certainty and political scientists emphasizing *uncertainty*. Instead of drawing on the social psychological literature on certainty (see Gross, Holtz, and Miller 1995 for a review), political scientists developed theories of how certainty operated largely based on spatial models of voter decision making. Shepsle’s (1972) early work on candidate strategy and Enelow and Hinich’s (1981) models of decision making under imperfect information place uncertainty at the core of elections.

The empirical tests of these models draw their theoretic guidance from precisely these formal models. Bartels’ (1986) seminal work on the empirical implications of uncertainty, for instance, is depicted explicitly as empirically testing the formal models. Alvarez and colleagues (Alvarez 1998; Alvarez and Brehm 1997, 2002; Alvarez and Franklin 1994) develop and extend these theoretic and empirical interests without any reference to the literature in social psychology. Even work that develops a survey-based measure of uncertainty, a measure very similar to those used in social psychology, does not draw on that literature for theoretic grounding (Alvarez and Franklin 1994).

While the primary focus has been on the direct effect of certainty on candidate evaluations (Alvarez 1998; Bartels 1986; Enelow and Hinich 1981), Alvarez

also finds a relatively consistent moderating effect of uncertainty on issue voting. That is, voters who are more certain about where the candidates stand rely on issues in their voting more than voters who are uncertain about the candidates' issue positions.

Attitude Certainty—Measurement

The simplest way that scholars have attempted to measure certainty is by developing meta-attitudinal measures. These ask respondents how certain they are of their placements of candidates on issue scales. The NES's first attempt allowed respondents to place the candidates as a range of scores on the scale. This was included for two scales on the 1980 NES Pilot, relations with the USSR, and government assistance to help minorities. It was not used again largely because little additional information was gained from the measures (Aldrich et al. 1982). Respondents have difficulty reporting ranges, thus their responses seem to have little validity. Alvarez and Franklin (1994) also developed a survey that used this technique, but their results were similar to those based on the NES questions. Few respondents use the option of a range of points. Furthermore, these ranges do not provide much evidence about the respondent's certainty. When a range is reported, the respondent places the candidate on two points instead of one.

A separate line of measurement was developed in the social psychological literature on attitude strength. Krosnick and Schuman (1988) examined the impact of attitude certainty on policy attitudes by using a meta-attitudinal measure in which respondents are asked how certain they are about their attitudes. This is the most intuitive and straightforward way to measure certainty: ask the respondents. Other studies have validated this measure and have compared it to other measures of attitude strength (Alvarez and Franklin 1994; Bassili 1996; Gross, Holtz, and Miller 1995; Krosnick et al. 1993). This measure was first implemented by the NES in 1996: after the respondents placed someone (either themselves, a political party, or a candidate) on an attitude scale, they were asked "Are you very certain of where (you/the target) stand(s) on this, pretty certain, or not very certain?"

Political scientists have also developed operative measures of certainty. Early work (Campbell 1983) focused on measuring the electorate's uncertainty about candidates by using the variance in the NES sample's aggregate placements of the candidate on several issue scales. Bartels (1986), recognizing the need for a measure of certainty, used a simple threshold-level measure. He argues that for a respondent to place the candidate on the policy scale, he or she must have at least some familiarity with the candidate's stand. The more often the respondent is able to place the candidate, the more certain he or she is about the candidate. This basic model of survey non-response gives us some leverage on the underlying levels of certainty. Bartels took these instances of nonresponse, estimated a regression model, and used the predicted values as an instrument of the certainty of each voter about each candidate.

Although this approach does provide a measure of the respondent's uncertainty about the candidate, there is no strong rationale for believing that uncertainty is the only reason for a respondent's nonresponse. Berinsky (1999), for instance, suggested that the answer "don't know" is sometimes the result of an individual's hesitancy to register an opinion that he or she thinks may be unpopular. Thus, uncertainty is undoubtedly one of the reasons why a respondent will refuse to place a candidate on the scale, but it is far from the only reason. Therefore, measures of uncertainty that are based on non-response may not be the most valid.

Alvarez's (1998) operative measure of certainty resolves this problem by returning to the connection between an attitude's variance and its uncertainty. Alvarez uses the averaged squared difference between the respondent's placement of the candidate's and the average placement by all of the respondents averaged across several issue questions—essentially an estimate of the respondent's variance in the placement of the candidate on the issue scales in the NES.⁶ Each respondent's error in placing the candidate will have a mean of zero and a variance determined by the respondent's uncertainty. He demonstrates that the measure performs well, both in terms of its predictors and its effect on voting behavior.

As far as we know, there are yet to be any direct comparisons between the different types of certainty. Alvarez (1998) does suggest that there are differences between his operative measures of certainty and the meta-attitudinal measure included in the 1996 NES. His conclusion is that while related, the two measures are distinct because the meta-attitudinal is subjective whereas the operative measure is objective. In his analyses of the 1996 NES, he relies solely on the operative measure, so the empirical differences between these measures remain unexplored.

Are Dimensions of Attitude Strength Interchangeable?

From even the admittedly brief discussion of some of the dimensions of attitude strength, it seems quite logical to conclude that these concepts are psychologically distinct from one another.⁷ However, to the extent that they each predict most, if not all, of the defining features of strong attitudes (persistence, resistance, cognitive impact, and behavioral impact), one might assume that they are all indicators of a single latent construct called attitude strength. In fact, standard practice in both psychology and political science has been to do just this—dimensions are often treated as interchangeable, or they are combined to form a single index of attitude strength. For example, Aldrich, Sullivan, and Borgida (1989)

⁶The assessment of the error variance that Alvarez and Brehm (2002) use is analogous to this and is also an operative measure of uncertainty, as is Franklin's (1991) measure of uncertainty about senator's issue positions.

⁷Much of what follows comes from the much more comprehensive review of Visser, Bizer, and Krosnick (2003).

used an open-ended national importance question to assess the accessibility of foreign policy attitudes. Some researchers have used measures of certainty to gauge attitude intensity (e.g., Katz 1944), and others have used extremity (e.g., McDill 1959). Some conceptualize "salience" as the accessibility of an attitude, whereas others use importance. Still others create indices of attitude strength by combining across various dimensions (e.g., Bassili and Roy 1998; Lavine et al. 1998b).

Evidence of the unidimensionality of attitude strength comes from exploratory factor analyses that tend to demonstrate that the dimensions of attitude strength (including importance, accessibility, certainty, extremity, and knowledge) fall under a few relatively consistent factors (e.g. Abelson 1988; Bassili 1996; Kokkinaki 1998; Prislín 1996). However, Krosnick et al. (1993) argue that exploratory factor analyses such as these are subject to systematic measurement error that may exaggerate the correlations among dimensions. This occurs when dimensions are measured on the same scale (as is often the case); commonalities in how respondents deal with a particular scale may be mistaken for commonalities in the constructs themselves.

Krosnick et al. (1993) conducted confirmatory factor analyses that corrected for systematic measurement error, and found that: (1) very few pairs of strength-related attributes were strongly correlated with one another, and most were not correlated at all, and (2) goodness-of-fit indices for models in which a single factor was imposed were consistently weaker than models that treated the dimensions as separate, correlated constructs. Lavine et al.'s (1998a) confirmatory factor analyses corroborate this conclusion.

Although these analyses are consistent with the conclusion that attitude strength is a multidimensional construct, more convincing evidence comes from recent work in psychology comparing the causes and consequences of (usually two) dimensions. The conclusion from this research is that various strength-related dimensions have different antecedents and different effects on cognition and behavior (see Visser, Krosnick, and Simmons 2003 for a comprehensive review of this literature).

One such set of studies examined the relation between importance and accessibility. Bizer and Krosnick (2001) experimentally manipulated attitude accessibility to determine if an increase in accessibility caused an increase in importance. Contrary to the unidimensionality hypothesis, increases in accessibility were not followed by corresponding increases in importance. Follow-up studies (Bizer and Krosnick 2001) confirmed that accessibility does not cause importance, but that importance does, in fact, cause accessibility.

Additional evidence of the distinctions between importance and accessibility comes from Miller and Krosnick's (2000) work on the mechanisms underlying news media priming. Miller and Krosnick (2000) found that the effect of media exposure on the ingredients of presidential approval judgments is due to the effect of media exposure on attitude importance, and *not* to exposure's effect on accessibility. Thus, not only is the relation between accessibility and importance not

bidirectional, but the constructs have different consequences as well—importance causes changes in the ingredients of presidential approval judgments in response to media exposure, whereas accessibility does not.⁸

Other evidence of the multidimensionality of attributes of attitude strength comes from an examination of the causes and consequences of importance and certainty. In a series of studies, Visser, Bizer, and Krosnick (2003) demonstrate that importance predicts voter turnout, whereas certainty does not. On the other hand, certainty predicts the degree to which citizens find more than one presidential candidate acceptable; importance does not. In other analyses, certainty and importance both had independent effects on cognition and behavior (in other words, controlling for one construct did not diminish the effects of the other). Importance and certainty also have different causes. Namely, Visser, Bizer, and Krosnick (2003) find that whereas extensive media attention to global warming increased the importance people placed on their global warming attitudes, it did not increase attitude certainty.

Political scientists have also begun to explicitly compare the consequences of two or more dimensions of attitude strength. Consistent with the psychology literature, the conclusion from this work is that strength-related dimensions are empirically distinct. For instance, Bassili's work (1993) on the predictive power of vote intention on vote choice found that the accessibility of vote intentions performed better than the certainty of vote intentions. Nelson, Clawson, and Oxley's (1997) work on framing, like Miller and Krosnick's (2000) work on priming, indicates that framing effects stem from a frame altering the importance of an attitude and not its accessibility. Huckfeldt, Sprague, and Levine (2000) demonstrate how campaigns influence both the accessibility and certainty of attitudes. Peterson (2004) suggests certainty and not accessibility moderates the use of issues in candidate evaluations. Finally, Alvarez and Brehm's (1995, 1997, 1998, 2002) models of survey response draw heavily on the theoretical and empirical distinctions between uncertainty, ambivalence, and equivocation.

Clearly, the bulk of the evidence points to the conclusion that dimensions of attitude strength are not, in fact, interchangeable. Most importantly, different normative conclusions can be reached, depending on which strength dimension is

⁸In contrast, Valentino, Hutchings, and White (2002) conclude that exposure to racial content in advertisements affects evaluations by altering the accessibility of racial attitudes and not by changing the importance of these attitudes. However, although Valentino, Hutchings, and White (2002) report evidence showing that some necessary conditions for accessibility to mediate the effects of their ads were met, they did not conduct the final and crucial test of mediation—showing that the effect of exposure to the ad on accessibility is responsible for the effect of exposure to the ad on the use of racial attitudes in making evaluations (a point to which we will return later). Since Valentino, Hutchings, and White (2002) look at a very different manipulation of media exposure than Miller and Krosnick (2000), and focus on a very different type of importance, there is no reason to expect that their results should be consistent with Miller and Krosnick's (2000). However, Valentino, Hutchings, and White's (2002) conclusion that accessibility mediates the impact of exposure to racial content on attitudes is unwarranted from the tests that they report.

examined. Not to beat a dead horse, but one example is useful. Take Visser, Bizer, and Krosnick's (2003) findings regarding turnout. If one researcher conceptualized "attitude strength" as the degree to which the attitude was important for the citizen, he or she would conclude that attitude strength is related to voter turnout. If another researcher conceptualized "attitude strength" as the degree to which people were certain about their attitudes, the opposite conclusion would be reached—namely, that attitude strength is not related to voter turnout. Theoretical and empirical clarity can be obtained when researchers understand that "attitude strength" is not a single construct and are circumspect about the language they use and the measures they choose.⁹

Conclusion

Our goal in writing this review is to consolidate a lot of theoretical and empirical attitude strength research into one place. The conclusion the reader should take from this endeavor is simple: attitude strength is not a single construct. Rather, it is more appropriately thought of as a "heuristic label we attach to certain attitudes as a way of efficiently noting that they possess certain characteristics" (Krosnick and Petty 1995, 3). Measures of attributes of attitudes presumed to possess the defining characteristics of attitude strength (namely, persistence, resistance, cognitive impact, and behavioral impact) are not interchangeable. Attributes such as accessibility, importance, and certainty have different antecedents and different consequences for political cognition and behavior. Different substantive conclusions about the role of attitude strength, as either a mediator or moderator of observed relationships, could be reached depending on which attribute one chooses to measure.

The obvious question readers should be left with is: which type of strength is appropriate for my particular research question? At this point, research on the differences between strength-related attributes is in its embryonic phase. Therefore, we cannot recommend to the researcher which attribute is most appropriate for which type of hypothesized relationship under which contexts. Instead, we end with three pieces of advice. First, scholars seeking to understand how attitudes matter, both politically and empirically, should test which type matters rather than merely assuming that the most available type of strength is the most appropriate. While this sometimes is not possible (the NES, for instance, does not contain measures of many types of strength), the appropriateness of the type of strength should at least be acknowledged as an important concern. Second, because the different types of strength respond to different stimuli, scholars should also pay attention to the politically meaningful differences across types of strength. If importance and certainty respond to different components in the information environment, which one matters in a particular case tells us some-

⁹See Visser, Bizer, and Krosnick (2003) for recommendations about when it is and is not appropriate to combine dimensions of attitude strength to form composite indices.

thing about the nature of how citizens respond to information they receive. Finally, we hope that in the near future it will be possible to develop a clear theory about which type matters when and why. Thus, we advise scholars to continue to compare different types of strength in as many politically meaningful settings as possible. Hopefully, this type of incremental progress, determining when, why, and how each construct (whether it be accessibility, ambivalence, certainty, importance, or another measure) impacts political cognitions and behavior, will form the foundation for a broader theory about the role of attitude strength in politics.

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Joanne M. Miller is assistant professor of political science, University of Minnesota, Minneapolis, MN 55455 (jmillier@polisci.umn.edu). David A. M. Peterson is assistant professor of political science, Texas A&M University, College Station, TX 77843–4348 (dave@polisci.tamu.edu).