
Using Partially Structured Attitude Measures to Enhance the Attitude-Behavior Relationship

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This article recalls a classic scheme for categorizing attitude measures. One particular group of measures, those that rely on respondents' interpretations of partially structured stimuli, has virtually disappeared from attitude research. An attitude measure based on respondents' interpretation of partially structured stimuli is considered. Four studies employing such a measure demonstrate that it predicts unique variance in self-reported and actual behavior, beyond that predicted by explicit and contemporary implicit measures and regardless of whether the attitude object under consideration is wrought with social desirability concerns. Implications for conceptualizing attitude measurement and attitude-behavior relations are discussed.

Keywords: *attitudes; implicit attitudes; attitude measurement; attitude-behavior consistency*

Mary didn't go to church once the whole time she was in college but she claimed that she was still a very religious person. She said that she prayed occasionally and that she believed in Christian ideals. Sometimes she watched religious programs on TV like the 700 Club or the Billy Graham Crusade.

Based on the above information, how religious would you judge Mary to be? As explained further shortly, if you thought she was quite religious, you show evidence of a nonreligious attitude. If you thought she was not very religious, however, you show evidence of a religious attitude. Why might this be the case? Considerable research in social psychology has shown that people not only have attitudes but that attitudes also influence information processing and social judgments, such as Mary's religiousness (e.g., Lord, Ross, & Lepper, 1979; Sherif & Hovland, 1961; Vallone, Ross, & Lepper, 1985). For this

reason, ratings of Mary can serve as a measure of your attitudes.

CLASSES OF MEASURES AND MULTIPLE INDICATORS

In 1964, Cook and Selltitz published a prescient article identifying five classes of attitude measures and calling for the use of multiple indicators in attitude measurement. Remarkably, after four more decades of attitude research, the five classes of measures identified by Cook and Selltitz encompass all contemporary attitude measures. The first group consists of "self-reports of beliefs, feelings, behavior, etc., toward an object or class of objects" (p. 39). A great deal of research has successfully identified conditions under which self-report (i.e., explicit) attitude measures are predictive of behavior (e.g., Ajzen & Fishbein, 1977; Fazio, 1990; Fishbein & Ajzen, 1974). The second group, behavioral measures, is now commonly viewed as attitudinal outcomes rather than measures. And for the purposes of the present research, there seems little to be gained by attempting to predict behavior on the basis of other behavior except to

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note that closely related past behaviors (habits) can predict current behavior above and beyond current attitudes (Ouelette & Wood, 1998).

A third group of attitude measures is physiological. In 1964, this class of measures was limited to galvanic skin response, vascular constriction, amplitude and duration of heart cycle, and pupillary constriction/dilation. Contemporary research has progressed a great deal in terms of the sophistication of physiological measures (e.g., Cacioppo, Crites, Berntson, & Coles, 1993), yet relatively little work has focused on behavioral prediction. The dearth of work on behavioral prediction using this class of measures may be due, in large part, to the fact that physiological measures are quite difficult to administer.

A fourth group, which has frequently been employed in the service of behavioral prediction, encompasses classic and contemporary implicit attitude measures. In this group, inferences about attitudes are made on the basis of performance on objective tasks. As defined by Cook and Selltiz (1964), respondents are presented with "specific tasks to be performed; they are presented as tests of information or ability, or simply as jobs that need to be done" (p. 50). These measures rely on the notion "that a systematic bias in performance reflects the influence of the attitude" (p. 50). Classic measures of this type include Hammond's (1948) error-choice method and distortions in logical reasoning (Selltiz & Cook, 1966; Thistlethwaite, 1950; Waly & Cook, 1965). This group of attitude measures also would encompass priming-based implicit attitude measures (Fazio, Jackson, Dunton, & Williams, 1995) and the Implicit Association Test (IAT) (Greenwald, McGhee, & Schwartz, 1998). Both rely on the automatic activation of attitudes and the influence of attitude activation on simple objective tasks such as lexical decisions and categorization.

The final group of measures identified by Cook and Selltiz has been largely overlooked by attitude researchers. Measures relying on the interpretation of partially structured (PS) stimuli, as defined by Cook and Selltiz (1964), are similar to objective (implicit) measures:

While there may be no attempt to disguise the reference to the attitudinal object, the subject is not asked to state his own reactions directly; he is ostensibly describing a scene, a character, or the behavior of a third person. (p. 47)

Classic attitude measures belonging to this group include projective tests (e.g., Proshansky, 1943).

Measures relying on PS stimuli fell out of favor among attitude researchers due to their poor psychometric properties (Lemon, 1973).¹ Personality researchers, however, have carefully investigated the psychometric

properties of projective tests. Critiques of projective tests' poor test-retest reliability were severely undermined by the discovery that low reliability scores were an artifact of conversational norms (see Grice, 1975) and the testing situation. When provided with identical testing materials at Time 2, respondents felt that they should provide responses to the stimuli that differed substantively from their original responses. Once this concern was alleviated by experimenters, projective measures had perfectly acceptable psychometric properties (e.g., test-retest correlations around .60) (Lundy, 1985; Winter & Stewart, 1977).

Validity concerns regarding respondents' perceptions of PS stimuli arise because it can be difficult to tell whether responses to PS stimuli reflect respondents' true attitudes or a multitude of other influences. Responses to PS stimuli obviously may reflect the influence of the respondent's attitudes, but they do not necessarily reflect the respondent's attitudes. For example, a respondent's description of an ambiguous scenario featuring a nun and a priest may be influenced by her attitudes toward religion, by more general societal-level attitudes toward religion, by recently primed news stories, or by other factors. Attempts to assess the validity of these measures have typically relied on the extent to which the measure of interest correlates with explicit measures tapping the same construct (criterion validity) (e.g., Proshansky, 1943).

Although contemporary, objective (implicit) measures have demonstrated poor criterion validity, their use has not diminished, as poor criterion validity had doomed past indirect measures. One attempt to explain the apparent poor criterion validity of contemporary, objective (implicit) measures has been to propose that people can simultaneously hold evaluatively inconsistent (or at least uncorrelated) attitudes (Greenwald & Banaji, 1995; T. D. Wilson, Lindsey, & Schooler, 2000). Explicit and objective (implicit) measures are thus hypothesized to be tapping different attitudes toward the same object. A slightly different argument was put forth by Cook and Selltiz (1964). Rather than proposing multiple attitudes, Cook and Selltiz believed in a single latent attitude and that any single attitude index provides a relatively crude measure of the latent attitude construct. This belief led to the call for multiple methods of measurement (with different measures having heterogeneous irrelevancies) and to the expectation that different measures would not be perfectly correlated. Furthermore, as we explain below, to the extent that different types of measures tap different aspects of attitudes, multiple indicators might work together to enhance behavioral prediction. A revival of measures relying on PS stimuli might aid in this effort.

REVIVING MEASURES USING PARTIALLY STRUCTURED STIMULI

The item opening this article is actually one item in a series of vignettes that we developed to measure attitudes via respondents' interpretations of PS stimuli; in the words of Cook and Sellitz (1964), participants are simply "describing the behavior of a third person." Following each vignette, respondents are asked to rate the targets with respect to the attitude object under consideration (e.g., Mary's religiosity).

According to the logic behind this measure, different people should encode these scenarios in different ways (Hastorf & Cantril, 1954). Specifically, judgments about Mary's religiosity should be influenced by the perceiver's own attitudes toward religion. Because Mary behaves in both religious (occasional prayer, watching religious TV programming) and nonreligious (skipping church for years) ways, her behavior should be discrepant for both religious and atheistic people alike. Thus, the behaviors should lie in both religious and atheistic people's latitudes of rejection and should be contrasted away by both (Sherif & Hovland, 1961). Very religious people should see Mary's behaviors as rather nonreligious. Very atheistic people should see Mary's behaviors as rather religious. So, to the extent that individuals interpret the behaviors as relatively religious, one can infer that the perceivers, themselves, are not religious. This differential interpretation of events has the potential to be an important independent determinant of how an individual responds to an object, person, or situation.

The way in which one interprets an event, favorably or unfavorably, should cause differential positive or negative behavior. Consider, for example, two people reading an article about capital punishment. One sees a series of well-argued, valid points and the other sees a series of poorly argued, unreasonable points. Both are privy to the same series of arguments, but their differential interpretations of the arguments encourage voting for or against capital punishment, respectively (Lord et al., 1979; Vallone et al., 1985). Indeed, it is often these idiosyncrasies in information processing that justify or enable the individual's preferential response to an object (see Fazio, 1990; Karpinski & von Hippel, 1996; Kunda, 1990). Presumably, not all individuals use their attitudes to the same extent to interpret attitude-relevant information (Houston & Fazio, 1989). To the extent that a measure relying on interpretation of PS stimuli taps into the tendency for a person's attitudes to influence the interpretation of situations, this measure could contribute to behavioral prediction above and beyond an explicit measure that does not. Yet, participants' own attitudes toward religion are likely not the only influence on their social judgments or behaviors.

The scenarios may be differentially encoded due to the influence of social norms as well as attitudes. Individuals who have been surrounded by religious, or religious-acting, others would likely find Mary's discrepant behaviors somewhat nonreligious. Even atheist observers may judge Mary's behaviors as nonreligious if the observers use religious friends as normative referents rather than their own attitudes. On the contrary, individuals with normative expectations for atheism should perceive Mary's behaviors as religious. Because norms need not be correlated with attitudes, and norms play a role in guiding behavior (Ajzen, 1991; Fishbein, 1980), a measure tapping normative influences also might contribute to behavioral prediction beyond an explicit attitude measure that does not tap such influences.

Although norms may play a role in driving the PS measures, we use attitudinal influence as a default in describing the research herein because PS measures have generally been thought to be guided largely by one's own attitudes. We shall discuss further which process(es) may be driving the PS measures throughout the article.

HYPOTHESES

The primary goal of the current article is to demonstrate that a PS measure can predict behavior and do so above and beyond a traditional explicit attitude measure. In addition, we believe that such a measure should predict behavior regardless of whether social desirability is a concern because the measure is somewhat disguised. Whereas explicit attitude measures are relatively malleable in the face of social desirability concerns (e.g., Fazio et al., 1995), disguised measures should be at least somewhat difficult to control for at least two reasons. First, respondents may be unaware that the measure is intended to assess their attitudes. Second, even if respondents do realize that the measures are assessing their attitudes, they may feel more comfortable expressing undesirable attitudes if they do not have to explicitly acknowledge them as their own. We expect that a PS measure can predict behavior beyond that of traditional explicit measures when social desirability is not a concern because, as noted earlier, the measure taps into processes that also are influential in guiding behavior.

Finally, we propose that PS measures will be only modestly correlated with explicit measures because they tap different aspects of attitudes or because they tap normative influences in addition to (or instead of) attitudes, *per se*. Explicit measures are sensitive to the stored evaluative content of individuals' attitudes, whereas PS measures tap the differential perception of stimuli (see also von Hippel, Sekaquaptewa, & Vargas, 1995, 1997). PS measures may be driven by attitude-relevant sources other than consciously accessible explicit attitudes.

STUDY 1

As a first test of the primary hypothesis—that a PS measure should predict behavior above and beyond a traditional explicit measure—we chose a domain in which social desirability is a chronic concern. The attitude object selected for Study 1 was cheating, or “being dishonest.” We expected our PS measure to be related to self-reported and actual dishonest behavior. At least three related reasons suggest why an explicit attitude measure may be a poor predictor of dishonesty. First, due to a main effect of social desirability, few individuals were expected to express favorable attitudes toward dishonesty on explicit measures. Second, social desirability concerns can have different influences on different people and can thus introduce a certain amount of error, causing a wide variety of responses to explicit measures of attitudes toward dishonesty (cf. Fazio et al., 1995). Third, when social desirability is a chronic concern, people might not admit their true feelings even to themselves and thus might not be able to report their attitudes accurately even if they so desire (cf. Dovidio & Gaertner, 1991). On the other hand, explicit measures might be related to dishonest behaviors because both the attitude and the behavior share social desirability concerns. Thus, it was unclear whether the explicit attitude measure would be correlated with either self-reported, or actual, dishonest behaviors. The PS measure, being less sensitive to these problems, should therefore predict dishonesty above and beyond the explicit measure.

*Method**PARTICIPANTS*

One hundred fifty-four male and female introductory psychology students at the Ohio State University participated for partial fulfillment of a course requirement.

STIMULUS MATERIALS

The experiment was designed to give participants an opportunity to cheat on an anagram test. Explicit and PS measures were then used to predict this single instance of dishonest behavior as well as a comprehensive index of self-reported dishonest behaviors. The PS measure was a set of six short vignettes. The vignettes described different individuals engaging in what might be called ambiguously or moderately dishonest behaviors. For example, one vignette read as follows:

Colleen checked out a rather rare publication from the school library. The due date had passed and she received a letter in the mail saying that she had to pay \$50 to replace the book if she could not return it. Colleen realized that this was a very small price to pay for this particular book. The book was out of print and she had always

wanted her own copy of it. She decided to pay the \$50 and report the book as lost.

Following each vignette, participants responded to three critical questions: “How dishonest was the behavior Colleen performed?” “How dishonest do you think Colleen is, in general?” and “Out of 100 people, how many would do what Colleen did in that situation?” Participants responded to the first two questions using 11-point scales anchored by *not at all dishonest* and *extremely dishonest*. The third question required participants to provide a number from 0 to 100. Responses to the first two questions following each vignette were reverse scored, and responses to all three questions for each of the vignettes were transformed to *z* scores and then combined into a single PS measure of attitudes toward dishonesty. Thus, higher scores on this measure indicate the belief that the targets were relatively honest.

Again, according to the logic behind this measure, different participants should encode the scenarios in different ways. Very honest people (or those very favorable toward honesty) should see the ambiguous scenarios as rather dishonest. Very dishonest people (or those very favorable toward dishonesty) should see the behaviors and perhaps think that they would do the same thing, and thus, they should be unwilling to interpret such behaviors as dishonest. So, to the extent that individuals perceive these behaviors as relatively honest, one can infer that they themselves are probably relatively dishonest or favorable toward dishonesty, at least at some level.²

In addition to the PS measure just described, participants also completed an explicit attitude measure (a series of semantic differential items [good-bad, harmful-beneficial, wise-foolish, pleasant-unpleasant, and healthy-sick] assessing attitudes toward “being dishonest”). Finally, participants received the Balanced Inventory of Desirable Responding (BIDR), which is made up of impression management and self-deception subscales (Paulhus, 1991), and were asked to respond to a series of demographic questions including their high school grade point average (GPA).

The behavioral dependent measures consisted of a scale of self-reported dishonest behaviors and a specific opportunity to cheat on an anagram test. A comprehensive behavioral index was modeled after Fishbein and Ajzen’s (1974) index of religious behaviors and consisted of 45 dishonest behaviors that participants indicated whether they had performed (e.g., I have turned in work that is not my own; I have lied to the police). The opportunity to cheat was provided by an anagram test that was designed to be exceedingly difficult. Twelve of the anagrams were extremely difficult to solve (e.g., recsnapa, ecbiaanm, and gnimimtyana for pancreas, ambiance, and magnanimity) and three were easier

filler items. The second page of the anagram test was an answer key that provided solutions to all 15 items. Participants were ensured anonymity and were asked only to write the last four digits of their social security numbers at the top of each packet (so that the packets could be matched).

PROCEDURE

Participants in this study were told that the experiment was divided into two parts: the first part was an anagram test and the second was a series of questionnaires. Participants were told that they had up to 15 min to work on 15 anagrams. If they finished before time was called, they were to score their own anagram test using an answer key that was provided with the test and were then to hand in their anagram test and begin the second packet. Otherwise, they were to spend the 15 min allotted for work on the anagram test, and when time was called they were to score and return their anagram tests before beginning work on the second packet. Finally, participants were told that they were free to leave when they had completed the second packet. These instructions were designed to suggest to participants that it would be possible for them to complete the experiment more rapidly if they were to cheat by using the answer key provided. In addition, because the study was conducted in large groups, it was relatively easy for participants to cheat without being detected.

Results

A cheating score was calculated by computing the number of difficult anagrams that participants answered correctly and for which there was no accompanying evidence of effort (in the form of markings on the test). Thus, every participant had a cheating score ranging from 0 to 12, which indicated the number of difficult anagrams that he or she answered correctly in the absence of any accompanying effort. Means, standard deviations, reliability scores, and possible ranges of the variables in Study 1 are presented in Table 1.

The correlation matrix (Table 2) indicates that both the explicit and PS measures were correlated with self-reported cheating behavior. In addition, consistent with the primary hypothesis, the PS measure was correlated with cheating on the anagram test, whereas the explicit measure was not. Also consistent with expectations, the explicit measure was not significantly correlated with the PS measure. Somewhat surprisingly, the explicit measure was not correlated with impression management, whereas the PS measure was correlated with impression management. Individuals who engage in impression management tended to report the ambiguous behaviors as more dishonest. The explicit attitude measure was, however, negatively correlated with self-deception. Indi-

TABLE 1: Means, Standard Deviations, Reliability Scores, and Possible Ranges for Study 1 Measures

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>α</i>	<i>Possible Range</i>
Self-reported dishonesty	17.01	7.85		0 to 45
Cheating on anagrams	2.80	3.23		0 to 12
PS measure	0.00	0.41	.70	-1.54 to 1.17 ^a
Semantic differential	18.02	9.56	.89	5 to 55
Impression management	4.17	2.74	.63	0 to 20
Self-deception	5.69	3.32	.69	0 to 20
High school GPA	3.07	0.52		0 to 4.0

a. Scores for the partially structured (PS) measure in this study are reported as z scores and reflect the actual, rather than the possible, range because the component variables had very different scales.

viduals who reported positive attitudes toward dishonesty were somewhat less likely to engage in self-deception. Finally, high school GPA was unrelated to cheating on the anagram test, suggesting that the anagram test did provide a measure of cheating and probably did not reflect actual ability or honest performance.

Perhaps the more interesting question is whether the explicit and PS measures predicted unique variance in either self-reported cheating behavior or cheating on the anagram test. To examine this, the explicit, PS, personality, and demographic variables were entered into two simultaneous multiple regression equations, with self-reported dishonest behaviors and cheating on the anagram test as dependent measures. These analyses (Table 3) revealed that the PS measure was a significant predictor of both self-reported dishonest behaviors and cheating on the anagram test. Because the PS measure was predictive of actual and self-reported dishonest behavior when controlling for impression management, this finding suggests that the PS measure and dishonest behaviors were not related simply due to shared social desirability concerns. The explicit measure of attitudes toward dishonesty was a significant predictor of self-reported dishonest behaviors and a marginal predictor of cheating on the anagram test. The impression management and self-deception measures both predicted self-reported dishonesty, but neither predicted cheating on the anagram test.

Discussion

Study 1 demonstrated that the PS measure can be a reliable predictor of both self-reported and actual behavior when social desirability is a concern, despite evidence that the PS measure was sensitive to impression management concerns. Because the PS measure worked despite its relationship to impression management, we can assume either that not all of the participants controlled their responses or that there was simply a uni-

TABLE 2: Correlation Matrix for Measures in Study 1

	<i>Self-Reported Dishonesty</i>	<i>Cheating on Anagrams</i>	<i>PS Measure</i>	<i>Semantic Differential</i>	<i>Impression Management</i>	<i>Self-Deception</i>
Cheating on anagrams	.13					
PS measure	.33***	.23***				
Semantic differential	.22*	.13	.11			
Impression management	-.49***	-.03	-.26**	-.01		
Self-deception	.02	.14†	.03	-.16*	.22**	
High school GPA	-.25**	.02	.01	-.22**	.05	.07

NOTE: PS = partially structured.

† $p < .10$. * $p < .05$. ** $p < .01$. *** $p < .001$.

form main effect for impression management that did not destroy the integrity of the measure.

Thus, Study 1 provides some initial support for the hypothesis that PS measures can reliably predict behavior and account for variance in behavior above and beyond that afforded by an explicit measure. Clearly, however, our cheating measure is imperfect: Individuals who are exceptionally good at anagrams would receive inaccurate cheating scores, as would individuals who worked out correct answers somewhere other than on the pages they returned to the experimenter. These problems should only serve to add error variance to our measure; the fact that the PS measure predicts unique variance in cheating despite this problem provides additional evidence for the utility of the PS measure.

In addition, in Study 1, the explicit and PS measures were unrelated to one another, suggesting that the PS measure is tapping something explicit measures do not. Although the PS measure operates in a manner that is consistent with predictions, we do not have direct evidence that the behaviors lie within participants' latitudes of rejection. Thus, the PS measure may tap something other than attitudes, *per se*.

Responses to the vignettes might be based on perceived norms rather than, or in addition to, attitudes. If participants regularly associate with dishonest (honest) individuals or have normative expectations/standards for a wide (narrow) variety of less-than-perfect behaviors, then participants might judge the targets more leniently (harshly). Furthermore, the PS measure might reflect participants' consistency motivations: Participants who behaved dishonestly, or reported many dishonest behaviors, may have felt a need to judge others less harshly to avoid dissonance. But because the PS measure predicted behavior while controlling for both BIDR subscales it seems unlikely that consistency is solely driving the PS measure. Also, the consistency motivation was likely a main effect weighing on all attitude and behav-

TABLE 3: Regression Weights and p Values for Measures in Study 1

<i>Variable</i>	<i>DV: Self-Reported Dishonest Behavior</i>		<i>DV: Cheating on Anagram Test</i>	
	β	p	β	p
PS measure	.206	.004	.195	.022
Semantic differential	.154	.035	.146	.091
Impression management	-.456	.000	.062	.476
Self-deception	.154	.034	.116	.180
High school GPA	-.205	.004	.039	.640

NOTE: DV = dependent variable, PS = partially structured.

ioral measures equally; the PS measure should not have been uniquely affected by a consistency motivation. The exact process driving the PS measure is open to some interpretation: Attitudes, norms, and consistency motivations may all play a role in participants' social judgments.

Although Study 1 provides evidence that PS measures can be used to predict behavior above and beyond an explicit attitude measure, it does so only in a context in which social desirability is a chronic concern, where explicit measures should be ineffective. To provide a more thorough test of the primary hypothesis, we conducted a second study in a domain that is free from social desirability concerns.

STUDY 2

Our second study examined attitudes toward political conservatism. Pretesting ($N = 125$) revealed no relationship between the subscales of the BIDR and either self-reported liberal/conservative behaviors or explicit attitudes toward political conservatism (all r s $< .15$, p s $> .10$). In Study 2, we tested the hypothesis that PS measures could predict unique variance in both self-reported and actual behavior above and beyond that predicted by

explicit attitude measures when social desirability is not a chronic concern.

Method

PARTICIPANTS

Ninety-four male and female introductory psychology students at the Ohio State University participated for partial fulfillment of a course requirement.

STIMULUS MATERIALS AND PROCEDURE

The PS measure mirrored the vignette measure used in Study 1. There were six vignettes, each of which described an individual expressing ambiguous statements about then-current political issues. For example, one vignette read as follows:

One afternoon James and his friends were discussing their opinions on Hillary Clinton. James believed that she wasn't the greatest of First Ladies but that she had almost been doing a *halfway* decent job in her role, despite the Whitewater scandal.

Following each vignette, participants responded to two critical questions, similar to those from Study 1: "How politically conservative/liberal was the behavior James performed?" and "How politically conservative/liberal do you think James is, in general?" Participants responded to these questions using 11-point scales anchored by *very liberal* and *very conservative*. Responses to the questions following each vignette were reverse-scored and then combined into a single score. Higher scores on this measure indicate the belief that the targets were relatively liberal.

As in Study 1, different participants should encode the scenarios in different ways. The behaviors should lie in both conservative and liberal people's latitudes of rejection and should be contrasted away by both (Sherif & Hovland, 1961). So, to the extent that participants perceive these behaviors as relatively liberal, one can infer that they themselves must be relatively conservative (or favorable toward political conservatism). Higher numbers on this measure reflect the belief that the targets are relatively liberal and imply that the respondent has a conservative attitude.

There were two behavioral measures in this study. The first was a page appended to the experimental materials that gave participants the opportunity to sign their names to request more information from either College Democrats or Republicans. This measure was coded such that a -1 reflected a request for information from College Democrats, a 0 reflected no interest in information at all, and +1 reflected a request for information from College Republicans. The second behavioral mea-

TABLE 4: Means, Standard Deviations, Reliability Scores, and Possible Ranges for Study 2 Measures

<i>Variable</i>	<i>M</i>	<i>SD</i>	<i>α</i>	<i>Possible Range</i>
Self-reported behavior	-1.16	6.18		-25 to +25
Request for information	.06	.50		-1 to +1
PS measure	32.31	6.14	.63	6 to 66
Semantic differential	32.41	12.47	.95	5 to 55
Conservatism scale	-5.98	8.70	.79	-30 to +30

NOTE: PS = partially structured.

TABLE 5: Correlation Matrix for Measures in Study 2

	<i>Self-Report Liberal/Conservative Behaviors</i>	<i>Request for Information</i>	<i>Semantic Differential</i>	<i>Conservatism Scale</i>
Request for information	.57***			
Semantic differential	.69***	.45***		
Conservatism scale	.74***	.41***	.60***	
PS measure	.14	.27**	.04	.05

NOTE: PS = partially structured.

p* < .01. *p* < .001.

sure was a self-report checklist of liberal and conservative behaviors such as "voted for Republican representative in Congress." Liberal behaviors were scored as -1, conservative behaviors were scored as +1; all behaviors were summed.

Two explicit attitude measures were used: a series of semantic differential items (the same as those used in Study 1) measuring attitudes toward "being politically conservative" and a modified version of the Wilson Conservatism Scale (G. D. Wilson, 1985) (several items in the original scale were outdated and consequently replaced with more up-to-date items). Endorsement of liberal items was scored -1, endorsement of conservative items was scored +1, and all items were summed.

All of the measures were counterbalanced and given to participants in a single packet, with the exception of the "request information" page, which was always last. To ensure that participants took this request seriously, a brief cover story was provided. Participants read that the experimenters were obliged to offer information from both major political parties because the research was being conducted by a state-funded institution.

Results

Means, standard deviations, reliability scores, and possible ranges of the variables measured in Study 2 are presented in Table 4. The behavioral measures were cor-

related with one another (Table 5). Both of the explicit attitude measures also were correlated with self-reported and actual liberal/conservative behaviors. The PS measure, however, was only correlated with actual liberal/conservative behavior and not to self-reported behaviors. Finally, the explicit attitude measures were strongly related to one another, and the PS measure was again not correlated with either of the explicit measures.

To determine whether the PS measure predicted unique variance in participants' self-reported liberal and conservative behaviors and requests for information from campus political groups, the explicit and PS variables were entered into two simultaneous multiple regression equations. Both of the explicit attitude measures predicted self-reported behavior (left columns, Table 6). The PS measure was a marginally significant predictor of self-reported behavior. The semantic differential measure predicted unique variance in the tendency to request information from college Democrats and Republicans and the conservatism scale was a marginal predictor (right columns, Table 6). Most important, the PS measure predicted unique variance in behavior above and beyond both explicit measures.

Discussion

The results from Study 2 offer stronger support for the primary hypothesis in that a PS measure can predict unique variance in a single, consciously controlled behavior beyond that predicted by explicit attitude measures, even when social desirability is not an important concern. Individuals who showed a conservative contrast (i.e., perceived the targets as more liberal) tended to request information from college Republicans, and individuals who showed a liberal contrast (i.e., perceived the targets as more conservative) tended to request information from college Democrats. As in Study 1, however, we cannot be sure of the precise mechanism by which the PS measure operates. The measure does behave consistent with our attitude-based predictions but it is also possible that the measure is tapping participants' normative standards and/or consistency motivations.

STUDY 3

The goal of Study 3 was to develop a PS measure of attitudes toward religion. Religion was used to examine attitude-behavior relations in Fishbein and Ajzen's (1974) seminal article.

Method

PARTICIPANTS

One hundred twenty-seven male and female advertising students at the University of Illinois participated in partial fulfillment of a course requirement.

TABLE 6: Regression Weights and *p* Values for Measures in Study 2

Variable	DV: Self-Reported Liberal/Conservative Behaviors		DV: Request for Information From College Democrats/Republicans	
	β	<i>p</i>	β	<i>p</i>
Semantic differential	.383	.000	.315	.006
Conservatism scale	.499	.000	.212	.060
PS measure	.106	.097	.248	.007

NOTE: PS = partially structured; DV = dependent variable.

STIMULUS MATERIALS AND PROCEDURE

The PS measure consisted of a series of 20 short vignettes presented in 12 different orders. Each of the vignettes described an individual expressing slightly conflicting ideals regarding religion. An example of the vignettes used in this study can be found at the beginning of this article. Following each vignette, participants responded to two critical questions: "How religious was the behavior Mary performed?" and "How religious do you think Mary is, in general?" Participants responded to these questions using 11-point scales anchored by *not at all religious* and *extremely religious*. Responses to the questions following each vignette were reverse scored and then combined into a single score. Higher scores on this measure indicate the belief that the targets were relatively nonreligious and imply that the respondent is religious.

Also included in the study was an explicit measure of religious attitudes, the Religious Attitude Scale (RAS) (Poppleton & Pilkington, 1963, used in Fishbein & Ajzen, 1974), and 45 items from a comprehensive behavioral index of self-reported religious behaviors (adapted from Fishbein & Ajzen, 1974; the original list contains 100 religious and antireligious behaviors). Participants indicated whether they had engaged in these behaviors; they received 1 point for each behavior performed and 0 points for each behavior not performed. Antireligious behaviors were reverse scored and all of the behaviors were then summed to form an index ranging from 0 to 45.

Participants were asked to complete a packet containing the stimulus materials. The materials were counterbalanced and given to participants in a single packet.

Results and Discussion

Self-reported behavior had a possible range of 0 to 45 ($M = 18.42$, $SD = 4.12$). The PS measure had a possible range of 1 to 11 ($M = 5.71$, $SD = 1.02$, $\alpha = .90$); the RAS had a possible range of 40 to 140 ($M = 90.59$, $SD = 21.87$, $\alpha = .93$). The PS measure and RAS were correlated with

behavior ($r_s = .33$ and $.60$, respectively, $p_s < .001$) and with one another ($r = .32$, $p < .001$).

To see whether the PS measure reliably predicted unique variance in self-reported religious behavior beyond that predicted by the explicit measure, both were entered into a simultaneous multiple regression analysis. This analysis revealed that the PS measure once again predicted unique variance in self-reported behavior ($\beta = .17$, $p = .02$) beyond what was predicted by the explicit measure ($\beta = .54$, $p = .00$).

These results offer further support for the notion that a PS measure can predict behavior above and beyond that predicted by an explicit measure. Furthermore, this study provides evidence that our PS measure can have good internal reliability. Thus, the current study further establishes the validity of the PS measure, but as in Studies 1 and 2, however, we remain uncertain about the exact process by which the PS measure operates: it may tap attitudes, consistency motivation, normative influences, or some combination thereof.

STUDY 4

In a fourth study, we sought to replicate and extend work from the previous studies in three ways. First, we wanted to further explore the psychometric properties of the PS measure. To this end, Study 4 used a split-half, split-method technique wherein participants completed measures at two different times using paper-and-pencil at Time 1 and a computer program at Time 2. This technique also allowed us to examine consistency concerns by correlating Time 1 PS measure scores with Time 2 behaviors, and vice versa. Second, we wanted to compare the efficacy of our PS measure to a well-known implicit (or objective in Cook and Sellitz's, 1964, terms) attitude measure, the IAT (Greenwald et al., 1998). Third, we wanted to see whether our PS measure would still predict unique variance in self-reported behavior, even with a wide variety of explicit and implicit predictor variables entered into a simultaneous multiple regression equation. Following previous work in domains where social desirability concerns are minimal (e.g., Wanke, Plessner, & Friese, 2002), we expected that the IAT would be correlated with explicit attitude measures and that the IAT would predict unique variance in behavior. More important, we predicted that the PS measure also would predict unique variance in behavior beyond that predicted by the IAT and multiple explicit measures.

Study 4 also was designed to address one potentially troubling aspect of Study 2: the fact that two deliberative explicit measures each predicted unique variance, beyond one another, in political behaviors (significantly for self-reported behavior and marginally for actual behavior), just as the PS measure does (marginally for self-reported behavior and significantly for actual behav-

ior). There are at least two possible explanations for the predictive utility of additional explicit measures. First, it may be a methodological issue—multiple explicit measures of the same construct may add unique variance because each is an imperfect measure of religious attitudes (Cook & Sellitz, 1964). Second, and more troubling, it may be a conceptual issue—multiple explicit measures of the same construct may add unique variance because each is tapping different aspects of political attitudes. This suggests the possibility that there is nothing unique about the PS measures; they may be no more effective than additional explicit measures. A compelling argument against this problem would be to demonstrate that PS measures can predict unique variance in self-reported behavior, even after additional explicit attitude measures stop explaining unique variance in self-reported behavior. The use of the split-half, split-method technique allows us to assess additional explicit attitude measures for an analysis to address this issue.

Method

PARTICIPANTS

Participants at Time 1 were 338 male and female advertising students at the University of Illinois who received extra credit in an advertising course. At Time 2, 226 of these students returned, again for extra credit in an advertising course, to complete additional measures.³

STIMULUS MATERIALS AND PROCEDURE

The PS measure was identical to the one used in Study 3. The IAT was administered using the Windows 95-based FIAT program (Farnham, 1997). A list of the words used for the IAT is presented in the appendix. Critical blocks in the IAT were counterbalanced across participants (i.e., half saw religious + positive and atheistic + negative in Block 3, and vice versa in Block 5; half saw religious + negative and atheistic + positive in Block 3, and vice-versa in Block 5). We used three explicit attitude measures: the RAS, a series of semantic differential items (the same as those used in Studies 1 and 2), and a one-item explicit attitude measure that asked respondents to indicate their "attitude toward being religious" on an 11-point scale anchored by *extremely unfavorable* and *extremely favorable*. In addition to the explicit and PS measures, participants completed the BIDR (Paulhus, 1991) and a comprehensive behavioral index of self-reported religious behaviors. This index was adapted from Fishbein and Ajzen (1974) and contains a list of 83 religious and antireligious behaviors. Participants indicated whether they had engaged in these behaviors, receiving 1 point for each behavior performed and 0 points for each behavior not performed. Antireligious behaviors were reverse scored. Finally, all the behaviors were summed to form an index ranging from 0 to 83.

All but three of the measures used in this study were divided into halves and administered at two times, 4 to 6 weeks apart. Participants were randomly assigned to receive either the first half of the materials or the second half of the materials at Time 1. The semantic differential and the one-item explicit measures were short enough to be included in full at both testing sessions. The IAT was administered only at Time 2 because it does not lend itself to either split-half or split-method analyses. Aside from these deviations, participants completed half of the measures at Time 1 and the remaining half at Time 2. At Time 1, participants were asked to complete a packet containing the stimulus materials. The measures were organized into 24 different counterbalanced orders and given to participants in a single packet. At Time 2, all measures were administered in a random order using MediaLab software (Jarvis, 2001), except the IAT, which was always administered last. Participants were fully debriefed and thanked at the end of Time 2.

Results

The IAT data were compiled following procedures outlined in Greenwald et al. (1998). Means, standard deviations, split-half/split-method correlations, and possible ranges for Study 4 measures are presented in Table 7. As can be seen, the split-half/split-method correlations for all predictor variables are adequate.

The correlation matrix (Table 8) shows that the explicit attitude measures were all correlated with one another and with self-reported religious behaviors, replicating Fishbein and Ajzen (1974). Consistent with Studies 1 and 2, the PS measure was unrelated to any of the explicit attitude measures, and it was only marginally correlated with self-reported religious behavior. The IAT was reliably correlated with two of the three explicit attitude measures, marginally correlated with the third, and reliably correlated with self-reported religious behavior. The IAT and the PS measure also were marginally correlated with one another.

Impression management was correlated with self-reported religious behavior and marginally correlated with two of the three explicit attitude measures; it was not correlated with either the PS measure or the IAT. This correlational pattern suggests that religion may be somewhat sensitive to social desirability concerns. Alternatively, religious attitudes and behaviors may be confounded with idealistically “good” items on the impression management subscale. Religiosity may not necessarily be related to impression management, but people who perform religious behaviors and hold favorable attitudes toward religion may be more likely to engage in idealistically good behaviors such as those on the impression management subscale.

TABLE 7: Means, Standard Deviations, Reliability Scores, and Possible Ranges for Study 4 Measures

Variable	M	SD	Split-Half/ Split- Method r	Possible Range
Self-reported behavior	40.79	8.10	.59	0 to 83
PS measure	5.63	0.86	.45	1 to 11
Religious Attitude Scale	71.16	24.98	.30	40 to 140
Semantic differential ^a	8.48	1.58	.68	1 to 11
One-item measure ^a	7.42	2.19	.51	1 to 11
Impression management	3.99	2.63	.32	0 to 20
Implicit association test	.38	.23		

NOTE: PS = partially structured.

a. These correlations are test-retest/split-method rather than split-half/split-method.

There is mixed support for the idea that participants' consistency motivations are driving responses to the PS measure. Time 1 PS scores were uncorrelated with self-reported behavior at Time 2 ($r = .00$, *ns*), suggesting that participants do not report behavior in a manner that is consistent with the PS measure. Time 2 PS scores were correlated with self-reported behavior at Time 1 ($r = .15$, $p < .05$), suggesting that participants may respond to the PS measure in a manner that is consistent with recently reported behavior.

To test whether the PS measure could predict unique variance in self-reported behavior even after the addition of explicit measures that no longer predict additional variance, we relied on the split-half/split-method technique to generate a number of different explicit attitude measures. We used the RAS and semantic differential measures from Times 1 and 2 as four distinct explicit measures. We collapsed the one-item explicit measure by computing a mean score from Times 1 and 2.⁴ All five of the explicit attitude measures were reliably correlated with self-reported behavior (RAS Time 1, $r = .60$; RAS Time 2, $r = .46$; Semantic Differential Time 1, $r = .54$; Semantic Differential Time 2, $r = .51$; one-item explicit measure, $r = .58$; all p s $< .001$); that is, all of the explicit measures predicted behavior on their own.

Next, we entered all of the explicit, implicit, and PS measures and the impression management scale in a simultaneous multiple regression equation. When the five explicit attitude measures were entered simultaneously (Table 9), only three of them reliably predicted unique variance in self-reported behavior; however, the PS measure still reliably predicted unique variance in self-reported behavior. A PS measure predicted unique variance in self-reported behavior even after a number of explicit attitude measures stopped explaining unique variance in self-reported behavior. Contrary to expectations, the IAT did not predict unique variance in self-reported behavior. Finally, impression management was

TABLE 8: Correlation Matrix for Measures in Study 4

	<i>Behavioral Index</i>	<i>PS Measure</i>	<i>RAS</i>	<i>Semantic Differential</i>	<i>One-Item Explicit Measure</i>	<i>Impression Management</i>
PS measure	.11†					
RAS	.61***	.02				
Semantic differential	.57***	.00	.45***			
One-item explicit measure	.58***	-.03	.41***	.76***		
Impression management	.24**	.04	.11†	.11†	.09	
IAT	.17*	.11†	.12†	.23***	.25***	-.06

NOTE: PS = partially structured; RAS = Religious Attitude Scale; IAT = Implicit Association Test.
 †*p* < .10. **p* < .05. ***p* < .01. ****p* < .001.

TABLE 9: Regression Weights and p Values for Measures From Times 1 and 2 in Study 4

<i>Variable</i>	<i>DV: Self-Reported Religious Behaviors</i>	
	<i>β</i>	<i>p</i>
PS measure	.09	.05
Attitudes toward being religious	.28	.00
Religious Attitude Scale Time 1	.22	.00
Religious Attitude Scale Time 2	.30	.00
Semantic differential Time 1	.11	.13
Semantic differential Time 2	.03	.70
Impression management	.14	.00
Implicit association test	.00	.98

NOTE: PS = partially structured, DV = dependent variable.

still a significant predictor of religious behaviors when it was included in the regression equation with the attitudinal variables.

Discussion

The results from Study 4 offer stronger support for the primary hypothesis by suggesting that a PS measure can predict unique variance in self-reported behavior beyond that predicted by explicit attitude measures, personality measures, and the IAT. Individuals who perceived the targets as more religious reported having performed fewer religious behaviors, whereas individuals who perceived the targets as less religious reported having performed more religious behaviors. To the extent that the split-half/split-method technique makes it difficult for participants to recall their previous responses, we can be confident that consistency concerns are not the primary mechanism driving the PS measure. Similarly, the fact that the PS measure predicts behavior despite controlling for impression management suggests that the measure is not primarily tapping consistency. Furthermore, consistency concerns should operate as a main effect on all of the measures (attitudes and behavior); thus, consistency is not likely the sole driver of the PS measure. Normative influences could still play a

role in the operation of the PS measure: Individuals may judge the vignettes using perceived normative standards instead of their religious attitudes. As in Study 1, though, it seems likely that norms and attitudes would be correlated in this domain. Normative beliefs, then, might influence the PS measure in conjunction with attitudes.

Taken together, Studies 1 through 4 provide support for the primary hypothesis that PS measures can be used to reliably predict behaviors. The PS measures used in these studies reliably predicted unique variance in both self-reported and actual behaviors, even when they did not correlate with explicit measures and even in domains in which social desirability is not an important concern. Somewhat surprisingly, but consistent with research employing implicit measures by Dovidio, Kawakami, Johnson, Johnson, and Howard (1997), the same PS measure that was correlated with an explicit measure in Study 3 was not correlated in Study 4.

GENERAL DISCUSSION

In the 75 years since Thurstone (1928) declared that attitudes can be measured, a large number of methods for doing so have been developed. Thirty-six years after Thurstone’s groundbreaking work, Cook and Selltiz (1964) described a taxonomy of attitude measures that remains highly relevant to the present day. Of the five classes of attitude measures described by Cook and Selltiz, one is direct and the others are (to varying degrees) indirect. They are explicit self-report, objective, physiological, behavioral, and partially structured. The first three of these five types of measures have received considerable attention in the past 37 years, but the latter two types have been comparatively neglected.

Behavioral measures of attitudes have not been entirely neglected; rather, their status in the field has shifted from being attitudinal indicators to being attitudinal outcomes. Attitude research has focused on behavioral prediction (e.g., Ajzen, 1991; Ajzen & Fishbein, 1977; Fazio, 1990) rather than using behavioral measurement as an attitudinal indicator. In contrast to the shifting status of behavioral measures, PS measures fell

by the wayside in mainstream attitude research primarily because they were believed to have poor psychometric properties. Some personality researchers stuck with PS measures (e.g., the TAT) and found adequate psychometric properties; furthermore, these measures reliably predicted behavioral tendencies (e.g., McClelland, 1985). The present research attempts to revive the use of PS measures in attitude research by demonstrating that not only can they have adequate reliability but, more important, they provide an additional predictor of behavior.

The current research demonstrates that PS measures are useful in predicting behavior and can yield information beyond that provided by explicit attitude measures, even when social desirability is a not a concern. Perhaps PS measures are effective beyond explicit measures and beyond contemporary implicit measures because these PS measures rely on attitude use, or the tendency for attitudes to influence information processing; that is, PS measures assess individuals' idiosyncratic processing of attitude-relevant information instead of their direct evaluations. This idiosyncratic processing perspective is evident in Cook and Sellitz's description of such measures, noted above. In the present research, we suggest that attitudes influenced the interpretation of ambiguously contradictory behaviors of target individuals. It appears that participants' own attitudes caused them to contrast the target characters' behavior away from their own attitudinal positions, but as noted earlier, we have no direct evidence that attitudes rather than norms or consistency concerns are driving the current effect.

What Drives the Partially Structured Measures?

The PS measures may be tapping participants' attitudes, their need to maintain consistency, perceived social norms, or some combination of all of these constructs. We doubt that consistency, alone, is driving the measure; if it were, we would expect higher correlations between PS and explicit attitude measures and we would not expect the PS measures to predict behavior while controlling for impression management concerns. Study 4 offered mixed support for the consistency interpretation: The Time 1 PS measure did not correlate with Time 2 behavior (i.e., the PS measure did not influence behavioral responses), but the Time 2 PS measure did correlate with Time 1 behavior (i.e., behavioral responses may have influenced the PS measure). It is worth noting that the PS measure preceded, and still predicted, behavior in Study 2. Therefore, the PS measure cannot be only a response to behavior. Finally, a consistency concern should operate equally on all of the attitude measures as well as the behaviors; with no reason to expect that consistency concerns would differentially influence the PS measures, it seems unlikely that consis-

tency concerns are the sole influence behind the PS measures. Consistency concerns may be more clearly ruled out by separating the measures further in time, by controlling for individual differences in the preference for consistency (Cialdini, Trost, & Newsome, 1995), or by collecting thought listings regarding participants' impressions of the PS measure and checking for consistency concerns.

It is also possible that PS measures tap normative influences rather than attitudes. In this case, we would expect the measure to predict behavior because perceived norms account for unique variance in behavior beyond attitudes. The fact that the PS measures were at best modestly correlated with explicit attitude measures may suggest that the former were tapping something other than attitudes. Conceptually parallel weak correlations between objective implicit and explicit attitude measures have been attributed to the notion that other implicit measures tap cultural-level norms rather than individuals' idiosyncratic attitudes (Karpinski & Hilton, 2001). The fact that our PS measures predicted behavior suggests that they are tapping some individual-level idiosyncrasies (e.g., individual normative beliefs or attitudes). Finally, it seems unlikely that individualistic American respondents would spontaneously use normative referents to make judgments about others over their own attitudinal referents. The most likely reference point for making judgments about others' behavior would seem to be respondents' own attitudes. The role of normative beliefs might be more clearly ascertained by simply asking participants about their normative beliefs and including norms in regression analyses.

One final construct that might be driving the PS measures is attitude strength (Petty & Krosnick, 1995). According to this possibility, individuals who show a greater "bias" (here, bias refers simply to judgments away from the neutral midpoint of the scale) also should show a stronger relationship between explicit attitude measures and self-reported behavior than individuals who show little or no bias. This finding would be analogous to prior findings that attitude accessibility (Fazio et al., 1995) and knowledge (Kallgren & Wood, 1986) moderate attitude-behavior consistency. To examine this possibility, we conducted regression analyses testing for interaction effects between the explicit attitude measure and the amount of bias shown on the PS measure in the prediction of both self-reported dishonest behaviors and actual cheating behavior.

A new variable reflecting the amount of bias shown was created by taking the absolute value of respondents' centered bias scores. Thus, higher numbers reflected greater deviation from the midpoint in either direction. Our analyses revealed no Explicit Measure \times Bias interaction on self-reported dishonest behavior ($\beta = -.03$,

$p > .86$). Thus, for this behavioral criterion, our PS measure predicted behavior beyond that of Explicit attitudes, despite the fact that it did not moderate the explicit attitude to behavior link (i.e., was not a proxy for attitude strength). However, there was a significant explicit Measure \times Bias interaction on actual cheating behavior ($\beta = .417, p < .05$). The form of this interaction offered some support for the attitude strength hypothesis: the relationship between the explicit measure and actual cheating on the anagram test was stronger for those individuals who showed more biased processing than those who showed less biased processing.

Conceptually parallel analyses were conducted for Study 2. No Explicit Measure \times Bias interactions emerged with either the revised Wilson Conservatism Scale ($\beta = -.06, p > .60$) or the semantic differential scale ($\beta = -.20, p > .40$) predicting self-reported behavior. Similarly, when predicting actual behavior, there was no interaction between the revised Wilson Conservatism Scale and amount of bias ($\beta = .07, p > .70$); however, there was a significant interaction between the semantic differential and amount of bias ($\beta = -.77, p < .05$). The form of this interaction was contrary to the attitude strength hypothesis: The relationship between the explicit measure and requests for information was stronger for those individuals who showed less biased processing than those who showed more biased processing. These results further suggest that our PS measure is not serving as a proxy measure of attitude strength in this context.

Study 3 revealed no RAS \times Bias interaction ($\beta = .12, p > .36$). For Study 4, three separate regression analyses were conducted. They revealed no Explicit Measure \times Bias interactions between either the RAS and amount of bias ($\beta = .19, p > .28$) or the one-item explicit measure and amount of bias ($\beta = .32, p > .14$). There was a marginally significant Semantic Differential \times Bias interaction ($\beta = .55, p = .08$). The form of this interaction was consistent with the attitude strength hypothesis: The relationship between the explicit measure and self-reported religious behavior was somewhat stronger for those individuals who showed more biased processing than those who showed less biased processing. Taken together, however, these results do not offer much support for the notion that our PS measure was a proxy measure of attitude strength in this context.⁵ Of course, a stronger test of the attitude strength hypothesis would include various measures of strength in a regression analysis.

Although the present studies do not offer definitive support for the mechanism driving the PS measures, their predictive utility suggests that further research to uncover the process by which they operate is warranted. Attitudinal influences seem a likely candidate. Indeed, the notion that psychological factors such as mood, expectancies, and attitudes influence information processing

is one of the oldest and most pervasive ideas in social psychology (e.g., Allport, 1935; Bruner, 1957; James, 1890; Lewin, 1935). Campbell (1963), for example, noted that attitudes contain “residues of experience of such a nature as to *guide, bias, or otherwise influence later behavior*” (p. 97, emphasis added), and presumably later information processing as well. Allport (1935) suggested that “an attitude is a mental and neural state of readiness, organized through experience, *exerting a directive or dynamic influence* upon the individual’s response to all objects and situations with which it is related” (p. 810, emphasis added), and Krech and Crutchfield (1948) defined attitude as, “an enduring organization of motivational, emotional, perceptual, and cognitive processes with respect to some aspect of the individual’s world” (p. 152).

Conclusions

We have provided evidence that a PS measure tapping idiosyncratic information processing can be fruitfully applied to improve the prediction of behavior. Across four studies in three different attitude domains, we have demonstrated three main points: (a) PS measures of attitudes are useful in predicting behavior when social desirability is a concern, (b) explicit and PS measures of attitudes are only moderately related to each other (our PS measure was almost completely unrelated to the explicit attitude measures in three of four studies), and (c) PS measures can predict unique variance in behavior beyond that predicted by explicit measures and contemporary implicit measures, independent of social desirability concerns. Thus, these studies begin to show ways in which PS measures of attitudes can augment explicit measures of attitudes.

In combination with previous research, the data from the current studies emphasize that PS measures can predict behavior and that they can do so beyond what can be predicted by explicit measures. The current studies build on prior work and add the notion that PS measures may be more useful than has previously been believed. Because PS and explicit measures are likely to tap information inaccessible to each other, this approach to the study of attitudes should reveal greater strength in the attitude-behavior relationship.

APPENDIX

Religious words:	religious, spiritual, devout, reverent, faithful, devoted, prayerful
Nonreligious words:	nonreligious, atheistic, agnostic, faithless, nonbeliever, skeptic, doubter
Positive words:	gold, joy, smile, peace, paradise, sunshine, warmth
Negative words:	abuse, corpse, death, filth, poison, slime, pain

NOTES

1. Similar concerns have, of course, been raised about contemporary implicit attitude measures (Bosson, Swann, & Pennebaker, 2000; Brendl, Markman, & Messner, 2001; Karpinski & Hilton, 2001; but see Cunningham, Preacher, & Banaji, 2001).

2. Although the behaviors described in the vignettes were designed to be in most people's latitudes of rejection, it is possible that some individuals, who held moderate opinions toward honesty/dishonesty, assimilated rather than contrasted the behaviors. However, such assimilation tendencies would only serve to weaken the efficacy of our partially structured measure.

3. The 112 participants who did not return at Time 2 may have failed to do so for a number of reasons. First, they may have reached their extra-credit limit and thus had no motivation to return. Second, they may have missed class on days in which the extra-credit sign-up sheets were announced and thus never learned when the Time 2 study was conducted. Third, they may have been unable to make it to any of the Time 2 sessions. Fourth, they may have refused to return for idiosyncratic reasons of their own.

4. The one-item explicit measure and the semantic differential were correlated at .82 at Time 1. Because we intended to enter these measures into a simultaneous multiple regression equation, we collapsed the one-item measure to obviate collinearity problems with the regression analysis.

5. Of course, attitude strength has not been proven to be a monolithic construct. Various measures of attitude strength (e.g., knowledge, accessibility, confidence) show low correlations with one another (see Petty & Krosnick, 1995). This provides another reason why the partially structured (PS) measure is unlikely to be tapping a general attitude strength construct.

REFERENCES

- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179-211.
- Ajzen, I., & Fishbein, M. (1977). Attitude-behavior relations: A theoretical analysis and review of empirical research. *Psychological Bulletin*, 84, 888-918.
- Allport, G. W. (1935). Attitudes. In C. Murchison (Ed.), *Handbook of social psychology* (pp. 798-844). Worcester, MA: Clark University Press.
- Bosson, J. K., Swann, W. B., & Pennebaker, J. W. (2000). Stalking the perfect measure of implicit self-esteem: The blind men and the elephant revisited? *Journal of Personality and Social Psychology*, 79, 631-643.
- Brendl, M. C., Markman, A. B., & Messner, C. (2001). How do indirect measures of evaluation work? Evaluating the inference of prejudice in the Implicit Association Test. *Journal of Personality and Social Psychology*, 81, 760-773.
- Bruner, J. W. (1957). On perceptual readiness. *Psychological Review*, 64, 123-152.
- Cacioppo, J. T., Crites, S. L., Berntson, G. G., & Coles, M. G. (1993). If attitudes affect how stimuli are processed, should they not affect the event-related brain potential? *Psychological Science*, 4, 108-112.
- Campbell, D. T. (1963). Social attitudes and other acquired behavioral dispositions. In S. Koch (Ed.), *Psychology: A study of a science* (Vol. 6, pp. 94-172). New York: McGraw-Hill.
- Cialdini, R. B., Trost, M. R., & Newsome, J. T. (1995). Preference for consistency: Development of a valid measure and the discovery of surprising behavioral implications. *Journal of Personality and Social Psychology*, 69, 318-328.
- Cook, S. W., & Seltitz, C. (1964). A multiple-indicator approach to attitude measurement. *Psychological Bulletin*, 62, 36-55.
- Cunningham, W. A., Preacher, K. J., & Banaji, M. R. (2001). Implicit attitude measures: Consistency, stability, convergent validity. *Psychological Science*, 12, 163-170.
- Dovidio, J. F., & Gaertner, S. L. (1991). Changes in the nature of assessment of racial prejudice. In H. Knopke, J. Norrill, & R. Rogers (Eds.), *Opening doors: An appraisal of race relations in contemporary America* (pp. 201-241). Tuscaloosa: University of Alabama Press.
- Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology*, 33, 510-540.
- Farnham, S. (1997). *FIAT: Farnham Implicit Association Test*. Seattle, WA.
- Fazio, R. H. (1990). Multiple processes by which attitudes guide behavior: The MODE model as an integrative framework. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 23, pp. 75-109). San Francisco: Academic Press.
- Fazio, R. H., Jackson, J. R., Dunton, B. C., & Williams, C. J. (1995). Variability in automatic activation as an unobtrusive measure of racial attitudes: A bona fide pipeline? *Journal of Personality and Social Psychology*, 69, 1013-1027.
- Fishbein, M. (1980). A theory of reasoned action: Some applications and implications. In H. Howe & M. Page (Eds.), *Nebraska symposium on motivation* (Vol. 27, pp. 65-116). Lincoln: University of Nebraska Press.
- Fishbein, M., & Ajzen, I. (1974). Attitudes toward objects as predictors of single and multiple behavioral criteria. *Psychological Review*, 81, 59-74.
- Greenwald, A. G., & Banaji, M. R. (1995). Implicit social cognition: Attitudes, self-esteem, and stereotypes. *Psychological Review*, 102, 4-27.
- Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit social cognition: The implicit association test. *Journal of Personality and Social Psychology*, 74, 1464-1480.
- Grice, H. P. (1975). Logic and conversation. In P. Cole & J. L. Morgan (Eds.), *Syntax and semantics, 3: Speech acts* (pp. 41-58). New York: Academic Press.
- Hammond, K. R. (1948). Measuring attitudes by error choice: An indirect method. *Journal of Abnormal and Social Psychology*, 43, 38-48.
- Hastorf, A. H., & Cantril, H. (1954). They saw a game: A case study. *Journal of Abnormal and Social Psychology*, 49, 129-134.
- Houston, D. A., & Fazio, R. H. (1989). Biased processing as a function of attitude accessibility: Making objective judgments subjectively. *Social Cognition*, 7, 51-66.
- James, W. (1890). *The principles of psychology*. New York: Dover.
- Jarvis, W. B. G. (2001). *MediaLab by Empirisoft Research Software*. New York. Available from <http://www.empirisoft.com>.
- Kallgren, C. A., & Wood, W. (1986). Access to attitude-relevant information in memory as a determinant of attitude-behavior consistency. *Journal of Experimental Social Psychology*, 22, 328-338.
- Karpinski, A. T., & Hilton, J. L. (2001). Attitudes and the implicit association test. *Journal of Personality and Social Psychology*, 81, 774-788.
- Karpinski, A. T., & von Hippel, W. (1996). The role of the Linguistic Intergroup Bias in expectancy maintenance. *Social Cognition*, 14, 141-163.
- Krech, D., & Crutchfield, R. (1948). *Theory & problems of social psychology*. New York: McGraw-Hill.
- Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin*, 108, 480-498.
- Lemon, N. (1973). *Attitudes and their measurement*. New York: John Wiley.
- Lewin, K. (1935). *A dynamic theory of personality*. New York: McGraw-Hill.
- Lord, C. G., Ross, L., & Lepper, M. (1979). Biased assimilation and attitude polarization: The effects of prior theories on subsequently considered evidence. *Journal of Personality and Social Psychology*, 37, 2098-2109.
- Lundy, A. (1985). The reliability of the Thematic Apperception Test. *Journal of Personality Assessment*, 49, 141-145.
- McClelland, D. C. (1985). How motives, skills, and values determine what people do. *American Psychologist*, 40, 812-825.
- Ouelette, J. A., & Wood, W. (1998). Habit and intention in everyday life: The multiple processes by which past behavior predicts future behavior. *Psychological Bulletin*, 124, 54-74.
- Paulhus, D. L. (1991). Measurement and control of response bias. In J. P. Robinson, P. R. Shaver, & L. S. Wrightsman (Eds.), *Measures of personality and social psychological attitudes*. San Diego, CA: Academic Press.

- Petty, R. E., & Krosnick, J. A. (Eds.). (1995). *Attitude strength: Antecedents and consequences*. Mahwah, NJ: Lawrence Erlbaum.
- Poppleton, P., & Pilkington, G. (1963). The measurement of religious attitudes in a university population. *British Journal of Social and Clinical Psychology, 2*, 20-36.
- Proshansky, H. M. (1943). A projective method for the study of attitudes. *Journal of Abnormal and Social Psychology, 38*, 393-395.
- Sellitz, C., & Cook, S. W. (1966). Racial attitude as a determinant of judgments of plausibility. *Journal of Social Psychology, 70*, 139-147.
- Sherif, M., & Hovland, C. T. (1961). *Social judgment: Assimilation and contrast effects in communication and attitude change*. New Haven, CT: Yale University Press.
- Thistlethwaite, D. L. (1950). Attitude and structure as factors in the distortion in reasoning. *Journal of Abnormal and Social Psychology, 45*, 442-458.
- Thurstone, L. L. (1928). Attitudes can be measured. *American Journal of Sociology, 33*, 529-554.
- Vallone, R. P., Ross, L., & Lepper, M. R. (1985). The hostile media phenomenon: Biased perception and perceptions of media bias in coverage of the Beirut massacre. *Journal of Personality and Social Psychology, 49*, 577-585.
- von Hippel, W., Sekaquaptewa, D., & Vargas, P. (1995). On the role of encoding processes in stereotype maintenance. In M. P. Zanna (Ed.), *Advances in experimental social psychology* (Vol. 27, 177-254). San Francisco: Academic Press.
- von Hippel, W., Sekaquaptewa, D., & Vargas, P. (1997). The linguistic intergroup bias as an implicit indicator of prejudice. *Journal of Experimental Social Psychology, 33*, 490-509.
- Waly, P., & Cook, S. W. (1965). Effect of attitude on judgments of plausibility. *Journal of Personality and Social Psychology, 2*, 745-749.
- Wanke, M., Plessner, H., & Frieze, M. (2002, May). *When implicit attitude measures predict brand choice—and when they don't*. Special session: "Predicting consumer behavior by implicit attitudes" at the annual convention of the Association for Consumer Research Asia-Pacific Conference, Beijing, China.
- Wilson, G. D. (1985). The "catchphrase" approach to attitude measurement. *Personality and Individual Differences, 6*, 31-37.
- Wilson, T. D., Lindsey, S., & Schooler, T. Y. (2000). A model of dual attitudes. *Psychological Review, 107*, 101-126.
- Winter, D. G., & Stewart, A. J. (1977). Power motivation as a function of retest instructions. *Journal of Consulting and Clinical Psychology, 45*, 436-440.

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