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IT'S NOT JUST WHAT YOU THINK, IT'S ALSO HOW YOU THINK:
USING MEASURES OF BIASED PROCESSING TO PREDICT BEHAVIOR

DISSERTATION

Presented in Partial Fulfillment of the Requirements for
the Degree of Doctor of Philosophy in the Graduate
School of The Ohio State University

By
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*****

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ABSTRACT

Attitudes are generally acknowledged to have their influence at many levels. Direct attitude measures (e.g., semantic differential, Likert, and Thurstone scales), however, typically assess only general evaluative beliefs and feelings. I suggest that indirect attitude measures can be used to assess an important and often overlooked property of attitudes — the extent to which they bias information processing. Furthermore, because biases in information processing can change the interpretation of attitude-relevant events, I propose that the propensity to engage in attitudinally biased processing can be an important predictor of behavior. Three studies provide evidence that indirect attitude measures that assess biased processing: (1) are particularly well-suited to predict behavior when social desirability is a chronic concern, (2) are only modestly related to traditional direct attitude measures, and (3) can predict unique variance in behavior beyond that predicted by direct attitude measures even when social desirability is not a concern.
Dedicated to Marianne Vargas and Joe Vargas
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CHAPTER 1

INTRODUCTION

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 a bias that suggests a non-religious way of thinking. If you thought she was not very religious, however, you show a bias that suggests a religious way of thinking. Thus, ratings of Mary can serve as an indirect measure of a person’s attitude toward religion. Why might this be the case? Considerable research in social psychology has shown that people not only have attitudes, but they also use them. Attitude use, in turn, can lead to biases in perception and information processing that can be reflected in social judgments such as how religious Mary is (e.g., Lord, Ross, & Lepper, 1979; Sherif & Hovland, 1961). For this reason, ratings of Mary can serve as an indirect attitude measure by tapping biases in information processing. Furthermore, because biases in information processing can change the interpretation of attitude-relevant events (e.g., see Fazio, 1990), I propose that the tendency to engage in biased processing can be an important predictor of behavior. The goal of this paper is to demonstrate that indirect measures of attitudes are often
largely independent of direct attitude measures and can be used to predict unique variance in behavior beyond that accounted for by direct measures for a wide variety of attitude objects. This perspective on indirect measures suggests that they can be considerably more useful than has been believed previously.

Attitudes traditionally have been defined as evaluative psychological tendencies, or response dispositions, toward objects, issues, or people (Eagly & Chaiken, 1993; Petty & Cacioppo, 1986). These evaluative tendencies can be manifested affectively, cognitively, or behaviorally (Breckler, 1984; Ostrom, 1969). Attitude measurement, however, has typically relied on direct, self-report measures wherein respondents either directly indicate their level of favorability toward the attitude object (e.g., on semantic differential scales), or toward statements about the attitude object (e.g. on Likert scales, Thurstone scales). Such direct, self-report measures have been demonstrated to predict behavior reliably in a number of different attitude domains, including religion (Fishbein & Ajzen, 1974), birth control (Davidson & Jaccard, 1979), environmental concerns (Weigel & Newman, 1976), and many others. However, one potential problem with direct measures is, simply put, their directness.

When respondents do not wish to have their true feelings known, or are unaware of their true feelings, direct attitude measures can be inaccurate. As a result, direct measures tend to be poor predictors of behavior when the attitude domain under consideration is wrought with social desirability concerns. For example, in one early study, Corey (1937) measured students' attitudes toward cheating and tried to predict their cheating on exams throughout a school semester. He found the correlation between the students' attitudes toward cheating and their actual cheating behavior on five tests was close to zero. When such social desirability concerns limit the efficacy of direct attitude measures for predicting behavior, researchers have often turned to and advocated the use of indirect attitude assessments.
Indirect Attitude Measures

Indirect attitude measures come in a number of different forms, including behavioral indicators, physiological procedures, and disguised self-report measures. I shall briefly review each of these different classes of indirect attitude measures and then present a more in-depth review of some aspects of disguised self-report attitude measures that have an important bearing on the present research.

Behavioral indicators of attitudes rely on individuals' tendencies to act favorably or unfavorably toward some representation of the attitude object. For example, behavioral measures of attitudes toward other individuals include measures such as amount of eye contact (Argyle, 1967; Rubin, 1970), and the physical distance two people stand from each other (Byrne, Ervin, & Lamberth, 1970). Other types of behavioral indicators can be used to assess attitudes toward different, more general topics. Consistently favorable behavior toward a particular attitude object generally reflects a favorable attitude. Individuals' tendency to consistently use, for example, contraceptive devices, may reflect favorable attitudes toward birth control (Davidson & Jaccard, 1979). Importantly, a single behavioral criterion is an unreliable predictor of attitudes, so it is best to use aggregate measures of behavior (Fishbein & Ajzen, 1974, 1975). Still other behavioral indicators may be used to assess attitudes of larger populations. For example, individuals' willingness to send pre-addressed and pre-stamped "lost" letters have been suggested to reflect liking for the addressees (Milgram, Mann, & Harter, 1965). Of course, the lost letter technique does not allow researchers to examine individual differences in attitudes. Behavioral measures of attitudes have one major drawback in that they are difficult to interpret unless a large number of different behaviors are observed. Any single instance of favorable behavior may easily be attributed to situational norms instead of favorable attitudes.
Physiological indicators rely on physical changes in individuals in response to attitude-relevant stimuli. Measures such as Galvanic Skin Response and pupillary dilation/constriction have been used as indirect attitude measures; however, both measures are considered inadequate attitudinal measures primarily because neither has been conclusively demonstrated to reflect attitude valence (for a discussion of GSR and pupillary response as indirect attitude measures see Petty & Cacioppo, 1983). Facial Electromyographic Activity (EMG) has also been used to assess both valence and intensity of attitudes (Cacioppo & Petty, 1979; Cacioppo, Petty, Losch, & Kim, 1986). Additionally, event related brain potentials (ERPs) have been used to distinguish evaluative consistency and inconsistency (Cacioppo, Crites, Berntson, & Coles, 1993). However, there are at least two drawbacks to using physiological indicators of attitudes: the first is that they require elaborate instruments; second, physiological indicators tend to be quite time-consuming for both experimenter and participant.

Disguised self-report measures require respondents to provide information that is ostensibly intended to assess something other than their attitudes. Researchers then infer respondents' attitudes based on the information provided. One such technique relies on individuals' tendencies to like attitudinally similar others. For example, respondents may be shown others' attitudes toward some topic and asked which individuals they might like the best (Hendrick & Seyfried, 1974). Thus, respondents provide information about their liking of other individuals rather than providing information about their attitudes, per se. Other disguised self-report measures require respondents to make judgments about attitude-relevant information.

In the present context, I am particularly interested in indirect self-report measures of a particular kind. Although it has not been widely discussed, most indirect self-report measures have historically relied on attitude use — or the tendency for attitudes to bias information processing — as a measure of attitudes. That is, most indirect self-report
measures assess individuals' biased perception or processing of attitude-relevant information as a proxy for direct evaluations.

For example, projective techniques rely on respondents' interpretations of ambiguous images. In one study (Prohansky, 1943), students known to have pro- and anti-labor union attitudes were shown a series of images (previously judged to be neither pro- nor anti-labor) and asked to write for two and a half minutes about each picture. Three judges coded the responses as either favorable or unfavorable toward labor. The projective technique was found to be highly correlated with a traditional measure of attitudes toward labor unions. Prohansky suggested that the method was sensitive to two potential biases that could be useful for inferring attitudes: first, attitudes might have distorted perception, such that respondents would tend to perceive the slides as attitude-congruent; second, attitudes might have influenced memory such that respondents would tend to recall more attitude-congruent information about the pictures.

In a related technique, Hammond's (1948) "Error-Choice Test" required participants to respond to a series of questions concerning a particular attitude object. The test contained two types of questions, the first of which featured response options that were both false but equidistant and in opposite directions from the truth (e.g., "Man-days lost because of strikes from January to June, 1946, were [1] 34.5 [2] 98.6 million." [Hammond, 1948, p. 48]). The second type of question ostensibly had a correct answer, but was, in fact, indeterminable (e.g., "Molotov is known in diplomatic circles for his [1] excellent [2] poor manners." [Hammond, 1948, p. 48]). The respondent's attitude was inferred from the direction of the response. If a respondent tended to select as true those items that were more favorable toward union labor (e.g., choice 1 in the first example), one can infer a positive attitude toward unions, and vice-versa. Importantly, Hammond noted, "The particular effect with which we shall be concerned here will be the systematic
error in perception and recall." due to the influence of attitudes (p. 38, emphasis in original).

Another use of disguised self-report measures examines respondents' proclivity to accept or reject logically flawed, but emotionally charged arguments toward a socially sensitive topic. In one such study (Thistlethwaite, 1950), respondents from Northern and Southern colleges were shown a series of ostensibly logically sound premises and conclusions about integration, and were asked to evaluate the validity of the arguments. Students who were prejudiced tended to accept flawed arguments that were emotionally charged and attitude-congruent, but reject more neutral, attitude-congruent arguments (see also Edwards & Smith, 1996; Lord, Ross, & Lepper, 1979). In a related vein, students also tended to judge attitude-congruent arguments as the most plausible (Selltiz & Cook, 1966; Waly & Cook, 1965). Correlations between judgments of plausibility and self-report measures of attitudes toward integration ranged from quite strong (among students from Southern colleges) to more moderate (among students from Northern colleges).

Such indirect methods of attitude measurement rely on biases in information processing as a method of distinguishing individuals' attitudes. The projective technique requires participants to make inferences about ambiguous events. The error-choice method requires participants to recall attitude-congruent and incongruent information, or make inferences about attitude-relevant questions. Judgments of argument validity rely on respondents' tendencies to assimilate attitude-congruent information and/or contrast attitude-incongruent information, and to be critical of attitude-incongruent information. Although measures such as these that tap information processing biases do not constitute the entire constellation of indirect self-report measures (e.g., see Hendrick & Seyfried, 1974), they represent an important and historically prevalent means of measuring attitudes in an indirect fashion.
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).

Notwithstanding these early definitions of attitudes that incorporated notions of biased processing, and the various indirect measures that rely on assessment of bias to infer attitudes, attitude research has overwhelmingly used direct attitude measures (Eagly & Chaiken, 1993). An important exception here, of course, is the use of indirect measures when social desirability is a concern such as when the attitude one wishes to assess is a potentially sensitive one such as racial prejudice (e.g., Fazio, Jackson, Dunton, & Williams, 1995; Milgram, 1977). When social desirability is not a concern, however, there are at least two primary reasons why researchers tend to rely on direct self-reports. First, and most importantly, direct measures are largely superior to indirect measures with regard to reliability and validity (Lemon, 1973). Second, direct measures are believed to have greater precision, or sensitivity, than indirect measures (Petty & Cacioppo, 1981). As a consequence, there has been virtually no interest in predicting behavior from indirect measures when social desirability was not a concern. In fact, there has been relatively little research predicting behavior with indirect self-report measures even when
social desirability was likely to be a concern. The classic early studies on indirect self-report measures described previously (e.g., Hammond, 1948) did not try to use the indirect measures to predict behavior. Rather, the goal was simply to use known groups that differed in their attitudes toward a particular topic to determine whether indirect measures of attitudes could distinguish between the groups, and to correlate the indirect measures with the direct, traditional measures. It is our prediction, however, that indirect measures that tap attitude use can be useful predictors of behavior above and beyond that predicted by direct measures, even when social desirability is not a concern.

Why Should Indirect Measures Predict Behavior?

As noted previously, indirect measures have generally been used as proxies for direct attitude measures that are considered helpful when social desirability is a concern, but of relatively little (if any) use when social desirability is not a concern. However, my view is that some indirect attitude measures can be more than simple, and often poor, proxies for direct attitude measures. If my analysis is correct, indirect attitude measures should predict unique variance in behavior because the biases tapped by these measures change both the amount and meaning of information that an individual collects (Ditto & Lopez, 1993; Lord et al., 1979). Because information processing biases tend to have their influence at encoding (von Hippel, Sekaquaptewa, & Vargas, 1995), incoming stimuli often seem different to different people observing the same event. For example, imagine two people standing near a snake -- one hears the snake hissing, the other hears the snake sniffing. Both are privy to the same objective event, but the differential use of their attitudes colors their perceptions so as to encourage or discourage approaching the snake. Thus, the biases themselves can be an important independent determinant of how an individual responds to an object, person, or situation. Indeed, it is often the biases in information processing that justify or enable the individual's preferential response to an attitude object (see Fazio, 1990; Karpinski & von Hippel, 1996; Kunda, 1990).
Why Should Indirect Measures be Distinct from Direct Measures?

As noted above, the evidence from social psychological research is that attitudes often can and do bias information processing. Given the apparently reliable correlations between the indirect and direct measures in some past research, however, is there reason to expect that indirect measures should be sufficiently distinct from direct attitude measures to account for unique variance in behavior beyond that accounted for by direct measures? In order to address this question, it is necessary to consider what direct and indirect measures actually assess, and infer how this might lead to a dissociation between direct and indirect measures. The typical explanation for the modest relation between direct and indirect measures is that indirect measures are less reliable and valid than direct measures (Lemon, 1973). However, I suggest that there are other conceptual factors that contribute to this modest relationship, stemming from the possibility that direct and indirect measures tap different aspects of attitudes.

Direct measures assess the extent to which an individual has favorable or unfavorable thoughts, beliefs, and/or feelings about an attitude object. Thus, it could be said that direct attitude measures tap the evaluative content of individuals’ attitudes by requiring respondents to indicate their overall favorability toward the object directly, or their level of agreement with valenced attitude-relevant statements or ideas. This leads to the primary difference between direct and indirect self-report measures of attitudes: direct measures tap the evaluative content of an individual’s attitudes, whereas indirect measures tap attitude use in the form of biased processing. According to this conceptualization, the distinction between direct and indirect self-report attitude measures, is at least in part, one of content versus process. If different factors influence attitudinal content and attitudinal processes, then we would expect some dissociation between direct and indirect measures.
One such dissociating factor centers on the different influences of explicit and implicit attitudes (Greenwald & Banaji, 1993). Only explicit attitudes are thought to contribute to direct measures, but both explicit and implicit attitudes are likely to bias information processing, and thus contribute to indirect measures. For example, explicit attitudes might serve as anchors against which novel information is judged, causing judgmental distortions (e.g., Sherif & Hovland, 1961), and implicit attitudes might similarly have an influence on the way information is judged (Dion, Berscheid, & Walster, 1972; Zajonc, 1968). When explicit and implicit attitudes overlap substantially, these alternative sources of bias can be considered isomorphic. Under such circumstances, a religious person, for example, could hold similarly positive explicit and implicit attitudes toward religion. Sometimes, however, implicit and explicit attitudes can diverge from one another. Thus, a religious person who holds a favorable explicit attitude toward religion might have consciously inaccessible, implicit memories of punitive instructors in religious schools, or tedious religious classes and events, that contribute to a more negative implicit attitude toward religion. Under such circumstances, implicit and explicit attitudes can be considered important alternative sources of bias; and accurate prediction of bias, as well as an understanding of the potential dissociation between indirect and direct attitude measures, will depend on knowledge of both explicit and implicit attitudes.¹

A second dissociating factor is that there are likely to be individual differences in the tendency to engage in biased processing. Some people have a strong need to see the world the way they expect it to be, or want it to be, whereas others do not find such consistency terribly important. Individuals of the former type could be more biased in their information processing than the latter, as they attempt to construe the world in a way that is consistent with their beliefs or desires — though they would not necessarily

¹ When explicit and implicit biases have different valences, indirect measures probably tap some combination of biases produced by explicit and implicit attitudes. However, it is also possible that indirect measures primarily tap the bias produced by implicit attitudes.
have different attitudinal content per se. Extending this argument, it seems possible that a variety of individual difference measures might predict the tendency to process attitude-relevant information in a biased fashion. For example, personality variables such as Preference for Consistency (Cialdini, Trost, & Newsom, 1995), Personal Need for Structure (Thompson, Naccarato, & Parker, 1989), Need for Closure (Kruglanski, Webster, & Klem, 1993) and Dogmatism (Rokeach, 1960) have the potential to predict biased processing under certain circumstances. Individuals with a strong preference for consistency, for example, are more likely to base their responses to incoming stimuli on previous expectations (Cialdini et al., 1995). Additionally, people who have a high need for structure are particularly likely to assimilate discrepant information to pre-existing beliefs (Neuberg & Newsom, 1993). Thus, a number of individual difference variables have the potential to contribute variance to biased processing. Due to their different etiologies, biases in information processing that are due to differences in personality are likely to be largely uncorrelated with the valence of explicit or implicit attitudes. Thus, each of these factors should contribute independent variance to the proclivity to process attitude-relevant information in a biased fashion.

Indirect Attitude Measures Versus Measures of Attitude Strength

One possibility that might have occurred to some readers is that indirect measures of attitudes might serve as proxies for measures of attitude strength. That is, strong attitudes are thought to bias information processing more than weak ones (e.g., Houston & Fazio, 1989), and thus measures of biased processing might simply be tapping attitude strength. A hallmark of indicators of attitude strength — such as attitude accessibility or attitude confidence — is that these measures moderate the relationship between direct attitude measures and behavior but do not themselves have a direct impact on behavior (see Petty & Krosnick, 1995, for reviews of various strength indicators). Thus, for example, it is not the case that the more accessible one’s attitude is or the more confident
one is in one’s attitude, the more likely a person is to act in a particular way. Rather, the more accessible one’s attitude is or the more confident one is in one’s attitude, the more likely the attitude itself is to determine behavior. In contrast, one’s bias in information processing need not moderate attitude-behavior relationships, but should have a direct impact on the favorability of behavior.

This difference might best be illustrated by way of an example. Consider an attitude scale ranging from -5 (very negative) to +5 (very positive), and consider two people who have attitudes represented by +1 and +5. If these attitudes are equivalently low in accessibility or low in confidence (i.e., are “weak”), there should be little difference in these individuals’ behavior because these individuals are not relying much on their attitudes to guide their behavior. If these attitudes are equivalently and highly accessible (i.e., are “strong”), however, we would expect more pro-attitudinal behavior from the +5 person than from the +1 person. That is, attitude strength indicators such as accessibility and confidence determine when the valence of attitudes has an impact on the valence of behavior (e.g., see Fazio, 1995). One’s bias in information processing, on the other hand, would not necessarily moderate the relation between the valence of one’s attitude and the valence of behavior, but rather it could contribute directly to behavior. That is, my prediction is that the contribution of a processing bias to behavior should be the same whether a person’s attitude is +1 or +5. For example, a highly favorable processing bias should make people more likely to behave favorably, but would not necessarily make people more likely to act on their directly assessed attitudes than a less favorable processing bias. Similarly, a highly unfavorable processing bias should make people more likely to behave unfavorably, but would not necessarily make people more likely to act on their directly assessed attitudes than a less unfavorable processing bias. Thus, unlike measures of attitude strength, processing biases are not postulated to moderate attitude-behavior relations, but are hypothesized to provide an independent contribution to
behavior — the more favorably biased one’s processing is, the more favorably biased one’s behavior is predicted to be regardless of the valence of one’s directly measured attitude.²

**Hypotheses**

In the current research, I address two general theoretical issues, and an implication of these issues for the study of attitudes. First, because indirect measures are thought to be particularly useful when social desirability is a chronic concern, they should be better than direct measures at predicting behavior in such circumstances. There are several reasons why indirect measures should be superior to direct measures when social desirability is a concern. One reason is that individuals tend to be unaware of the biased nature of their information processing (Lewicki, 1982, 1985; Malpass, 1969; Nisbett & Wilson, 1977), and thus respondents might not be fully aware that indirect measures reveal information about their socially undesirable attitudes. That is, respondents might not realize that their attitudes are biasing the way they interpret information; they might simply believe that they are reporting objective perceptions of the stimuli. Another factor is that even if people are aware that their attitudes might influence the way they process information, they might not stop to reflect on how revealing the bias (i.e., indirect) measures can be. If respondents fail to consider that their responses can be used to infer psychological states/dispositions, they might not exert the necessary effort to control their responses. Thus, Hypothesis 1 is: When social desirability is a concern, indirect attitude measures should be superior to direct attitude measures in predicting behavior.

Second, I propose that the relationship between direct and indirect attitude measures is likely to be weaker than that reported in the set of classic studies reviewed

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² Of course, it is possible that an index of biased processing could also moderate the impact of directly assessed attitude valence on behavior, but the critical prediction here is that indirect measures should also contribute to behavioral prediction directly.
earlier (e.g., Hammond, 1948; Prohansky, 1943). The strong relationships between direct and indirect measures reported in those studies were likely due to the selection of participants who were known to have well-rehearsed, extreme, and strong attitudes toward the objects in question. I have suggested, however, that direct and indirect attitude measures assess different aspects of attitudes. Thus, Hypothesis 2 is: Direct and indirect attitude measures will be only weakly correlated with one another.

Third, and most importantly, I propose that indirect measures are likely to provide information beyond that provided by direct measures. In contrast to the prevailing view that indirect measures have little utility when social desirability is not a concern, I argue that indirect measures can be quite useful in accounting for unique variance in behavior. This is because indirect measures can tap into information processing biases that have the potential to change the way an individual perceives the attitude object and thereby influence behavior. Thus, Hypothesis 3 is: Indirect measures of attitudes should predict unique variance in behavior, beyond that predicted by direct measures of attitudes, even when social desirability is not a concern.

Three studies were conducted to test these hypotheses. One study was conducted in order to demonstrate that indirect attitude measures could predict behavior in a domain in which social desirability was expected to be a chronic concern — dishonesty (see Corey, 1937). Two studies were conducted in order to demonstrate that indirect measures of attitudes can predict unique variance in behavior above and beyond that predicted by direct measures of attitudes, even in domains in which social desirability was not expected to be an important concern (religion, politics).
CHAPTER 2

STUDY 1

The primary goal of Study 1 was to test my first hypothesis — that an indirect attitude measure should predict behavior more reliably than a direct attitude measure when social desirability is a chronic concern. A secondary goal was to provide some validation for the procedure developed to assess attitudes indirectly by examining its utility in a domain where prior research and theory suggested that it would be most effective. The attitude object selected for Study 1 was cheating, or "being dishonest." At least three related reasons suggest why a direct attitude measure should 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 a direct measure. Second, social desirability concerns can have different influences on different people, and can thus introduce a certain amount of random error, causing a wide variety of responses to direct 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). To the extent that indirect attitude measures are driven by attitude-relevant sources other than consciously accessible explicit attitudes, and to the extent these sources are more difficult to control than explicit attitudes, I expected an indirect measure assessing biased processing to be predictive of dishonesty.
Furthermore, Study 1 provides an opportunity to test whether the indirect attitude measure might predict behavior solely because it is tapping an implicit attitude toward cheating. If the indirect measure is truly implicit, then it should be unrelated to measures of impression management. If the indirect measure is not implicit, however, then it should be correlated with impression management because cheating is an attitude domain in which social desirability is a chronic concern (Corey, 1937). Under such circumstances, it remains possible that the indirect measure could predict behavior even if it is related to impression management because a uniform main effect of social desirability need not wipe out the integrity of the measure as an indicator of biased processing. If the indirect measure is correlated with impression management one could assume that the measure is not simply an implicit measure of attitudes.

Method

Participants

One hundred fifty-four male and female introductory psychology students at 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. Direct and indirect attitude measures were then used to predict this single instance of dishonest behavior, as well as a comprehensive index of self-reported dishonest behaviors. The indirect 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:

\[\text{The vignettes were generated based on three main criteria: (1) the author's } a \text{ priori beliefs about what constitute honest and dishonest behaviors, (2) speculations about what kinds of behaviors would be most ambiguously dishonest and open to multiple interpretations, and (3) informal discussions about ambiguously dishonest behaviors with others. None of the items used in the indirect measure were pretested for validity or reliability.}\]
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 measure of biased processing. Thus, higher scores on this measure indicate the belief that the targets were relatively honest.

According to the logic behind this measure, different participants should encode the scenarios in different ways. Because the targets of the scenarios behave in moderately dishonest ways, their behavior should be discrepant for very honest and very dishonest people, alike; that is, the behaviors should lie in both honest and dishonest people's latitudes of rejection, and should be contrasted away by both (Sherif & Hovland, 1961). Thus, the processing bias tapped by this measure is a contrast effect. 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), on the other hand, 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. Instead they might perceive these ambiguous behaviors as “opportunities” or as “clever behaviors” rather than 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 unfavorable toward honesty at least with regard to the way they process information. As should be evident from this description, this measure is not intended to be a measure of implicit attitudes (as defined by Greenwald & Banaji, 1995). Rather, this measure is simply an indirect measure of attitudes toward dishonesty in that responses are in the form of judgments about target individuals.

In addition to the indirect measure just described, participants also completed a direct 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 anagram test was designed to be exceedingly difficult, and to provide an opportunity for participants to cheat. Twelve of the anagrams were extremely difficult to

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4 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 indirect measure. Stated differently, the measure likely assesses the processing bias associated with highly favorable and highly unfavorable attitudes toward cheating. The processing biases (if any) associated with more moderate attitudes are relegated to error variance.
solve (e.g., recsnapa, ecbiaanm, gnimimtyana for pancreas, ambiance, 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). All of the materials from Study 1 are in Appendix B.

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 minutes 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 minutes 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. Additionally, because the study was conducted in large groups, it was relatively easy for participants to cheat without being detected.

I expected the indirect attitude measure to be related to self-reported and actual dishonest behavior: the more honest one perceives the vignettes, the more likely one should be to perform dishonest behaviors. It was unclear whether the direct attitude measure would be correlated with self-reported dishonest behaviors. On the one hand, they share social desirability concerns and thus might be related. On the other hand, people might be unaware of their true attitudes toward dishonesty, but might remember
the dishonest behaviors they have conducted, and thus the direct measure might be unrelated to self-reported dishonest behaviors. Furthermore, due to the different nature of the social desirability concerns involved, the direct measure was not expected to be related to the single instance of dishonest behavior.

Results

There were no interactions between any of the attitude measures and the counterbalancing manipulation (all $\hat{E}'s \leq 1.18$, n.s.), so all analyses were conducted after collapsing across counterbalancing order.

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 zero to twelve, which indicated the number of difficult anagrams that he/she answered correctly in the absence of any accompanying effort. Importantly, the obvious imperfection of this cheating measure (i.e., participants could have correctly solved some of the anagrams without the use of scratch paper; participants may have worked on a different sheet of paper) only serves to add error variance, making it harder to predict cheating. Means, standard deviations, ranges, and reliability statistics of the variables in study one are presented in Table 2.1.
Table 2.1 -- Means, standard deviations, possible ranges, and reliability statistics for Study 1 measures.¹

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Possible Range</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior 1 (Self-Reported Dishonest Behaviors)</td>
<td>15.57</td>
<td>7.01</td>
<td>0 to 45</td>
<td>---</td>
</tr>
<tr>
<td>Behavior 2 (Cheating)</td>
<td>2.80</td>
<td>3.23</td>
<td>0 to 12</td>
<td>---</td>
</tr>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>0.00</td>
<td>0.41</td>
<td>-1.54 to 1.17</td>
<td>.70</td>
</tr>
<tr>
<td>Direct Measure (Semantic Differential)</td>
<td>18.02</td>
<td>9.56</td>
<td>5 to 55</td>
<td>.89</td>
</tr>
<tr>
<td>Impression Management</td>
<td>2.46</td>
<td>1.77</td>
<td>0 to 20</td>
<td>.50</td>
</tr>
<tr>
<td>Self-Deception</td>
<td>2.73</td>
<td>1.79</td>
<td>0 to 20</td>
<td>.49</td>
</tr>
<tr>
<td>H. S. GPA</td>
<td>3.07</td>
<td>0.52</td>
<td>0 to 4.0</td>
<td>---</td>
</tr>
</tbody>
</table>

The correlation matrix (see Table 2.2) indicates that both the direct and indirect attitude measures were correlated with self-reported cheating behavior. Additionally, the indirect measure was correlated with cheating on the anagram test, whereas the direct measure was not.² Consistent with hypothesis 2, the direct measure was not significantly correlated with the indirect measure. Somewhat surprisingly, the direct measure was not

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¹ Scores for the indirect 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.

² The correlations between self-reported behavior and averaged responses to the individual vignettes ranged from .05 to .34. Correlations between actual cheating behavior and averaged responses to the individual vignettes ranged from .07 to .18 (see Appendix A, Table A.1).
correlated with impression management, whereas the indirect measure was correlated with impression management. Individuals who engage in impression management tended to report the ambiguous behaviors as more dishonest, suggesting that the indirect measure of attitudes is not entirely implicit. Finally, high school GPA was unrelated to cheating on the anagram test, suggesting that the anagram test did indeed provide a measure of cheating, and did not reflect actual ability or honest performance.
<table>
<thead>
<tr>
<th>Behavior 1 (Self-Reported Dishonest Behaviors)</th>
<th>Behavior 2 (Cheating)</th>
<th>Indirect Measure (Vignettes)</th>
<th>Direct Measure (Semantic Differential)</th>
<th>Impression Management</th>
<th>Self Deception</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior 1 (Self-Reported Dishonest Behaviors)</td>
<td>.123</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td></td>
<td>.228***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Measure (Semantic Differential)</td>
<td>.327***</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Impression Management</td>
<td></td>
<td>-.396***</td>
<td>-.212**</td>
<td>.015</td>
<td></td>
</tr>
<tr>
<td>Self-Deception</td>
<td>-.018</td>
<td>.178*</td>
<td>-.033</td>
<td>-.136</td>
<td>.261**</td>
</tr>
<tr>
<td>H.S. GPA</td>
<td>-.249**</td>
<td>.024</td>
<td>.010</td>
<td>-.216**</td>
<td>.047</td>
</tr>
</tbody>
</table>

*p < .05
**p < .01
***p < .001

Table 2.2 - Correlation matrix for measures in Study 1.
Perhaps the more interesting question is whether the direct and indirect measures predicted unique variance in either self-reported cheating behavior or cheating on the anagram test. To test these questions, the direct, indirect, 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. As can be seen in Table 2.3, these analyses revealed that the indirect measure was a significant predictor of both self-reported dishonest behaviors and cheating on the anagram test. Because the indirect measure was predictive of actual and self-reported dishonest behavior when controlling for impression management, this finding suggests that the indirect measure and dishonest behaviors were not related simply due to shared social desirability concerns. The direct measure of attitudes toward dishonesty was a marginal predictor of both self-reported dishonest behaviors and cheating on the anagram test. The impression management subscale of the BIDR was predictive of self-reported dishonesty and the self-deception subscale of the BIDR was predictive of cheating on the anagram test.
**DV = Self-Reported Dishonest Behavior**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>0.228</td>
<td>0.003</td>
</tr>
<tr>
<td>Direct Measure (Semantic Differential)</td>
<td>0.127</td>
<td>0.099</td>
</tr>
<tr>
<td>Impression Management</td>
<td>-0.365</td>
<td>0.000</td>
</tr>
<tr>
<td>Self Deception</td>
<td>0.098</td>
<td>0.202</td>
</tr>
<tr>
<td>H.S. GPA</td>
<td>-0.208</td>
<td>0.006</td>
</tr>
</tbody>
</table>

**DV = Cheating on Anagram Test**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>0.192</td>
<td>0.023</td>
</tr>
<tr>
<td>Direct Measure (Semantic Differential)</td>
<td>0.166</td>
<td>0.052</td>
</tr>
<tr>
<td>Impression Management</td>
<td>-0.002</td>
<td>0.986</td>
</tr>
<tr>
<td>Self Deception</td>
<td>0.217</td>
<td>0.012</td>
</tr>
<tr>
<td>H.S. GPA</td>
<td>0.049</td>
<td>0.560</td>
</tr>
</tbody>
</table>

*Table 2.3 — Regression weights and p values for direct and indirect attitude measures in Study 1.*
At this point, I consider the possibility that the indirect attitude measure is simply a proxy measure of attitude strength. According to the attitude strength viewpoint, individuals who show more bias should also show a stronger relationship between direct 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) or knowledge (Kallgren & Wood, 1986) moderate attitude-behavior consistency. In order to examine this possibility, I conducted regression analyses testing for the presence of interaction effects between the direct attitude measure and the amount of bias shown on the indirect 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 biased processing in either direction. The analyses revealed no direct measure by bias interaction on self-reported dishonest behavior (\( \beta = -.20, t = 1.17, p > .20 \)). Thus, for this behavioral criterion, the bias measure predicted behavior beyond that of direct attitudes, despite the fact that it did not moderate the direct attitude to behavior link (i.e., was not a proxy for attitude strength). However, there was a significant direct measure by amount of bias interaction on actual cheating behavior (\( \beta = .395, t = 2.13, p < .05 \)). The form of this interaction (see Figure 2.1) offered some support for the attitude strength hypothesis: the relationship between the direct measure and actual cheating on the anagram test was stronger for those individuals who showed more biased processing, compared to those who showed less biased processing.
In order to further explore the possibility that the indirect measure was a proxy measure of attitude strength I chose to examine the attitude-behavior correlations among individuals who showed different amounts of biased processing. Again, according to the attitude strength viewpoint, individuals who show more bias should also show a stronger relationship between direct attitude measures and self-reported behavior than individuals who show little or no bias. I created a tertiary split on the vignette measure, and divided participants into groups with scores less than -.14 suggesting an honest bias (i.e., perceiving the targets as relatively dishonest), scores between -.14 and .13 suggesting no bias (i.e., perceiving the targets moderately), and scores greater than .13 suggesting a dishonest bias (i.e., perceiving the targets as relatively honest). According to my use of
this measure, respondents who perceived the targets as either very dishonest or very honest were more biased than those who perceived the target more moderately. In order to examine differences in correlations between the direct measure and behavior, I conducted Fisher r-to-Z transformations to test differences between the correlations in bias and no-bias groups. As can be seen in the top row of Table 2.4, for the self-report measure of dishonest behavior, the attitude-behavior correlation was the same for people who showed an honest bias, a dishonest bias, and no bias. Similarly, as can be seen in the bottom row of Table 2.4, for the actual cheating behavior, direct attitudes did not vary in their ability to predict behavior for people who showed an honest bias, a dishonest bias, and no bias.
Direct Measure: Semantic Differential

<table>
<thead>
<tr>
<th></th>
<th>Honest Bias (perceived targets as dishonest)</th>
<th>No Bias (perceived targets moderately)</th>
<th>Dishonest Bias (perceived targets as honest)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior 1</td>
<td>( r = .13a ) ( n = 50 ) ( p &lt; .39 )</td>
<td>( r = .24a ) ( n = 50 ) ( p &lt; .11 )</td>
<td>( r = .23a ) ( n = 53 ) ( p &lt; .11 )</td>
</tr>
<tr>
<td>(Self-reported Dishonest Behaviors)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior 2</td>
<td>( r = .33a ) ( n = 50 ) ( p &lt; .03 )</td>
<td>( r = .06a ) ( n = 50 ) ( p &lt; .69 )</td>
<td>( r = .04a ) ( n = 53 ) ( p &lt; .77 )</td>
</tr>
<tr>
<td>(Cheating on Anagram Test)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Different subscripts indicate significant differences \( (p < .05) \). Comparisons only within rows.

**Table 2.4** -- Correlations between semantic differential scale and self-reported behavior/actual behavior among individuals who showed biased processing and individuals who did not show biased processing on the indirect (vignette) measure.

**Discussion**

Study 1 demonstrated that the indirect attitude measure can be a reliable predictor of behavior when social desirability is a concern, in spite of evidence that the indirect measure was itself sensitive to impression management concerns. The indirect attitude measure was a reliable predictor of both self-reported cheating behavior and actual cheating on an anagram test. Individuals who perceived the vignettes as relatively dishonest tended to perform fewer dishonest behaviors, and cheat less on the anagram test.
test; individuals who perceived the vignettes as relatively honest tended to perform more dishonest behaviors and cheat more on the anagram test. Because the indirect measure worked despite its relationship to impression management, one can assume either that not all the participants controlled their responses, or that there was simply a uniform main effect for impression management that did not destroy the integrity of the measure. Additionally, the relationship between the indirect measure and impression management is consistent with the notion that the indirect measure is not simply an implicit attitude measure, but is actually an indirect measure tapping attitude use in the form of biased processing. Study 1 also showed that the direct attitude measure was a marginal predictor of both self-reported dishonest behavior and actual cheating behavior.

Study 1 also provided mixed support for the notion that indirect measure is not simply tapping attitude strength in the form of biased processing. Regarding self-reported dishonest behavior, two analytic approaches failed to support the attitude strength viewpoint. Neither suggested that the biased processing tapped by the indirect measure moderated the relationship between the direct attitude measure and self-reported behavior. Regarding actual cheating behavior, however, one of two analytic approaches was consistent with the attitude strength viewpoint. There was an interaction between amount of bias and scores on the direct attitude measure, suggesting that individuals who were more biased had stronger attitude-behavior relationships. But, unsupportive of the attitude-strength viewpoint, there were no differences in the attitude-behavior correlations between individuals who showed biased versus non-biased processing.

Thus, Study 1 provides some support for hypotheses 1 and 2. Consistent with hypothesis 1, and the prevailing assumption in the literature, these results suggest that when social desirability is a concern, indirect measures are at least somewhat more effective than direct attitude measures in predicting behavior. Importantly, this finding emerged with both self-reported dishonest behaviors and a single instance of actual
cheating behavior. Supporting hypothesis 2, the direct and indirect attitude measures were unrelated to one another.
CHAPTER 3

STUDY 2

In order to further test hypothesis 2, and to provide an initial test of hypothesis 3, my second study examined attitudes toward religion, a domain in which social desirability was not expected to be a chronic concern — at least among a U.S. college student sample. Again, direct and indirect measures of attitudes were expected to be only modestly related to one another, and indirect measures were hypothesized to explain unique variance in behavior beyond that predicted by direct attitude measures. As a first test of hypothesis 3, Study 2 relied on a self-reported measure of behavior.

Method

Participants

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

Stimulus Materials and Procedure

As in Study 1, the indirect measure consisted of a series of ten short vignettes. Each of the vignettes described an individual expressing slightly conflicting ideals regarding religion. An example of the vignettes used this study can be found at the beginning of the introduction. 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 non-religious.

The vignettes were generated using the same criteria noted in Study 1. As in Study 1, different participants should encode the scenarios in different ways. Because the targets of the scenarios behave in moderately religious ways, their behavior should be discrepant from the beliefs of both those favorable and unfavorable towards religion. Consequently, the behaviors should lie in both pro- and anti-religious 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 non-religious, one can infer that they themselves must be relatively religious (or favorable toward religion), at least with regard to the way they process information. Higher numbers on this measure reflect the belief that the targets are relatively non-religious, and imply that the respondent has a pro-religious bias.

There were two direct attitude measures: a series of semantic differential items (the same as those used in Study 1) measuring attitudes toward “being religious,” and the Religious Attitude Scale (RAS; Poppleton & Pilkington, 1963). In addition to the direct and indirect attitude 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 anti-religious behaviors. Participants indicated whether they had engaged in these behaviors. Anti-religious behaviors were reverse scored, then all the behaviors were summed to form an index ranging from zero to 83.

Participants were asked to complete a packet containing the stimulus materials. The measures were counterbalanced and given to participants in a single packet. All of the materials from Study 2 are in Appendix C.
Results

There were no interactions between any of the attitude measures and the counterbalancing manipulation (all F's ≤ 1.82, n.s.), so all analyses were conducted after collapsing across counterbalancing order.

Means, standard deviations, ranges, and reliability statistics of the variables measured in Study 2 are presented in Table 3.1.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Possible Range</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior (Self-Reported Religious Behaviors)</td>
<td>41.07</td>
<td>8.14</td>
<td>0 to 83</td>
<td>---</td>
</tr>
<tr>
<td>Direct Measure 1 (RAS)</td>
<td>90.45</td>
<td>21.46</td>
<td>40 to 140</td>
<td>.93</td>
</tr>
<tr>
<td>Direct Measure 2 (Semantic Differential)</td>
<td>42.74</td>
<td>10.25</td>
<td>5 to 55</td>
<td>.91</td>
</tr>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>61.06</td>
<td>11.52</td>
<td>12 to 132</td>
<td>.81</td>
</tr>
<tr>
<td>Impression Management</td>
<td>2.44</td>
<td>1.84</td>
<td>0 to 20</td>
<td>.57</td>
</tr>
</tbody>
</table>

Table 3.1 -- Means, standard deviations, possible ranges, and reliability statistics for Study 2 measures.

First, I consider the relationships among self-reported religious behaviors, direct, and indirect attitude measures. The correlation matrix (see Table 3.2) shows, unsurprisingly, that both of the direct attitude measures (RAS and semantic differential)
were highly correlated with self-reported religious behaviors, and with one another. This finding replicates Fishbein & Ajzen (1974). The indirect measure was only weakly related to behavior. Consistent with hypothesis 2, the indirect measure was unrelated to either of the direct attitude measures.

<table>
<thead>
<tr>
<th>Behavior (Self-Reported Religious Behaviors)</th>
<th>Direct Measure 1 (Religious Attitude Scale)</th>
<th>Direct Measure 2 (Semantic Differential)</th>
<th>Indirect Measure (Vignettes)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Measure 1 (Religious Attitude Scale)</td>
<td></td>
<td>.684***</td>
<td></td>
</tr>
<tr>
<td>Direct Measure 2 (Semantic Differential)</td>
<td>.520***</td>
<td>.628***</td>
<td></td>
</tr>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>.161</td>
<td>.029</td>
<td>-.115</td>
</tr>
<tr>
<td>Impression Management</td>
<td>.309**</td>
<td>.229*</td>
<td>.206 †</td>
</tr>
</tbody>
</table>

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

Table 3.2 -- Correlation matrix for measures in Study 2.

---

7 The correlations between self-reported behavior and averaged responses to the individual vignettes ranged from -.03 to .29 (see Appendix A, Table A.2).
With regard to social desirability, Table 3.2 shows that the impression management subscale of the BIDR was significantly related to both religious behaviors and the RAS, and marginally related to the semantic differential. 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. That is, religiosity may not necessarily be related to impression management. Rather, people who perform religious behaviors and hold favorable attitudes toward religion may simply be more likely to engage in idealistically "good" behaviors such as those on the impression management subscale. The indirect measure was unrelated to impression management.

In order to determine whether the indirect attitude measure predicted independent variance in participants' self-reported religious behavior, the direct and indirect attitude measures, and personality variables were entered into a simultaneous multiple regression predicting self-reported behavior. Replicating Fishbein and Ajzen (1974), the RAS was a significant predictor of self-reported religious behavior. The second direct measure, the semantic differential, was only a marginal predictor of self-reported religious behavior once the other direct measure was included. More importantly, the indirect measure was a significant predictor of religious behavior, adding above and beyond both of the direct measures (see Table 3.3). Finally, impression management was still a significant predictor of religious behaviors when it was included in the regression equation along with the attitudinal variables.
DV = Self-Reported Religious Behaviors

<table>
<thead>
<tr>
<th>Variable</th>
<th>Beta</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct Measure 1 (RAS)</td>
<td>0.543</td>
<td>0.000</td>
</tr>
<tr>
<td>Direct Measure 2 (Semantic Differential)</td>
<td>0.171</td>
<td>0.096</td>
</tr>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>0.170</td>
<td>0.036</td>
</tr>
<tr>
<td>Impression Management</td>
<td>0.172</td>
<td>0.037</td>
</tr>
</tbody>
</table>

Table 3.3 -- Regression weights and p values for direct and indirect attitude measures in Study 2.

In order to examine whether the indirect measure was simply a proxy measure of attitude strength, I tested for the presence of interactions between the direct measures and the measure of biased processing. Recall that according to the attitude strength viewpoint, individuals who show more bias should also show a stronger relationship between direct attitude measures and self-reported behavior than individuals who show little or no bias. As in Study 1, a new variable reflecting the amount of bias shown was created by taking the absolute value of respondents’ centered indirect measure scores. Thus, higher numbers reflected greater biased processing. The analysis revealed no direct measure by bias interactions between either the RAS and amount of bias (beta = .075, t = .17, p > .80), or the semantic differential and amount of bias (beta = -.12, t = -.23, p >
.80). These results suggest that the indirect measure was not a proxy measure of attitude strength in this context.

As in study one, I conducted an additional analysis in order to further explore the possibility that the vignette attitude measure was simply a proxy measure of attitude strength. Again, according to the attitude strength viewpoint, individuals who show more bias should also show a stronger relationship between direct attitude measures and self-reported behavior than individuals who show little or no bias. I created a tertiary split on the vignette measure with scores less than 55.25 suggesting an anti-religious bias, scores between 55.25 and 65.25 suggesting no bias, and scores greater than 65.25 suggesting a pro-religious bias. According to my use of this measure, respondents who perceived the targets more as either very religious or not at all religious were more biased than those who perceived the target more moderately. As in Study 1, in order to examine differences in correlations between the direct measure and behavior, I conducted Fisher r-to-Z transformations to test differences between the correlations in bias and no-bias groups. As can be seen in Table 3.4, examining the RAS, one correlation differed significantly from the other two (p < .05). That is, individuals who showed a anti-religious bias (i.e., perceived the targets as very religious) had a weaker attitude-behavior correlation than individuals who showed no bias and individuals who showed a pro-religious bias (i.e., perceived the targets as non-religious). This pattern is clearly incongruent with the attitude strength viewpoint: individuals who showed more bias had a weaker, rather than stronger, attitude-behavior correlation. As can be seen in Table 3.5, examining the semantic differential, the attitude-behavior correlations were the same for people who showed an anti-religious bias, no bias, and a pro-religious. Again, although there are no significant differences among the attitude-behavior correlations, the pattern of results is incongruent with the attitude strength viewpoint.
**Direct Measure: Religious Attitude Scale**

<table>
<thead>
<tr>
<th></th>
<th>Anti-religious Bias</th>
<th>No Bias</th>
<th>Pro-religious Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td>(perceived targets as religious)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior (Self-reported Religious Behaviors)</td>
<td>$r = .35a$</td>
<td>$r = .76b$</td>
<td>$r = .83b$</td>
</tr>
<tr>
<td></td>
<td>$n = 25$</td>
<td>$n = 28$</td>
<td>$n = 27$</td>
</tr>
<tr>
<td></td>
<td>$p &lt; .09$</td>
<td>$p &lt; .01$</td>
<td>$p &lt; .01$</td>
</tr>
</tbody>
</table>

Different subscripts indicate significant differences ($p < .05$). Comparisons only within rows.

**Table 3.4** -- Correlations between RAS and self-reported behavior among individuals who showed biased processing and individuals who did not show biased processing on the indirect (vignette) measure.
**Table 3.5** — Correlations between semantic differential scale and self-reported behavior among individuals who showed biased processing and individuals who did not show biased processing on the indirect (vignette) measure.

**Discussion**

The primary results from Study 2 replicated those of Study 1. That is, the indirect attitude measure was uncorrelated with traditional direct measures, and the indirect measure of attitudes predicted unique variance in behavior beyond that predicted by both direct attitude measures. Individuals who perceived the targets as relatively non-religious tended to engage in more religious behaviors; individuals who perceived the targets as relatively religious tended to engage in fewer religious behaviors. Furthermore, these results emerged despite the fact that both of the direct attitude measures used in Study 2 were strongly correlated with self-reported behavior. Unlike Study 1, the
indirect measure in Study 2 was not correlated with impression management. This is likely due to the different nature of the attitude objects under consideration, as there do not seem to be any social desirability concerns regarding judgments about others' religiosity.

Study 2 also failed to support the attitude strength viewpoint. There were no interactions between amount of biased processing and scores on either of the direct attitude measures. Additionally, there were no consistent patterns among the attitude-behavior correlations for individuals who showed different amounts of bias. Thus, Study 2 provided no evidence that the amount of biased processing moderated the relationship between the direct measures and self-reported behavior.

However, because the RAS, the semantic differential, and the religious behaviors were correlated with impression management, my claim that indirect measures predict unique variance independent of social desirability concerns remains insufficiently examined. In order to bolster my claim that indirect measures of attitudes can predict behavior even when social desirability is not a concern, I sought to extend these findings by examining another domain in which social desirability was not expected to be an important concern.
CHAPTER 4

STUDY 3

In order to further distinguish the ability of indirect measures to predict behavior beyond that predicted by direct measures even when social desirability is not a chronic concern, this study examined attitudes toward politics. Rather than assume no relationship between social desirability and political attitudes, however, I conducted a pretest study. This pretesting (N = 125) revealed no relationship between the subscales of the BIDR and either self-reported liberal/conservative behaviors or direct attitude measures toward political conservatism (all r's < .15, p's > .10). Thus, in Study 3, both self-reported and actual political behaviors were examined to test the hypothesis that indirect measures could predict unique variance in behavior when social desirability is not a chronic concern.

Method

Participants

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

Stimulus Materials and Procedure

The indirect measure mirrored the vignette measure used in Studies 1 and 2. There were six vignettes, each of which described an individual expressing ambiguous statements about current political issues. For example, one vignette read:

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 were asked questions identical in form to those from Study 2, except that these questions centered around the extent to which the target was politically liberal or conservative. Again, the vignettes were designed to allow respondents to contrast them away from their own positions, and were generated using the same criteria noted in Study 1. So, to the extent that participants perceived these behaviors as relatively liberal, one can infer that they themselves must be relatively conservative in their orientation, and vice-versa. Higher numbers on this measure indicate the belief that the targets are relatively liberal, and thereby imply that the respondent shows a conservative processing bias.

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 College Republicans. As in Study 1, this measure is also an imperfect behavioral indicator (Converse, 1975; Judd, Krosnick, & Milburn, 1981), but this imperfection only serves to add error variance, thereby making the behavior more difficult to predict. This measure was coded such that a -1 reflected a request for information from College Democrats, a zero reflected no interest in information at all, and +1 reflected a request for information from College Republicans. The second behavioral measure was a self-report checklist of liberal and conservative behaviors, e.g., plan to vote for Bob Dole in November, 1996. Liberal behaviors were scored as -1, conservative behaviors were scored as +1; all behaviors were summed.

Two direct attitude measures were used: a series of semantic differential items (the same as those used in Studies 1 and 2) measuring attitudes toward "being politically conservative," and a revised version of the Wilson Conservatism Scale (Wilson, 1985).
Endorsement of liberal items was scored -1, endorsement of conservative items was scored +1, and all items were summed.

Participants were asked to complete the stimulus materials. All of the measures were counterbalanced and given to participants in a single packet, with the exception of the opportunity to request additional information from campus political groups, which was always the last page. In order to ensure that participants took this request seriously, a brief cover story was provided. Participants read that because the research was being conducted by a state-funded institution, the experimenters were obliged to offer information from both major political parties. All of the materials from Study 3 are in Appendix D.

Results

There were no interactions between any of the attitude measures and the counterbalancing manipulation (all F's ≤ 1.03, n.s.), so all analyses were conducted after collapsing across counterbalancing order.

Means, standard deviations, ranges, and reliability statistics of the variables measured in Study 3 are presented in Table 4.1.
Table 4.1 -- Means, standard deviations, possible ranges, and reliability statistics for Study 3 measures.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>SD</th>
<th>Possible Range</th>
<th>Alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior 1 (Self-Reported Liberal/</td>
<td>-1.16</td>
<td>6.18</td>
<td>-25 to +25</td>
<td>---</td>
</tr>
<tr>
<td>Conservative Behaviors)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behavior 2 (Request for Information)</td>
<td>0.06</td>
<td>0.50</td>
<td>-1 to +1</td>
<td>---</td>
</tr>
<tr>
<td>Direct Measure 1 (Semantic Differential)</td>
<td>32.41</td>
<td>12.47</td>
<td>5 to 55</td>
<td>.95</td>
</tr>
<tr>
<td>Direct Measure 2 (Conservatism Scale)</td>
<td>-5.98</td>
<td>8.70</td>
<td>-30 to +30</td>
<td>.79</td>
</tr>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>32.31</td>
<td>6.14</td>
<td>6 to 66</td>
<td>.66</td>
</tr>
</tbody>
</table>

The correlation matrix (see Table 4.2) shows that the behavioral measures were correlated with one another. Both of the direct attitude measures were also correlated with self-reported and actual liberal/conservative behaviors. The indirect measure, however, was only related to actual liberal/conservative behavior, and not to self-reported behaviors. Finally, the direct attitude measures were strongly related to one another, and the indirect measure was again not correlated with either of the direct measures.

---

*The correlations between self-reported behavior and averaged responses to the individual vignettes ranged from -0.20 to 0.30. Correlations between requests for information and averaged responses to the individual vignettes ranged from -0.09 to 0.39 (see Appendix A, Table A.3).
<table>
<thead>
<tr>
<th></th>
<th>Behavior 1 (Self-Report Liberal/Conservative Behaviors)</th>
<th>Behavior 2 (Request for Information)</th>
<th>Direct Measure 1 (Semantic Differential)</th>
<th>Direct Measure 2 (Conservatism Scale)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior 2 (Request for Information)</td>
<td>.573***</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Measure 1 (Semantic Differential)</td>
<td>.687***</td>
<td>.449***</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct Measure 2 (Conservatism Scale)</td>
<td>.735***</td>
<td>.414***</td>
<td>.601***</td>
<td></td>
</tr>
<tr>
<td>Indirect Measure (Vignettes)</td>
<td>.143</td>
<td>.268**</td>
<td>.036</td>
<td>.051</td>
</tr>
</tbody>
</table>

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

**Table 4.2** — Correlation matrix for measures in Study 3.

In order to determine whether the indirect measure predicted unique variance in participants' self-reported liberal and conservative behaviors, and requests for information from campus political groups, the direct and indirect variables were entered into two simultaneous multiple regression equations. As can be seen in the top panel of
Table 4.3, both of the direct attitude measures predicted self-reported behavior. The indirect measure was a marginally significant predictor of self-reported behavior. As can be seen in the bottom panel of Table 4.3, 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. Importantly, the indirect measure predicted unique variance in behavior above and beyond both direct measures.
Table 4.3 -- Regression weights and $p$ values for direct and indirect attitude measures in Study 3.

In order to examine whether the indirect measure was simply a proxy measure of attitude strength, I again tested for the presence of interactions between the direct
measures and a measure of biased processing, predicting both self-reported behaviors and requests for information from political groups. As in Studies 1 and 2, a new variable reflecting the amount of bias shown was created by taking the absolute value of respondents' centered indirect measure scores. The analyses revealed no direct measure by bias interactions between either the revised Wilson Conservatism Scale and amount of bias ($\beta = -.06, t = -.47, p > .60$), or the semantic differential and amount of bias ($\beta = -.20, t = -.75, p > .40$) predicting self-reported behavior. Similarly, when predicting actual behavior there was no interaction between the revised Wilson Conservatism Scale and amount of bias ($\beta = .07, t = .35, p > .70$); however, there was a significant interaction (see Figure 4.1) between the semantic differential and amount of bias ($\beta = -.77, t = -2.07, p < .05$). The form of this interaction was contrary to the attitude strength hypothesis, however: the relationship between the direct measure and requests for information was stronger for those individuals who showed less biased processing, compared to those who showed more biased processing. These results further suggest that the indirect measure is not serving as a proxy measure of attitude strength in this context.
In order to further explore whether the vignette attitude measure was simply a proxy measure of attitude strength, I created a tertiary split on the vignette measure with scores less than 28.75 indicating a liberal bias, scores between 28.75 and 34.25 indicating no bias, and scores greater than 34.25 indicating a conservative bias. According to my use of this measure, respondents who perceived the targets as either very conservative or very liberal were more biased than those who perceived the target more moderately. In order to examine differences in correlations between the direct measure and behavior, I conducted Fisher r-to-Z transformations to test differences between the correlations in bias and no-bias groups. Table 4.4 shows the correlations between the semantic
differential measure and self-reported and actual behaviors. As can be seen in the top row of Table 4.4, individuals who showed a liberal bias had a stronger correlation between the direct attitude measure and self-reported behavior than individuals who showed a conservative bias, but individuals who showed no bias did not differ from either of the bias groups. As can be seen in the bottom row of Table 4.4, there were no differences at all among correlations between the direct attitude measure and actual behavior for the bias and no bias groups. Table 4.5 shows the correlations between the Conservatism Scale and self-reported and actual behaviors. As can be seen in the top row of Table 4.5, one significant difference emerged such that individuals who showed a conservative bias had a weaker correlation between the direct attitude measure and self-reported behavior than individuals who showed no bias. As can be seen in the bottom row of Table 4.5, one significant difference emerged such that individuals who showed a liberal bias had a weaker correlation between the direct attitude measure and self-reported behavior than individuals who showed no bias. This result, of course, is opposite to the moderation pattern predicted by an attitude strength analysis. In any case, as in the previous studies, the pattern of correlations between the direct attitude measure and both self-reported and actual behavior is inconsistent with what would be predicted if the vignette measure were tapping attitude strength.
## Direct Measure 1: Semantic Differential

<table>
<thead>
<tr>
<th></th>
<th>Liberal Bias (perceived targets as conservative)</th>
<th>No Bias (perceived targets moderately)</th>
<th>Conservative Bias (perceived targets as liberal)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Behavior 1</strong></td>
<td>( r = .83a ) ( n = 28 ) ( p &lt; .01 )</td>
<td>( r = .66ab ) ( n = 32 ) ( p &lt; .01 )</td>
<td>( r = .57b ) ( n = 33 ) ( p &lt; .01 )</td>
</tr>
<tr>
<td><strong>Behavior 2</strong></td>
<td>( r = .44a ) ( n = 29 ) ( p &lt; .02 )</td>
<td>( r = .67a ) ( n = 32 ) ( p &lt; .01 )</td>
<td>( r = .31a ) ( n = 33 ) ( p &lt; .09 )</td>
</tr>
</tbody>
</table>

Different subscripts indicate significant differences (\( p < .05 \)). Comparisons only within rows.

**Table 4.4** -- Correlations between semantic differential and self-reported behavior/actual behavior among individuals who showed biased processing and individuals who did not show biased processing on the indirect (vignette) measure.
Direct Measure 2: Conservatism Scale

<table>
<thead>
<tr>
<th>Liberal Bias (perceived targets as conservative)</th>
<th>No Bias (perceived targets moderately)</th>
<th>Conservative Bias (perceived targets as liberal)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behavior 1 (Self-reported Conservative Behaviors)</td>
<td>r = .74ab</td>
<td>r = .85b</td>
</tr>
<tr>
<td></td>
<td>n = 28</td>
<td>n = 32</td>
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<tr>
<td></td>
<td>p &lt; .01</td>
<td>p &lt; .01</td>
</tr>
<tr>
<td>Behavior 2 (Request for Information)</td>
<td>r = .29a</td>
<td>r = .69b</td>
</tr>
<tr>
<td></td>
<td>n = 29</td>
<td>n = 32</td>
</tr>
<tr>
<td></td>
<td>p &lt; .13</td>
<td>p &lt; .01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>r = .35ab</td>
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<tr>
<td></td>
<td></td>
<td>n = 33</td>
</tr>
<tr>
<td></td>
<td></td>
<td>p &lt; .05</td>
</tr>
</tbody>
</table>

Different subscripts indicate significant differences (p < .05). Comparisons only within rows.

Table 4.5 — Correlations between conservatism scale and self-reported behavior/actual behavior among individuals who showed biased processing and individuals who did not show biased processing on the indirect (vignette) measure.

Discussion

The results from Study 3 offer stronger support for hypothesis 3 in that they suggest that indirect measures can predict unique variance in a single behavior, beyond that predicted by direct attitude measures, even when social desirability is not an important concern. Individuals who perceived the targets as more liberal tended to request information from college Republicans, and individuals who perceived the targets as more conservative tended to request information from college Democrats. Although
the relationship between the indirect measure and self-reported behaviors that was
observed in Study 2 was only marginally significant in this third study, this study did
demonstrate the ability of indirect measures to predict unique variance in actual behavior.
Taken together, Studies 2 and 3 provide solid support for hypotheses 2 and 3.
Consistent with hypothesis 2, the indirect measure used in both studies was uncorrelated
with direct measures. Consistent with hypothesis 3, the studies demonstrated that
indirect measures can predict unique variance in self-reported behavior and actual
behavior, even in domains in which social desirability is not an important concern. The
fact that the indirect measure reliably predicted a single-act behavioral criterion (in both
Studies 1 and 3) provides further evidence of the utility of such measures. Although it is
highly desirable to be able to predict single behavioral acts from general attitude measures,
such prediction has generally proven difficult because of the reduced correspondence
between the attitude and behavior measures (cf., Ajzen & Fishbein, 1977).

Finally, Study 3 provided mixed evidence that was contrary to the attitude
strength viewpoint. Regarding self-reported behavior, two analytic approaches failed to
support the notion that biased processing moderated the relationship between direct
attitude measures and behavior. Regarding requests for information from political clubs,
one of two analytic approaches was contrary to the attitude-strength viewpoint. There
was an interaction between amount of bias and scores on the direct attitude measure,
suggesting that individuals who were more biased had weaker attitude-behavior
relationships. Further unsupportive of the attitude-strength viewpoint, there was no
consistent pattern of differences in the attitude-behavior correlations between individuals
who showed biased versus non-biased processing.
CHAPTER 5

GENERAL DISCUSSION

In the 75 years since Thurstone declared that attitudes can be measured, a number of methods for doing so have been developed. Most of these methods have relied on direct self-report measures and have assessed individuals' evaluative feelings, beliefs, and thoughts about attitude objects. Indirect attitude measures have typically been seen as secondary measures, to be used only when direct measures might be suspect such as when social desirability concerns are apparent and people might attempt to conceal their true attitudes on direct measures. The historical indirect measures reviewed in the introduction were developed for this purpose, and more contemporary indirect measures have also been developed for this purpose. Based on the existing literature, then, one might recommend that researchers include indirect attitude measures only when trying to predict a sensitive behavior (e.g., cheating, racial prejudice) but would not recommend that researchers include indirect measures in order to aid prediction of more mundane behaviors (e.g., simply requesting information from one of the major political parties). The present research suggests that this widely accepted assumption is likely to be incorrect. That is, the current research demonstrates that indirect attitude measures might be of much wider utility in predicting behavior and can yield information beyond that provided by direct attitude measures even when social desirability is a not concern. I believe that indirect attitude measures, such as the ones used in this study, are effective
beyond direct measures because they tap attitude use in the form of biased information processing rather than just the evaluative content typically assessed by direct measures.

In this paper, I have provided evidence that indirect attitude measures assessing information processing biases can be fruitfully applied to improve the prediction of behavior. As can be seen in Table 5.1, across three studies in three different attitude domains, I have demonstrated three main points: (1) indirect measures of attitudes are particularly useful at predicting behavior when social desirability is a concern, and direct measures add little to the prediction of behavior in such situations (this point of view was assumed, but was not empirically tested, in the classic early studies on indirect measurement), (2) direct and indirect measures of attitudes are only weakly related to each other (indeed, the indirect measure was almost completely unrelated to the direct attitude measures in all three studies); (3) indirect measures predict unique variance in behavior beyond that predicted by direct measures, independent of whether social desirability is a concern. Additionally, I have provided evidence that indirect measures tapping biased information processing need not be proxy measures of attitude strength. Thus, these studies begin to show ways in which indirect measures of attitudes can augment direct measures of attitudes in behavioral prediction.

**Implications**

Our working assumption is that indirect measures are capable of adding to the prediction of behavior because they assess something that direct measures do not — attitudinal biases in information processing. That is, I propose that indirect measures are often dissociated from direct measures because direct measures tap the evaluative content of people's attitudes, whereas the indirect measures tap the processes in which they engage (von Hippel, Sekaquaptewa, & Vargas, 1995). Furthermore, attitudes can contain

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9 Here I refer specifically to indirect measures that rely on biases in information processing. Other types of indirect measures could be more highly correlated with direct measures and might not predict variance in behavior above and beyond direct measures.
important processing components that are not assessed by direct measures, and thus the ability to predict behavior will be enhanced to the extent that researchers supplement direct attitude assessments with indirect measures that tap cognitive processes.

One could then go one step further in this analysis, and propose that measures of attitudes that assess cognitive processes might often be considered procedural measures of attitudes, as they might tap habitual responses to attitude-relevant information. Such a possibility is consistent with many prior conceptions of the attitude construct, in which the notions of habitual responses and attitudes are often intermixed. Indeed, the classic definitions of attitude by Allport, Campbell, and Krech and Crutchfield support just such a notion. These early definitions of attitude implied a pervasive biasing component to the attitude construct. Thus, it seems possible that biased processing of attitude-relevant information can become proceduralized when the attitude is habitually used at encoding. Attitudes that have been initially learned and stored as declarative knowledge may thereby develop into different mental representations with use (Anderson, 1982; Smith, 1994). That is, the tendency to use attitudes when evaluating information and objects can be stored as a set of procedures, rather than as declarative knowledge, and the tendency to process information in a biased fashion can presumably become habitual and automatized. Just as different techniques have been developed to assess the cognitive, affective, and behavioral components of attitudes (e.g., Breckler, 1984; Crites, Fabrigar, & Petty, 1994), development of techniques to assess the processing component of attitudes could prove highly beneficial. Although the “vignette” measure was useful in the current research, other indirect procedural measures could prove to be even more powerful.

After all, the biasing component of attitudes need not be limited to a single type of bias. Because there are a variety of cognitive biases at people’s disposal, it is likely that the specific bias shown will be determined by an interaction between the observer and the nature of the information observed. A particular individual might be more prone to one
type of bias than another, and an attitude object that is likely to elicit bias from a particular person could elicit any number of different biases depending on how the attitude object is represented. For example, a written argument in favor of conservative politics might elicit contrast effects; whereas the observation of a known conservative individual behaving in an unambiguously liberal manner might elicit an attributional bias. Thus, the construct with which I am concerned is likely to be represented as a family of information processing biases associated with an attitude object. This approach suggests that we might add to our understanding of attitudes by considering not only the evaluative content associated with an attitude object, but also the variety of ways that people process information about the attitude object. According to this logic, a number of indirect attitude measures might be fruitfully tested, each assessing different biases. Some biases might prove to be more useful in predicting behavior than others. Additionally, it remains to be seen whether some individuals are more likely to show biases than others, or whether some individuals are more likely to show one type of bias over another.

A final consideration is the extent to which indirect attitude measures are reactive. In Study 1, the indirect bias measure was significantly correlated with impression management scores, suggesting that the measure was somewhat susceptible to social desirability pressures. It is worth keeping in mind, however, that one could develop different bias measures of attitudes that have varying degrees of subtlety. Thus, it is possible that some bias measures might be less reactive than others. Developing truly implicit bias measures could prove useful in assessing other socially undesirable attitudes, such as those concerning prejudice and sexism (see von Hippel, Sekaquaptewa, & Vargas, in press).

Conclusions

In combination with previous research, the data from the current studies emphasize that we not only have attitudes, we also use them. The current research
suggests that people who use their favorable and unfavorable predispositions to guide their thinking are more likely to engage in overt behavior toward the attitude object that is consistent with the way they think about the object. Thus, in addition to assessing what individuals' attitudes are, we should also consider how people use their attitudes. Indirect attitude measures reflect one way that attitudes are used — attitudes tend to bias the way people process information. The assessment of biased processing via indirect attitude measures enhances our ability to predict behavior, and thus indirect attitude measures might be removed from their second class status in the field. Because the attitude construct gains utility as a function of the strength of the relationship between attitudes and behavior, the inclusion of processing biases as an active area of attitudinal research seems to have considerable potential to increase the utility and scope of the attitude construct.

Most fundamentally, the notion that attitudes contain an important processing component shifts the conceptualization of attitudes away from a static collection of feelings and beliefs toward a set of active processing strategies or styles that can and should be assessed. The point of this approach to the psychology of attitudes is that rather than measuring attitudes solely in terms of evaluative content, it might be profitable to measure them in terms of a complex inter-relationship between processes, proclivities, and content. In so doing, the processing approach to attitudes emphasizes that how we think can be just as important as what we think.
Bibliography


APPENDIX A

CORRELATIONS BETWEEN DEPENDENT MEASURES
AND INDIVIDUAL VIGNETTES

<table>
<thead>
<tr>
<th></th>
<th>Charles</th>
<th>Jonathan</th>
<th>David</th>
<th>Colleen</th>
<th>John</th>
<th>Joel</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Reported Dishonest Behavior</td>
<td>$r = .10$</td>
<td>$r = .05$</td>
<td>$r = .34$</td>
<td>$r = .12$</td>
<td>$r = .31$</td>
<td>$r = .14$</td>
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<tr>
<td></td>
<td>$p = .23$</td>
<td>$p = .50$</td>
<td>$p = .00$</td>
<td>$p = .14$</td>
<td>$p = .00$</td>
<td>$p = .08$</td>
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<tr>
<td>Cheating on Anagrams</td>
<td>$r = .16$</td>
<td>$r = .07$</td>
<td>$r = .14$</td>
<td>$r = .12$</td>
<td>$r = .18$</td>
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<td>$p = .37$</td>
<td>$p = .08$</td>
<td>$p = .15$</td>
<td>$p = .02$</td>
<td>$p = .28$</td>
</tr>
</tbody>
</table>

*Table A.1* -- Correlations between behaviors and individual vignettes for Study 1.
<table>
<thead>
<tr>
<th></th>
<th>Cindy</th>
<th>Karen</th>
<th>Mary</th>
<th>Matt</th>
<th>Liz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Reported Religious Behavior</td>
<td>( r = .17 )</td>
<td>( r = .03 )</td>
<td>( r = .14 )</td>
<td>( r = .06 )</td>
<td>( r = - .01 )</td>
</tr>
<tr>
<td>Religious Behavior</td>
<td>( \rho = .14 )</td>
<td>( \rho = .79 )</td>
<td>( \rho = .20 )</td>
<td>( \rho = .60 )</td>
<td>( \rho = .94 )</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>Kevin</th>
<th>John</th>
<th>Paul</th>
<th>Beth</th>
<th>Thomas</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-Reported Religious Behavior</td>
<td>( r = .12 )</td>
<td>( r = .29 )</td>
<td>( r = -.03 )</td>
<td>( r = .12 )</td>
<td>( r = .11 )</td>
</tr>
<tr>
<td>Religious Behavior</td>
<td>( \rho = .29 )</td>
<td>( \rho = .01 )</td>
<td>( \rho = .77 )</td>
<td>( \rho = .30 )</td>
<td>( \rho = .35 )</td>
</tr>
</tbody>
</table>

**Table A.2** -- Correlations between behaviors and individual vignettes for Study 2.
<table>
<thead>
<tr>
<th></th>
<th>Joanne</th>
<th>Johnny</th>
<th>Sarah</th>
<th>James</th>
<th>Tara</th>
<th>Tom</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Self-Reported</strong></td>
<td>( r = .13 )</td>
<td>( r = -.12 )</td>
<td>( r = .30 )</td>
<td>( r = .20 )</td>
<td>( r = -.20 )</td>
<td>( r = .05 )</td>
</tr>
<tr>
<td><strong>Liberal/Conservative</strong></td>
<td>( \rho = .22 )</td>
<td>( \rho = .24 )</td>
<td>( \rho = .00 )</td>
<td>( \rho = .05 )</td>
<td>( \rho = .05 )</td>
<td>( \rho = .63 )</td>
</tr>
</tbody>
</table>

|                          | \( r = .07 \) | \( r = -.00 \) | \( r = .30 \) | \( r = .39 \) | \( r = -.09 \) | \( r = .07 \) |
| **Request for Information** | \( \rho = .52 \) | \( \rho = .97 \) | \( \rho = .00 \) | \( \rho = .00 \) | \( \rho = .40 \) | \( \rho = .53 \) |

*Table A.3* -- Correlations between behaviors and individual vignettes for Study 3.
APPENDIX B

MATERIALS FROM STUDY 1

The first portion of the study is timed:

you will have 15 minutes to unscramble a series of words.

When you are finished unscrambling the words, please score
your own performance using the answer key on the second page.

If you unscramble all the words before the 15 minutes is up,
you are free to continue on with the rest of the materials.

If you do finish before 15 minutes is up,
hand in the first packet to the experimenter
who will give you the next series of questions.

The second portion of the study will proceed at your own pace.

When you are finished with the second part
you may turn in the packet and leave.
Anagram Test

Some people can solve anagrams very quickly, and others take much more time to solve them. Spend up to 15 minutes trying to solve the following anagrams. When you are finished, check to be sure your answers are correct using the answer key on the next page.

time begun __________

<table>
<thead>
<tr>
<th>anagram</th>
<th>your answer</th>
<th>check if correct, X if wrong</th>
</tr>
</thead>
<tbody>
<tr>
<td>dolrw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>recsnapa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nixequo</td>
<td></td>
<td></td>
</tr>
<tr>
<td>athiscars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ecbiaanm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>gnimimtyana</td>
<td></td>
<td></td>
</tr>
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<td>gliebapaam</td>
<td></td>
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</tr>
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<td>rkaihscb</td>
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<td></td>
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<td></td>
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<td>pghaootrayp</td>
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<tr>
<td>uioettms</td>
<td></td>
<td></td>
</tr>
<tr>
<td>tervbus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ewlhp</td>
<td></td>
<td></td>
</tr>
<tr>
<td>edyigirl</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

time finished __________
Answer key:

world
pancreas
equinox
catharsis
ambiance
magnanimity
pleabargain
brackish
smoulder
palindrome
topography	
titmouse
subvert
whelp
yielding
This packet contains a series of questionnaires.
Many of the questions may seem similar to one another,
but it is important that you respond to
each of the questions carefully.
Please place a check-mark next to each statement that you have performed. If you have never performed the behavior leave the space blank.

______ I have looked at the exam of the person next to me
______ I have stolen something worth less than $1.00 from the store
______ I have stolen something worth between $1.00 and $5.00 from the store
______ I have stolen something worth between $5.00 and $10.00 from the store
______ I have stolen something worth more than $10.00 from the store
______ I have copied portions of books into my own essays or papers without citation
______ I have asked a friend for an answer during an exam
______ I have looked at someone’s notes or textbook during a closed-book exam
______ I have used a cheat-sheet during an exam
______ I have lied to my parents about smoking
______ I have lied to my parents about drinking
______ I have told a lie to get out of trouble
______ I have lied to a stranger
______ I have lied to the police
______ I have used a fake ID to get into a bar
______ I have stolen something from high school
______ I have lied to a teacher
______ I have sneaked out of my house after curfew
______ I have turned in work that was not my own
______ I have mis-reported earnings on my income tax
______ I have stolen something from work
______ I have bought something I knew was stolen
______ I have accepted a bribe

72
I have failed to report damage I've done accidentally to a parked car
I have forged a check
I have habitually failed to keep promises
I have testified falsely in court under oath
I have driven an automobile while drunk but without accident
I have reported a higher grade than I earned when allowed to score my own paper
I have kept over-change given by a clerk in mistake
I have cheated in a game of cards
I have lied to my girlfriend/boyfriend
I have tried to sell a car for more than it was worth
I have stolen food from a restaurant where I worked
I have cheated on a boyfriend/girlfriend
I have called in sick to work when I was really healthy
I have spent part of a school loan on items or activities unrelated to school
I have made a fraudulent insurance claim
I have sold my student football/basketball tickets
I have lied to get a date
I have eaten at a restaurant and left without paying
I have forged a note to excuse an absence from school
I have broken store merchandise and returned it to the shelf without reporting it
I have hidden answers to an exam in the bathroom
I have continued working after time was called on an exam
Attitude Toward Being Dishonest

Please use the scales below to rate your feelings about "being dishonest."

1 2 3 4 5 6 7 8 9 10 11

good

1 2 3 4 5 6 7 8 9 10 11

harmful

1 2 3 4 5 6 7 8 9 10 11

wise

1 2 3 4 5 6 7 8 9 10 11

pleasant

1 2 3 4 5 6 7 8 9 10 11

sick
Please read the following brief scenes, and then answer the questions that follow them.

Charles and his colleague, Warren, were both up for the same promotion at work. They had both joined the company in 1990 and were equally qualified for the promotion. During the past week, Charles and Warren were working on two separate but similar projects. One afternoon Charles watched Warren leave his desk for lunch. Charles stayed behind to work through lunch, declining an invitation to go with Warren and some others. When most of the office was at lunch, Charles walked over to Warren's desk and read through the project that Warren had been working on.

How dishonest was the behavior Charles performed?

1 2 3 4 5 6 7 8 9 10 11
not at all dishonest

extremely dishonest

How dishonest do you think Charles is, in general?

1 2 3 4 5 6 7 8 9 10 11
not at all dishonest

extremely dishonest

Out of 100 people, how many would do what Charles did in that situation?

__________
Jonathan had been involved in competitive bicycle racing for three and one half years. Thanks to many hours of training, he had improved steadily over the years and was a well-respected racer. He finished in the top five in three different races this year. In his last race he was ten miles from the finish, riding near only one other rider. The other rider was riding directly behind Jonathan's rear wheel, using Jonathan to help break the wind. In the last three races this particular rider had always finished ahead of Jonathan. Jonathan noticed a pothole in the road about 30 yards ahead. He waited until the last minute and then swerved to avoid the pothole. The other cyclist couldn't see the pothole in time to swerve around it and crashed.

How dishonest was the behavior Jonathan performed?

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
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<th>5</th>
<th>6</th>
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<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
</tr>
</thead>
<tbody>
<tr>
<td>not at all dishonest</td>
<td>extremely dishonest</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

How dishonest do you think Jonathan is, in general?

<table>
<thead>
<tr>
<th>1</th>
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<th>4</th>
<th>5</th>
<th>6</th>
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<th>11</th>
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</thead>
<tbody>
<tr>
<td>not at all dishonest</td>
<td>extremely dishonest</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tbody>
</table>

Out of 100 people, how many would do what Jonathan did in that situation?
David had just moved into a new apartment. David had always had a big crush on Irma, who happened to also move in to an apartment directly across the street from him. David noticed, after the first week of living in the new apartment, that it afforded an excellent view into Irma’s bedroom. David also noticed that Irma had a very rigid schedule. Every night Irma would get undressed for bed at 10:00pm. David took advantage of this to watch Irma get undressed every night.

How dishonest was the behavior David performed?

1 2 3 4 5 6 7 8 9 10 11
not at all extremely dishonest
dishonest

How dishonest do you think David is, in general?

1 2 3 4 5 6 7 8 9 10 11
not at all extremely dishonest
dishonest

Out of 100 people, how many would do what David did in that situation?

__________
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.

How dishonest was the behavior Colleen performed?

1  2  3  4  5  6  7  8  9  10  11
not at all dishonest
extremely dishonest

How dishonest do you think Colleen is, in general?

1  2  3  4  5  6  7  8  9  10  11
not at all dishonest
extremely dishonest

Out of 100 people, how many would do what Colleen did in that situation?


Joel had just started looking over the final exam for his physics class when he realized that he really needed to go to the bathroom. It looked like a really tough exam and Joel had already seen a few questions for which he didn't think he was going to be able to remember the answers. He couldn't hold out until the exam was over to go to the bathroom, so he got up and left the room. When he made it to the bathroom he remembered that he had left his study sheets in his back pocket. Those sheets, he knew, had some of the answers that he was going to need for the exam. Joel took out the sheets before he left the bathroom and made sure he would be able to remember some of the answers for the difficult questions he had already seen.

How dishonest was the behavior Joel performed?

1  2  3  4  5  6  7  8  9  10  11
not at all dishonest

How dishonest do you think Joel is, in general?

1  2  3  4  5  6  7  8  9  10  11
not at all dishonest

Out of 100 people, how many would do what Joel did in that situation?

79
John was walking South on High Street towards his friend's house around 5:30 pm. John and his friend had planned on going out to see a movie that evening. The movie started at 7:00 but John was headed over to his friend's house early just to hang out and talk a bit before they left. As John was passing by the record store he saw a ten dollar bill fall out of another pedestrian's pocket. No one else appeared to see the money fall out to the ground, and John was only a few feet behind the other person when the money fell. John picked up the money, put it in his pocket, and continued to his friend's house without saying anything to the person who dropped the money.

How dishonest was the behavior John performed?

1  2  3  4  5  6  7  8  9  10  11
not at all dishonest
extremely dishonest

How dishonest do you think John is, in general?

1  2  3  4  5  6  7  8  9  10  11
not at all dishonest
extremely dishonest

Out of 100 people, how many would do what John did in that situation?

__________
Using the scale below as a guide, next to each statement write a number to indicate how much you agree with it.

1  2  3  4  5  6  7
1   2   3   4   5   6   7
NOT AT ALL  SOMEWHAT  VERY
TRUE        TRUE      TRUE

____ My first impressions of people usually turn out to be right.
____ It would be hard for me to break any of my bad habits.
____ I don't care to know what other people really think of me.
____ I have not always been honest with myself.
____ I always know why I like things.
____ When my emotions are aroused, they bias my thinking.
____ Once I've made up my mind, other people can seldom change my opinion.
____ I am not a safe driver when I exceed the speed limit.
____ I am fully in control of my own fate.
____ It's hard for me to shut off a disturbing thought.
____ I never regret my decisions.
____ I sometimes lose out on things because I can't make up my mind soon enough.
____ The reason I vote is that my vote can make a difference.
____ My parents were not always fair when they punished me.
____ I am a completely rational person.
____ I rarely appreciate criticism.
____ I am very confident of my judgments.
____ I have sometimes doubted my ability as a lover.
____ It's all right with me if some people happen to dislike me.
____ I don't always know the reasons why I do the things I do.
____ I sometimes tell lies if I have to.
____ I never cover up my mistakes.
____ There have been occasions when I have taken advantage of someone.
____ I never swear.
____ I sometimes try to get even rather than forgive and forget.
____ I always obey laws, even if I'm unlikely to get caught.
____ I have said something bad about a friend behind his or her back.
____ When I hear people talking privately, I avoid listening.

81
I have received too much change from a salesperson without telling him or her.
I always declare everything at customs.
When I was young, I sometimes stole things.
I have never dropped litter on the street.
I sometimes drive faster than the speed limit.
I have never read sexy books or magazines.
I have done things that I don't tell other people about.
I never take things that don't belong to me.
I have taken sick-leave from work or school even though I wasn't really sick.
I have never damaged a library book or store merchandise without reporting it.
I have some pretty awful habits.
I don't gossip about other people's business.
Demographic Sheet

Age: __________

Gender: __________

Major: __________

Race: __________

High School GPA: __________

College GPA: __________

SAT Verbal Score: __________

SAT Math Score: __________

ACT Combined Score: __________
APPENDIX C

MATERIALS FROM STUDY 2

Please make a check-mark next to each statement which you, personally, have performed

1. ______ refuse to read books by atheist writers (e.g. John Irving)
2. ______ own a bible
3. ______ use the expression "Jesus Christ"
4. ______ refuse to go shopping on the Sabbath
5. ______ donate blood to the Red Cross
6. ______ take a non-credit religious course
7. ______ pray before or after meals
8. ______ refuse to work on the Sabbath
9. ______ refuse to buy the product of a company that sponsors a religious television program
10. ______ discuss religion with friends
11. ______ watch a religious television program
12. ______ distribute religious literature in the local community
13. ______ saying "God bless you" after someone sneezes
14. ______ pray for an end to war
15. ______ own recordings of religious music
16. ______ work on the Sabbath
17. ______ refuse to convert to another religion
18. ______ state a religious preference during University registration
19. ______ refuse to attend a church or synagogue
20. ______ watch Billy Graham's religious crusade on television
21. ______ attend a memorial service in a church or synagogue
22. ______ refuse to play cards for money
23. ______ take a religious course for credit
24. ______ attend non-religious wedding ceremonies
25. ______ read Playboy magazine
26. ______ listen to religious programs on the radio
27. ______ go shopping on the Sabbath
28. ______ refuse to attend classes on a religious holiday
29. ______ subscribe to a religious newspaper or magazine
30. ______ refuse to discuss religion with parents
31. ______ deliberately step on ants
32. ______ buy a product of a company that sponsors a religious television program
33. ______ pray for success before an examination
34. ______ refuse to drink liquor on the Sabbath
35. ______ participate in discussions at religious foundations (e.g., YMCA, Hillel, etc.)
36. ______ refuse to attend a religious service of a religion other than one's own
37. ______ consult a priest, minister, or a rabbi on personal problems
38. ______ kill bothersome flies
39. ______ donate money to a religious institution
40. ______ refuse to spend an evening at a club sponsored by a religious foundation
41. ______ refuse to attend a dance sponsored by a religious organization
42. ______ read books about religious philosophy
43. ______ refuse to attend a church or synagogue wedding
44. ______ attend a lecture sponsored by a religious organization
45. ______ drink liquor on the Sabbath
46. ______ cheat on an examination
47. ______ refuse to attend non-religious wedding ceremonies
48. ______ discuss religion with parents
49. ______ date a person against one's parents' wishes
50. ______ distribute religious literature on campus
51. ______ refuse to have a Crucifix or Mezuzah in one's local residence
52. ______ refuse to attend a memorial service in a church or synagogue
53. ______ have lunch at a cafeteria in a religious foundation
54. ______ spend an evening at a club sponsored by a religious foundation
55. ______ use the expression "for God's sake"
56. ______ send Christmas cards to friends
57. ______ attend a church or synagogue wedding
58. ______ try to convert others to faith in God
59. ______ read the bible in one's free time
60. ______ attend church or synagogue at least once a week
61. ______ know the first name of a minister, priest, or rabbi
62. ______ have a Christmas tree or a Menorah in one's local residence
63. ______ pray in private outside of church or synagogue
64. ______ refuse to donate money to a religious institution
65. ______ try to persuade others to attend church or synagogue on a religious holiday
66. ______ refuse to participate in discussions at religious foundations
67. ______ attend church or synagogue at least once a month
68. ______ refuse to pray before or after meals
69. ______ refuse to consult a minister, priest, or rabbi on personal problems
70. ______ donate used clothes to the Salvation Army
71. ______ convert to another religion
72. ______ have a Crucifix or Mezuzah in one's local residence
73. ______ go out into the local community to raise money for a religious organization
74. ______ attend a dance sponsored by a religious organization
75. ______ attend religious services of religions other than one's own
76. ______ read books about the history of religion
77. ______ read books by atheist writers (e.g., John Irving)
78. ______ refuse to discuss religion with friends
79. ______ attend classes on a religious holiday
80. ______ refuse to have a Christmas tree or Menorah in one's local residence
81. ______ refuse to attend a lecture sponsored by a religious organization
82. ______ refuse to state a religious preference during University registration
83. ______ refuse to have lunch at a cafeteria in a religious foundation
**Attitude Toward Being Religious**

Please use the scales below to rate your feelings about "being religious."

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
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<tbody>
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</tbody>
</table>
Religious Attitude Scale

Below are 21 statements which concern religious beliefs. Please indicate the extent to which you agree or disagree with each of them. Circle the response which best represents your opinion. For example:

More time in broadcasting should be allotted to agnostic speakers.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

Please do not leave out any statements even if you find it difficult to make up your mind.

1. To lead a good life it is necessary to have some religious belief.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

2. Jesus Christ was an important and interesting historical figure, but in no way divine.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

3. I genuinely do not know whether or not God exists.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

4. People without religious beliefs can lead just as moral and useful lives as people with religious beliefs.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree

5. Religious faith is merely another name for belief which is contrary to reason.

Strongly Disagree  Disagree  Uncertain  Agree  Strongly Agree
6. The existence of disease, famine, and strife in the world makes one doubt some religious doctrines.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

7. The miracles recorded in the Bible really happened.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

8. It makes no difference to me whether religious beliefs are true or false.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

9. Christ atoned for our sins by His sacrifice on the cross.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

10. The truth of the Bible diminishes with the advance of science.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

11. Without belief in God life is meaningless.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

12. The more scientific discoveries are made the more the glory of God is revealed.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

13. Religious education is essential to preserve the morals of our society.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

89
14. The proof that Christ was the Son of God lies in the record of the Gospels.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

15. The best explanation of miracles is as an exaggeration of ordinary events into myths and legends.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

16. International peace depends on the world-wide adoption of religion.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

17. If you lead a good and decent life it is not necessary to go to church.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

18. Parents have a duty to teach elementary Christian truths to their children.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
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</thead>
</table>

19. There is no survival of any kind after death.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

20. The psychiatrist rather than the theologian can best explain the phenomena of religious experience.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>

21. On the whole, religious beliefs make for better and happier living.

<table>
<thead>
<tr>
<th>Strongly Disagree</th>
<th>Disagree</th>
<th>Uncertain</th>
<th>Agree</th>
<th>Strongly Agree</th>
</tr>
</thead>
</table>
Please read the following brief scenes, and then answer the questions that follow them.

Cindy and her friend were having a conversation about religious beliefs. Cindy said to her friend, "I think that prayer should be important in people's lives. I don't think a person should have to go to church or other stuff to be religious. As long as someone has a faith in some higher power they are religious."

How religious do you think Cindy's behaviors are?

1  2  3  4  5  6  7  8  9  10  11
not at all religious

How religious do you think Cindy is, in general?

1  2  3  4  5  6  7  8  9  10  11
not at all religious
Karen was talking to her Aunt yesterday and said, "I don't really consider myself a religious person. Well, I go to church regularly and participate in church-related activities every now and then; but that's about all."

How religious do you think Karen's behaviors are?

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<tbody>
<tr>
<td></td>
<td>not at all</td>
<td>religious</td>
<td>extremely</td>
<td>religious</td>
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How religious do you think Karen is, in general?

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</table>
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.

How religious do you think Mary's behaviors are?

1 2 3 4 5 6 7 8 9 10 11
not at all religious
extremely religious

How religious do you think Mary is, in general?

1 2 3 4 5 6 7 8 9 10 11
not at all religious
extremely religious
Matt made an effort to attend church services regularly, but things seemed to keep getting in his way. It seemed like he could never make enough time to do all of the things he wanted to do. Last week, when he was in church, Matt got up and left in the middle of services.

How religious do you think Matt's behaviors are?

1  2  3  4  5  6  7  8  9  10  11
not at all religious

How religious do you think Matt is, in general?

1  2  3  4  5  6  7  8  9  10  11
not at all religious

extremely religious
Liz needed a job for the summer, but she wasn't having any luck at all finding one. She had applied to be a waitress all over town and hadn't received one call about her applications. One day she was passing a religious bookstore downtown that had a sign in the window: Help Wanted. She walked in and applied for the job.

How religious do you think Liz's behaviors are?

1 2 3 4 5 6 7 8 9 10 11
not at all religious

How religious do you think Liz is, in general?

1 2 3 4 5 6 7 8 9 10 11
not at all religious
Kevin really enjoyed going out with his friends and drinking a few beers. It wasn’t unusual, when Kevin and his friends got together, that things got out of hand. Occasionally, Kevin would wake up with a terrible hangover and be incapacitated for several hours. But Kevin also attended church services regularly. One day he had a particularly bad hangover but still got up and went to church on time.

How religious do you think Kevin’s behaviors are?

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<tbody>
<tr>
<td>not at all religious</td>
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<td></td>
<td></td>
<td>extremely religious</td>
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</table>

How religious do you think Kevin is, in general?

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<td></td>
<td></td>
<td></td>
<td>extremely religious</td>
</tr>
</tbody>
</table>
John and Andrew had been dating one another exclusively for three years. They had recently moved into an apartment together and were getting along very well. One afternoon a neighbor had approached them and asked them about their relationship. The neighbor thought that John and Andrew's relationship was unnatural and immoral. John said, in response, "We're not bad people, just different. Why, I still take time out every day to pray to God."

How religious do you think John's behaviors are?

1 2 3 4 5 6 7 8 9 10 11
not at all religious extremely religious

How religious do you think John is, in general?

1 2 3 4 5 6 7 8 9 10 11
not at all religious extremely religious
A few of Paul's friends thought that Paul was a lazy bum. It was true that he rarely went to class, didn't have a job, and sometimes had to ask his friends for money, but he didn't consider himself a bum. One day he was lying around the house doing nothing in particular when he decided to go get a cup of coffee. While he was out, he started talking to a woman nearby about his faith in God and how important it was to him.

How religious do you think Paul's behaviors are?

1 2 3 4 5 6 7 8 9 10 11
not at all religious extremely religious

How religious do you think Paul is, in general?

1 2 3 4 5 6 7 8 9 10 11
not at all religious extremely religious

98
Beth was always friendly, but never seemed to really care too much about her friends. She would always smile and say hi to everyone, but couldn't be counted on to help out her friends when they were in trouble or needed help. At the same time, however, she would get very upset when her friends refused to help her out. It was true that she rarely asked for help, but people still were reluctant to help her. She had many friends at her church and often spent some of her free time during the weekends attending church services, reflecting in prayer.

How religious do you think Beth's behaviors are?

1  2  3  4  5  6  7  8  9  10  11
not at all religious extremely religious

How religious do you think Beth is, in general?

1  2  3  4  5  6  7  8  9  10  11
not at all religious extremely religious
Thomas didn't want to go home for the weekend and help his parents with some chores around the house, like he had promised them he would. Instead, he wanted to go camping with some friends of his. He called his parents and told them that he had too much homework to do and wouldn't be able to go home that weekend. He went camping with his friends that weekend and on Sunday morning he convinced all his friends to go to church before they headed back to school.

How religious do you think Thomas's behaviors are?

1 2 3 4 5 6 7 8 9 10 11
not at all religious

How religious do you think Thomas is, in general?

1 2 3 4 5 6 7 8 9 10 11
not at all religious

100
Using the scale below as a guide, for each statement write a number in the blank to the left to indicate how much you agree with it.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT TRUE</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
<td>VERY TRUE</td>
</tr>
</tbody>
</table>

1. My first impressions of people usually turn out to be right.
2. It would be hard for me to break any of my bad habits.
3. I don't care to know what other people really think of me.
4. I have not always been honest with myself.
5. I always know why I like things.
6. When my emotions are aroused, they bias my thinking.
7. Once I've made up my mind, other people can seldom change my opinion.
8. I am not a safe driver when I exceed the speed limit.
9. I am fully in control of my own fate.
10. It's hard for me to shut of a disturbing thought.
11. I never regret my decisions.
12. I sometimes lose out on things because I can't make up my mind soon enough.
13. The reason I vote is that my vote can make a difference.
14. My parents were not always fair when they punished me.
15. I am a completely rational person.
16. I rarely appreciate criticism.
17. I am very confident of my judgments.
18. I have sometimes doubted my ability as a lover.
19. It's all right with me if some people happen to dislike me.
20. I don't always know the reasons why I do the things I do.
21. I sometimes tell lies if I have to.
22. I never cover up my mistakes.
23. There have been occasions when I have taken advantage of someone.
24. I never swear.
25. I sometimes try to get even rather than forgive and forget.
26. I always obey laws, even if I'm unlikely to get caught.
27. I have said something bad about a friend behind his or her back.
28. When I hear people talking privately, I avoid listening.
29. I have received too much change from a salesperson without telling him or her.
30. I always declare everything at customs.
31. When I was young, I sometimes stole things.
32. I have never dropped litter on the street.
33. I sometimes drive faster than the speed limit.
34. I have never read sexy books or magazines.
35. I have done things that I don't tell other people about.
36. I never take things that don't belong to me.
37. I have taken sick-leave from work or school even though I wasn't really sick.
38. I have never damaged a library book or store merchandise without reporting it.
39. I have some pretty awful habits.
40. I don't gossip about other people's business.
APPENDIX D
MATERIALS FROM STUDY 3

Please make a check-mark next to each statement which you, personally, have performed.

1. _______ donate money to a panhandler/homeless person
2. _______ participate in Earth Day activities
3. _______ read the Columbus Dispatch
4. _______ voted (or would have voted) for George Bush in 1992 election
5. _______ planning to vote for Bob Dole in 1996 election
6. _______ vote for Democratic representative in congress
7. _______ vote for Republican representative in congress
8. _______ watch Rush Limbaugh on TV (how often)... 
9. _______ listen to Rush Limbaugh on the radio
10. _______ read Newsweek magazine
11. _______ voted for (or would have voted) Bill Clinton in 1992 election
12. _______ listen to G. Gordon Liddy on the radio
13. _______ refuse to go to a gay club/bar
14. _______ attend the G. Gordon Liddy lecture on campus
15. _______ wear a shirt and tie/dress to class
16. _______ voted for (or would have voted) Republican ticket in 1994 election
17. _______ read the Wall Street Journal
18. _______ join a Sorority/Fraternity
19. _______ take a course in business/finance
20. _______ attend a meeting of the College Republicans group
21. _______ take an art class
22. _______ planning to vote for Bill Clinton in 1996 election
23. _______ buy clothes in a thrift store
24. _______ read The Guardian
25. _______ attend a poetry reading
26. ______ own a pair of Birkenstock sandals
27. ______ make an effort to recycle glass/aluminum
28. ______ take a course in Military History
29. ______ spent time in the Wexner Center for the Arts
30. ______ volunteer time working on a Democratic party political campaign
31. ______ burn a flag
32. ______ volunteer time working on a Republican party political campaign
33. ______ go to see Bill Clinton speak on campus
34. ______ refuse to participate in Earth Day activities
35. ______ voted for (or would have voted) Democratic Party ticket in 1994 election
36. ______ volunteer time for NARAL
37. ______ support National Organization for Women (NOW)
38. ______ attend a Grateful Dead show
39. ______ go to a gay club/bar
40. ______ go hunting
41. ______ read The Other Paper
42. ______ join armed forces reserves
43. ______ refuse to buy an imported car
44. ______ frequently try different foods
45. ______ save money
46. ______ have a parent who belongs to a union
47. ______ join ROTC
48. ______ habitually spend rather than save
49. ______ attend a meeting of the College Democrats group
50. ______ prefer doing things you know you like
Thank you for your help in this experiment.

We are conducting research on political issues and students’ opinions. Because we are a state funded institution, however, it is necessary that we represent both sides of the issue.

Consequently, below there are two forms: one requesting College Democrats to get in touch with you about their group, one requesting College Republicans to get in touch with you about their group. We will distribute these forms to their respective groups so that they may contact you.

If you choose to sign one of these forms, you may do so now. If you do not feel strongly enough about the issue to sign one of the forms, you may ignore this page.

* * * * * * * * * * * * * * * * * *

I, the undersigned, would like more information about College Democrats.

Sincerely ______________________

print name ______________________

* * * * * * * * * * * * * * * * * *

I, the undersigned, would like more information about College Republicans.

Sincerely ______________________

print name ______________________
### Attitude Toward Being Politically Conservative

Please use the scales below to rate your feelings about "being politically conservative."

<table>
<thead>
<tr>
<th>Rating</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>good</td>
<td>bad</td>
</tr>
<tr>
<td>beneficial</td>
<td>harmful</td>
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<tr>
<td>wise</td>
<td>foolish</td>
</tr>
<tr>
<td>pleasant</td>
<td>unpleasant</td>
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<tr>
<td>healthy</td>
<td>sick</td>
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</tbody>
</table>
Which of the following do you like, favor or believe in? Circle "Yes" or "No". If absolutely uncertain, circle "?". There are no right or wrong answers. Please answer all items.

<table>
<thead>
<tr>
<th>Item</th>
<th>Yes</th>
<th>?</th>
<th>No</th>
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</thead>
<tbody>
<tr>
<td>1. Interracial marriages</td>
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<td>2. Anti-abortion laws</td>
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<tr>
<td>3. Punk hair style and dress</td>
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<td>4. Strict discipline in school</td>
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<td>5. Parole</td>
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<td>6. Wall Street</td>
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<td>7. Civil Rights commissions</td>
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<td>8. Jerry Falwell</td>
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<td>9. Bible truth</td>
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<td>10. Newt Gingrich</td>
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<td>11. Feminism</td>
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<td>12. Working mothers</td>
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<td>13. Doonesbury</td>
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<td>14. Premarital sex</td>
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<td>15. Trimming social programs</td>
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<td>16. Hunting</td>
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<td>17. Persian Gulf War (vs. Iraq)</td>
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<td>18. Police women</td>
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<td>19. Boy Scouts</td>
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<td>20. United Nations</td>
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<td>21. U.S. intervention in Bosnia</td>
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<td>22. Anti-pornography laws</td>
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<td>23. Anti-sodomy laws</td>
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<td>24. Gay rights</td>
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<td>25. Death penalty</td>
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<td>26. School prayer</td>
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<td>27. Dismissing employees with AIDS</td>
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<td>28. Living together before marriage</td>
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<td>29. Sex education</td>
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<tr>
<td>30. Decriminalization of marijuana</td>
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107
Joanne was thinking about her feelings about immigration in this country. She believed that the U.S. was big enough to support a few illegal immigrants, but also thought that illegals who crossed the border should not be allowed complete access to health care and schooling — especially when illegal immigrants didn't pay taxes.

How politically conservative/liberal is Joanne's statement?

1  2  3  4  5  6  7  8  9  10  11
very liberal
very conservative

How politically conservative/liberal is Joanne, in general?

1  2  3  4  5  6  7  8  9  10  11
very liberal
very conservative
Johnny was speaking to his father about the need for a well-equipped and well-prepared army. He said, "It's really important that the U.S. have an army that is ready to defend the nation and I think the government should commit money to having effective armed forces. But, I also think that no more money should be allocated to defense spending."

How politically conservative/liberal is Johnny's statement?

<table>
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<td>very liberal</td>
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How politically conservative/liberal is Johnny, in general?

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Sarah was talking to a friend of hers about the government's policy on funding artists. She said, "I don't think we taxpayers should be paying for art that might possibly offend people. It's OK to help artists who produce good works that many of us can see and enjoy, so they should be rewarded. I think some of the controversial stuff should be avoided."

How politically conservative/liberal is Sarah's statement?

1  2  3  4  5  6  7  8  9  10  11  
very liberal  very conservative

How politically conservative/liberal is Sarah, in general?

1  2  3  4  5  6  7  8  9  10  11  
very liberal  very conservative
James enjoyed talking to his friends in class. 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.

How politically conservative/liberal is James's statement?

1 2 3 4 5 6 7 8 9 10 11
very liberal

How politically conservative/liberal is James, in general?

1 2 3 4 5 6 7 8 9 10 11
very liberal
Tara was reflecting on her thoughts about capital punishment. She believed that some criminals certainly performed acts that were horrible enough to merit the death penalty. But at the same time, she was uncertain that the death penalty was having any effect at all on crime in the U.S.

How politically conservative/liberal is Tara's statement?

1 2 3 4 5 6 7 8 9 10 11
very liberal
very conservative

How politically conservative/liberal is Tara, in general?

1 2 3 4 5 6 7 8 9 10 11
very liberal
very conservative
Tom believed that the individual has a right to choose what was best for himself. But recently he had been thinking about Dr. Jack Kevorkian and his beliefs about suicide and euthanasia. Tom didn't think that assisted suicide should be allowed under any circumstances except when the sick individual was completely brain dead and had no chance of recovery at all.

How politically conservative/liberal is Tom's statement?

1 2 3 4 5 6 7 8 9 10 11
very liberal

very conservative

How politically conservative/liberal is Tom, in general?

1 2 3 4 5 6 7 8 9 10 11
very liberal

very conservative