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Attitudes and the Prediction of Behavior

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Evaluation is a fundamental and immediate reaction to any object of psychological significance (Jarvis & Petty, 1996; Osgood, Suci, & Tannenbaum, 1957; Zajonc, 1980). We like certain individuals or groups and dislike others; we support some policies and oppose others; we prefer some products or brands over others; and we approve of some activities and disapprove of others. The term *attitude* is used to refer to these dispositions to respond with some degree of favorableness or unfavorableness to a psychological object (Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975). The evaluative disposition itself is a hypothetical construct; it cannot be directly observed. We can only infer it from observable responses to the object, such as verbal expressions of like or dislike, physiological reactions, cognitive biases reflected in response latencies, or overt actions in relation to the object. Manifest responses of this kind are, however, merely fallible indicators of the latent evaluative disposition. Verbal expressions of liking are subject to social desirability biases (Paulhus, 1991), physiological reactions may reflect arousal or other reactions instead of evaluation (Kidder & Campbell, 1970), and response latencies may be indicative not of personal attitudes but of cultural stereotypes (Devine, 1989).

Given the fallibility of verbal, physiological, and cognitive indicators, measures of attitude that rely on such measures often are validated by examining their capacity to predict overt behavior with respect to the attitude object. In fact, it is usually argued that attitudes are of little value unless they can predict overt behavior (Ajzen, 2005). However, it is important to realize that overt actions can also be misleading. As Merton (1940,) noted a long time ago,

The metaphysical assumption is tacitly introduced that in one sense or another overt behavior is "more real" than verbal behavior. This assumption is both unwarranted and scientifically meaningless.... It should not be forgotten that overt actions may deceive; that they, just as "derivations" or "speech reactions" may be deliberately designed to disguise or to conceal private attitudes. (p. 20)

In this chapter we discuss the nature of attitudes and their relation to overt behavior. We examine the cognitive foundation of evaluative dispositions, the effects of global attitudes on behavior, and the prediction of specific actions from attitudes and other behavioral dispositions.

THE COGNITIVE FOUNDATION OF ATTITUDES

There is general agreement that most social attitudes are acquired, not innate. We are not born with positive attitudes toward certain candidates for political office or negative attitudes toward astrology. The great diversity of political, religious, artistic, economic, and other attitudes within and between cultures attests to the power of social background and experience in shaping our evaluative dispositions. In the course of our daily lives we acquire many different beliefs about a variety of objects, actions, and events. Thus, we may come to believe that television programs contain a great deal of violence, that men are better suited than women to hold positions of leadership, that smoking cigarettes causes heart disease, that raising taxes inhibits economic activity, and a myriad of other things. Beliefs of this kind may be formed as a result of direct observation, they may be self-generated by way of inference processes, or they may be formed indirectly by accepting information from such outside sources as friends, television, newspapers, books, and so on. Some beliefs persist over time, others weaken or disappear, and new beliefs are formed.

Although many beliefs accurately reflect reality, they can also be biased by a variety of cognitive and motivational processes. They may be irrational, based on invalid or selective information, be self-serving, or otherwise fail to correspond to reality (Allport, 1954; Eagly & Chaiken, 1993; Fishbein & Ajzen, 1975). However, no matter how they were formed or how accurate they are, beliefs represent the information we have about the world in which we live, and they form the cognitive foundation for many of our responses to aspects of that world.

The idea that beliefs form the foundation for our attitudes is embedded in the most popular model of attitude formation and structure, the expectancy-value (EV) model (Dabholkar, 1999; Feather, 1982). One of the first and most complete statements of the model can be found in Fishbein's (1963, 1967) summation theory of attitude. According to the EV model, we form beliefs about an object by associating it with certain attributes; that is, with other objects, characteristics, or events. Thus, perhaps as a result of watching a television program, we may come to believe that the government of a certain country (the object) is corrupt,

imprisons innocent people, and mismanages the economy (attributes). Because the attributes that come to be linked to the object are already valued positively or negatively, we automatically and simultaneously acquire an attitude toward the object. In this fashion, we learn to like objects we believe have largely desirable characteristics, and we form unfavorable attitudes toward objects we associate with mostly undesirable characteristics. Although people can form many different beliefs about an object, it is assumed that only a relatively small number influence their attitudes at any given moment. It is these readily *accessible* beliefs that are considered to be the prevailing determinants of a person's attitude.

Specifically, the subjective value of each attribute contributes to the attitude in direct proportion to the strength of the belief; that is, the subjective probability that the object has the attribute in question. The way in which beliefs combine to produce an attitude is shown in Equation 1. As can be seen, the strength of each belief (*b*) is multiplied by the subjective evaluation (*e*) of the belief's attribute and the resulting products are summed. A person's attitude is expected to be directly proportional (α) to this summative belief index.

$$A_B \propto \sum b_i e_i \quad [1]$$

Of course, individuals are not expected to actually perform the mental calculations described by the EV model. It is merely assumed that attitude formation can be modeled as if a person were performing the stipulated calculations.

DEFINING THE PSYCHOLOGICAL OBJECT

A distinguishing characteristic of attitudes is that they involve evaluation of a particular psychological object, be it a physical entity (e.g., the Eiffel Tower), an institution (the Catholic Church), a person (President Kennedy) or group of people (homosexuals), a policy (stem cell research), an abstract concept (democracy), or any other discriminable aspect of an individual's world. We have or can readily develop dispositions to evaluate each of these kinds of objects with some degree of favorableness or unfavorableness. However, to understand the influence of attitudes on behavior we must distinguish between two fundamentally different types of attitude objects (Ajzen, 1982; Ajzen & Fishbein, 1980, 2005). One type, illustrated by the above examples, spells out no particular action that might be taken in relation to the object of interest. Evaluative dispositions with respect to this type of object will be termed *global attitudes*. The second type of attitude object is a specific behavior or category of behaviors. Examples of objects involving specific behaviors are donating money to the Catholic Church, reading a book about President Kennedy, and employing a gay person, whereas examples of behavioral categories are exercising, dieting, and studying. Evaluative dispositions with respect to psychological objects of this kind will be termed *attitude toward a behavior*.

GLOBAL ATTITUDES AND THE PREDICTION OF BEHAVIOR

Social scientists and laypersons alike have an abiding trust in the explanatory power and predictive validity of global attitudes. It appears intuitively compelling to argue, for example, that proenvironmental attitudes are conducive to participation in recycling efforts, that degree of job satisfaction influences work productivity, that prosocial attitudes determine willingness to donate blood, or that racial prejudice is responsible for biases in hiring decisions. Yet, as reasonable as it appears, empirical research has provided very little support for the idea that performance of specific behaviors can be predicted from global attitudes. In an early review of work on the attitude-behavior relation, Ajzen and Fishbein (1977) discovered that among the 102 studies reviewed, 54 had assessed global attitudes in attempts to predict specific actions. Of these studies, 25 obtained nonsignificant results and the remainder rarely showed correlations in excess of .40. A more recent meta-analysis of this literature (Kraus, 1995) revealed similarly low correlations between global attitudes and specific behaviors.

Racial Attitudes and Discriminatory Behavior: An Illustration

Perhaps the best illustration of this state of affairs comes from the extensive literature on racial prejudice and discrimination (Fiske, 1998). Indeed, some of the earliest studies regarding the relation between attitudes and behavior were conducted in this domain. A good example is the experiment reported by Himelstein and Moore (1963). A sample of white male college students first completed a scale assessing attitudes toward African Americans and, some time later, reported for an ostensibly unrelated psychology experiment. Upon arrival, the participant found another student (a confederate), either black or white, already seated in the room. While they were waiting for the experiment to begin, a (white) confederate entered the room carrying a petition to extend the university's library hours on Saturday nights. The black or white confederate was approached first and either signed or refused to sign the petition. Following this manipulation, the naive participant was asked to sign. Conformity or lack of conformity with the response of the confederate served as the measure of behavior. The data revealed virtually no effect of global attitudes toward African Americans on conformity with the black confederate.

A study by Linn (1965), which dealt with the release of interracial photographs, provides another good example. In the first phase of the experiment white female college students completed a general attitude questionnaire. Scattered among the questions were seven items that assessed global attitudes toward blacks. About four weeks later, the students were asked to help a psychological testing company that was said to be developing a new projective personality test. Students who volunteered to participate were asked to have their picture taken with a black male and to sign releases for use of the picture under a variety of increasingly public conditions. The conditions ranged from laboratory work where the picture would

be seen only by professional sociologists and psychologists to use by organizations like the NAACP in a nationwide campaign for racial integration. The results of the study revealed no significant association between global attitudes toward blacks and willingness to release the interracial photographs.

The results were no more encouraging when global attitudes toward minority groups were used to predict other kinds of behavior, including administration of electric shocks (Genthner & Taylor, 1973; Larsen, Colen, von Flue, & Zimmerman, 1974), verbal conditioning to black individuals (Smith & Dixon, 1968), evaluating and sentencing a black person (Brigham, 1971), and interacting with black students during school-related activities (Bagley & Verma, 1979). In his review of this literature, Duckitt (1992, Chapter 3) concluded that the correlation between racial attitudes and measures of discrimination is at best in the weak to moderate range. Two meta-analyses (Schütz & Six, 1996; Talaska, Fiske, & Chaiken, 2004) of the relevant literature also paint a very discouraging picture. The average correlations between measures of prejudice and discrimination in these two analyses were, respectively, .29 (based on 46 effect sizes) and .26 (based on 136 effect sizes).

Implicit Racial Attitudes In recent years a renewed challenge to the postulated relation between prejudice and discrimination has emerged (Fiske, 1998). Many investigators have pointed out that expressed stereotypical beliefs and prejudicial attitudes have declined markedly over the past decades (e.g., Dovidio, 2001; Schuman, Steeh, Bobo, & Krysan, 1997), yet discrimination against historically disadvantaged racial and ethnic groups continues to be evident in employment, education, housing, healthcare, criminal justice, and other domains (e.g., Bushway & Piehl, 2001; Crosby, Bromley, & Saxe, 1980; Daniels, 2001; Hacker, 1995; Landrine, Klonoff, & Alcaraz, 1997; Myers & Chan, 1995). Although intriguing, it must be noted that this observation is based on evidence that is at best weak and circumstantial (see Ajzen & Fishbein, 2005). There is plenty of evidence to suggest that, like expressed prejudice, overt discrimination has also declined greatly over the years (e.g., Freeman, 1973; Iceland, 2003; Jarrell & Stanley, 2004); and on the other side of the coin, there is good evidence to show that verbally expressed prejudice has by no means disappeared (Leach, Peng, & Volckens, 2000).

Whether discrimination has or has not declined to the same degree as prejudice, the immediate reaction to the apparent inconsistency between racial prejudice and discriminatory behavior was to question the validity of the measures of discriminatory attitudes (Crosby et al., 1980; McConahay, Hardee, & Batts, 1981): Because of self-presentational concerns, people were presumably reluctant to express their true (negative) feelings. There was also an assumption, however, that the nature of racial prejudice had changed over the years to become more subtle and nuanced than the blatant racism of the past (McConahay, 1986). Also, it was argued that prejudice might now be expressed more indirectly and symbolically than in the past; for example, as opposition to preferential treatment for minorities (Sears, 1988). Other theorists proposed that racial attitudes had become ambiguous or aversive, containing explicit egalitarian elements as well as more subtle and unacknowledged negative beliefs and feelings (Gaertner & Dovidio, 1986).

This revised view of the nature of contemporary prejudice provided a ready explanation for the apparent gap between low professed prejudice and high levels of discrimination. The high levels of discrimination suggested that prejudice was still very much present but that because it had become subtle and perhaps even unconscious, standard attitude scales which measure *explicit* stereotypes and prejudice were incapable of capturing it. This view led to the prediction that *implicit* attitudes—assumed to be automatically activated—guide behavior by default unless they are overridden by controlled processes.

Contemporary models of stereotyping and prejudice differ in detail, but they agree in their overall expectations regarding the predictive validity of explicit and implicit attitude measures. It is assumed that because prejudicial attitudes and discriminatory behavior with respect to racial and ethnic minorities are frowned upon in contemporary American society, many people try to inhibit their expression. Also, in addition to self-presentation biases, culturally pervasive stereotypes, even if not consciously endorsed, may be passively acquired in the process of socialization or simply by observing certain groups and social roles that co-occur repeatedly (see Devos, this volume). These beliefs and attitudes may influence behavior without a person's knowledge. Implicit measures of attitude may circumvent these problems by providing information about beliefs and attitudes that individuals may not be willing or able to self-report. Specifically, it is expected that implicit measures of prejudicial attitudes are valuable predictors of discriminatory behaviors that are not consciously monitored or that are difficult to control (e.g., facial expressions, eye contact, blushing, and other nonverbal behaviors), as well as of behaviors that people do not view as indicative of prejudice and thus are not motivated to control. They should be less predictive of behaviors that are under conscious control. With respect to explicit attitude measures the opposite pattern is expected. These measures should be predictive of behaviors that are under volitional control and whose implications for prejudice are apparent but less predictive of spontaneously emitted reactions that are not consciously monitored (Dovidio, Brigham, Johnson, & Gaertner, 1996).

Before we consider empirical tests of this hypothesis, it should be noted that the results of past studies on the relation between prejudice and discrimination discussed above are inconsistent with the prediction that explicit attitudes will be good predictors of controlled behaviors. In most of these past studies, explicit measures of global attitudes were used to predict controlled behaviors, yet contrary to what would be expected, the correlations were found to be very weak, rarely exceeding the .30 level (Wicker, 1969).

Examination of the predictive validity of implicit attitudes became possible with the development of new measurement techniques that rely on reaction times, most notably the implicit association test (IAT; Greenwald, McGhee, & Schwartz, 1998) and evaluative priming (Dovidio, Evans, & Tyler, 1986; Fazio, Jackson, Dutton, & Williams, 1995—see Fazio & Olson, 2003; Schwarz, this volume). Thus far, only a small number of studies have directly tested the hypothesis that explicit global attitudes are better predictors of controlled than of spontaneous behaviors and that implicit global attitudes predict spontaneous reactions better than controlled actions. The results of these studies have been rather disappointing. To be

sure, in some instances implicit measures of prejudice have been found superior to explicit measures for the prediction of such nonverbal behaviors as blinking and eye contact (Dovidio, Kawakami, Johnson, Johnson, & Howard, 1997), the number of times whites handed a pen to an African American as opposed to placing it on the table (Wilson, Lindsey, & Schooler, 2000), as well as the friendliness of white participants in their interactions with a black person, judged by the black person on the basis of the white person's nonverbal behavior (smiling, eye contact, spatial distance, and body language) (Fazio et al., 1995; see Fazio & Olson, 2003 for a review). A similar effect was obtained in a study dealing with behavior whose implications for prejudice were ambiguous (Sekaquaptewa, Espinoza, Thompson, Vargas, & von Hippel, 2003). The critical behavior in this study was white males' choice of stereotype-consistent or inconsistent questions in a mock job interview with a black female applicant. However, even the implicit attitude measures in these studies did not do very well, with correlations rarely exceeding the .30 level observed in earlier research with explicit measures.

There also is some evidence for the advantage of explicit over implicit measures in the prediction of controlled behaviors. Thus, it has been found that in comparison to implicit measures of prejudice, explicit measures are better predictors of judgments concerning the verdict in the Rodney King trial involving police brutality toward a black person and attractiveness ratings of facial photographs of black and white individuals (Fazio et al., 1995), as well as ratings of the guilt of African-American defendants in a simulated jury trial (Dovidio et al., 1997). Note that the criterion measures in these studies were verbal judgments, not overt behaviors. Even so, predictive accuracy was modest, with correlations ranging from .24 to .54.

Perhaps the best evidence regarding the relative predictive validity of explicit and implicit global attitude measures comes from a meta-analysis of the literature (Poehlman, Uhlmann, Greenwald, & Banaji, 2005) based on 61 studies that reported data for 86 independent samples. This meta-analysis went beyond prejudice and discrimination to include data regarding a variety of other attitudinal and behavioral domains (food choice, achievement, condom use, self-esteem, smoking, political behavior, and others). The results again demonstrated the limited predictive power of global attitudes in relation to specific behaviors. Overall, the mean correlation between explicit attitude measures and various criteria, weighted for sample size, was .35, compared to a significantly lower mean correlation of .27 for implicit attitude measures. Considering only the 32 studies in the domain of racial attitudes and behavior, the mean correlation for the prediction of discriminatory responses was significantly higher when implicit ($r = .25$) rather than explicit ($r = .13$) measures of prejudice were obtained, even though the correlations were rather low in either case.

More importantly, the meta-analysis provided only very limited support for the distinct roles of implicit and explicit attitude measures. The attitudes assessed in the different studies were rated for the likelihood that they would elicit self-presentation concerns, and the behaviors were rated for their degree of controllability. The moderating effects of these factors were examined for the total sample of studies; separate analyses for racial attitudes and behaviors were not reported. As expected, the predictive validity of explicit attitude measures tended to decline

with social desirability concerns ($r = -.36$) and to increase with the rated controllability of the behavior ($r = .28$). However, contrary to expectations, there was no significant effect of these variables on the correlation between implicit measures of attitude and the performance of specific behaviors.

It has often been reported that implicit attitude measures correlate only weakly with explicit measures of the same attitude (e.g., Cunningham, Preacher, & Banaji, 2001; Karpinski & Hilton, 2001; Neumann, Hülsebeck, & Seibt, 2004). These findings suggest that implicit and explicit methods may serve to assess two distinctly different attitudes (Wilson et al., 2000), and that prediction of behavior could perhaps be improved by considering implicit and explicit measures simultaneously. However, examination of empirical studies that have assessed the same attitude by implicit and explicit means provides no support for this proposition. Zero-order correlations reveal that, in most cases, only one attitude type correlates significantly with behavior. Sometimes explicit attitudes are significant predictors and implicit attitudes are not (e.g., Asendorpf, Banse, & Muecke, 2002; Bosson, Swann, & Pennebaker, 2000; Wiers, Van Woerden, Smulders, & De Jong, 2002), whereas in other instances, implicit attitudes are significant predictors of behavior while explicit attitudes are not (e.g., Egloff & Schmukle, 2002; Hugenberg & Bodenhausen, 2003). As might therefore be expected, in these cases multiple regression analyses show that only one of the two measures makes a significant contribution to the prediction of behavior. To be sure, a few studies have found both implicit and explicit attitudes to be significantly correlated with a behavioral criterion (e.g., Czopp, Monteith, Zimmerman, & Lynam, 2004, in the case of past condom use; Maison, Greenwald, & Bruin, 2004, Study 3; Teachman & Woody, 2003). However, even here, inclusion of both measures in a regression analysis produced only a relatively small improvement in predictive validity. For example, in Czopp et al. (2004), prediction of condom use went from a correlation of .31 when only an explicit attitude measure was used to a correlation of .35 when an implicit measure was added to the prediction equation, a statistically significant but relatively small increase of 2% in explained variance. Clearly, although our understanding of sensitive beliefs and attitudes such as stereotypes and prejudice may well benefit from the measurement of explicit as well as implicit attitudes (for reviews see Blair, 2001; Fiske, 1998), the inclusion of both types of measures does not guarantee better behavioral prediction.

To summarize briefly, global attitudes are found to be rather poor predictors of specific overt behaviors. This conclusion emerges from research on the relation between racial prejudice and discrimination as well as the prediction of behavior in many other domains. Contrary to contemporary theories, the predictive validity of global attitudes tends to be relatively low whether explicit or implicit measures of attitude are employed and irrespective of social desirability concerns or the behavior's controllability.

Linking Global Attitudes to Behavior: The MODE Model

The most detailed and sophisticated account of the processes whereby global attitudes may serve to guide behavior is provided by Fazio's (1986; 1990; Fazio

& Towles-Schwen, 1999) MODE model. In this model, attitude is defined as a learned association in memory between an object and a positive or negative evaluation of that object. The attitude's strength is equivalent to the strength of this association.¹ Building on past research (Eagly, 1998), the model assumes that attitudes influence or bias perception and judgment of information relevant to the attitude object, a bias that is congruent with the valence of the attitude. Thus, people with positive attitudes toward, say, genetically modified food may evaluate new information as indicating that eating such food is safe whereas people with negative attitudes may evaluate the same information as evidence that it is dangerous. As a result, a global measure of attitude toward genetically modified food should predict consumption of such food. However, the model assumes that only strong attitudes—being chronically accessible in memory—are likely to bias perception of the situation and thus influence behavior. In work with the MODE model, the degree of an attitude's chronic accessibility in memory (i.e., its strength) is usually operationalized by measuring the latency of responses to attitudinal questions: the faster the response, the more accessible the attitude is assumed to be (e.g., Fazio & Williams, 1986; see also Fazio, 1990b).

The MODE model thus suggests that attitude strength—in the form of its accessibility in memory—plays a pivotal role in the link between attitudes and behavior. Generally speaking, relatively accessible attitudes should predict behavior better than less accessible attitudes. Support for this expectation has been obtained in several studies that have compared the predictive validity of attitudes expressed with low as opposed to high response latencies (Berger & Mitchell, 1989; Fazio, Powell, & Williams, 1989; Fazio & Williams, 1986; Kokkinaki & Lunt, 1997). In a study by Fazio, Powell, and Williams (1989), for example, college students indicated their liking or disliking for each of 100 common products (Star-Kist tuna, Planters peanuts, etc.) and, on the basis of response speed, were divided into high, moderate, and low accessibility subgroups. As a measure of behavior, participants could choose to take home five products from a set of 10 options. The attitude-behavior correlation increased with degree of accessibility, from .50 in the low accessibility group to .62 in the high accessibility group. Similarly, Fazio and Williams (1986) predicted voting choice in the 1984 Presidential election from attitudes toward the two major candidates (Reagan and Mondale) assessed several months earlier. In addition to attitude valence, the investigators assessed the accessibility of these attitudes by asking participants to respond as quickly as possible to the attitude questions and recording response latencies. As hypothesized, prediction of voting choice was significantly better for participants with relatively accessible (low latency) attitudes toward the candidates than for participants with relatively inaccessible attitudes.

Fazio's MODE model has elucidated the processes whereby global attitudes can guide performance of specific behaviors, but it leaves several important issues unresolved. First, it has been suggested that the magnitude of the attitude-behavior relation may be moderated not by attitude accessibility but by other correlated factors of attitude strength, such as certainty, amount of knowledge, or the attitude's temporal stability (Eagly & Chaiken, 1993). Support for the superior predictive validity of stable as opposed to accessible attitudes was provided by Doll and

Ajzen (1992). As expected, compared to second-hand information, direct experience with different video games raised the accessibility of attitudes toward playing those games. However, it also increased the temporal stability of these attitudes. A mediation analysis showed that the higher predictive validity of the attitude measures following direct as opposed to indirect experience could be explained better by their greater stability than by their higher level of accessibility.

Perhaps most important, any model dealing with the influence of global attitudes on specific behaviors should be able to account for the typically low attitude-behavior relations reported in the literature. In past research, investigators have tried unsuccessfully to use measures of global attitudes to predict such behaviors as job absence and turnover, various types of interaction with African Americans, participation in civil rights activities, attendance of labor union meetings, and so forth (Wicker, 1969). According to the MODE model, the observed low attitude-behavior correlations imply that participants in these studies held relatively weak attitudes, too weak to influence their definition of the event and thus guide their behavior. Without further evidence, this conjecture cannot be completely discounted, but it seems reasonable to assume that people hold fairly strong attitudes toward their jobs, their labor unions, members of minority groups, and civil rights. Strong attitudes of this kind should be chronically accessible and thus available to guide behavior. However, in actuality, even under these ideal conditions from the MODE model perspective, the observed correlations between global attitudes and specific behaviors are found to be disappointing.

Clearly then, even though attitude strength or accessibility is an important factor that can influence the relation between global attitudes and specific behaviors, by itself it cannot account for many of the relatively low correlations reported in the literature. In the remainder of this chapter we consider a different approach to the attitudinal prediction of specific behaviors.

THE PRINCIPLE OF COMPATIBILITY

The finding that as a general rule global attitudes are poor predictors of specific behaviors should come as no surprise. For global attitudes to predict a particular behavior, the behavior in question must be a valid indicator of the latent attitudinal disposition—it must reflect the global attitude of interest. However, it is unreasonable to expect any single behavior to be representative of a broad attitudinal domain. Consider, for example, the relation between global attitudes toward African Americans and willingness to have one's picture taken with a black individual of the opposite sex for a variety of purposes (Linn, 1965). Although refusal to pose for a picture with a black person may well be an indication of prejudice, this behavior can also be influenced by a variety of other factors that have nothing to do with prejudice. In fact, any single behavior in relation to African Americans is likely to be multiply determined and hence be a poor indicator of the underlying disposition; that is, the tendency to discriminate (Fishbein & Ajzen, 1974; see also Epstein, 1983).

In their review of research dealing with the attitude-behavior relation, Ajzen and Fishbein (1977) proposed that it is useful to define a behavioral criterion in terms of four facets or elements: the *action* involved, the *target* at which the action is directed, the *context* in which it occurs, and its *time* of occurrence. In a parallel manner, it is also possible to analyze any measure of attitude in terms of these four elements (i.e., the object or target that is being evaluated), and whether the evaluative measure involves a particular action, context, and time. These considerations led to the formulation of the by now widely accepted *principle of compatibility* (Ajzen, 1988; Ajzen & Fishbein, 1980). According to the principle, we can expect a strong attitude-behavior correlation only to the extent that the measures of attitude and behavior involve exactly the same action, target, context, and time elements.

Behavioral Aggregation

A global attitude is an evaluation of a target that involves no specific action, context, or time elements. A scale that assesses attitudes toward Muslims, for example, results in a score that represents a generally favorable or unfavorable evaluation of Muslims; no particular action, context, or time is specified. Because single behaviors, such as voting for a Muslim candidate in a local election or inviting a Muslim to one's home, involve specific actions and often also specific context and time elements, they are by definition not compatible with the global attitude measure. However, even if not well reflected in any single behavior, the behavioral disposition implied by a favorable or unfavorable attitude toward Muslims should become evident if we observe a broad, representative sample of behaviors with respect to Muslims (Thurstone, 1931). A multiple-act index obtained by aggregating across a variety of behaviors involves many different actions directed at the target of interest, performed in different contexts and at different points in time. Like global attitudes, such multiple-act indices thus generalize across action, context, and time elements; the only element that remains constant is the target. Consequently, we would expect a strong correlation between global attitudes and general patterns of behavior, (i.e., multiple-act aggregates).

Empirical research has provided support for this hypothesis. When the behavioral criterion is broadly representative of the behavioral domain, rather than a single arbitrarily selected action, strong relations between global attitudes and behavior are observed. For example, in a study of religiosity (Fishbein & Ajzen, 1974) several instruments were used to assess global attitudes toward religion and participants were asked to indicate whether they did or did not perform each of a set of 100 behaviors in this domain. Whereas the global attitude measures were typically poor predictors of individual behaviors (the mean correlation was about .14), they showed strong correlations (ranging from .61 to .71) with an aggregate measure across all 100 behaviors, a measure designed to reflect the general pattern of religiosity. Comparable results were reported for abortion activism (Werner, 1978) and for protection of the environment (Weigel & Newman, 1976).

Predicting Specific Actions

We have seen that global attitudes do after all have predictive validity, at least when it comes to the prediction of overall behavioral trends rather than specific actions. This conclusion is far from trivial. As social psychologists we are frequently interested in general behavioral patterns. A good case in point is the question of prejudice and discrimination discussed earlier. The logic of aggregation implies that discrimination against members of a certain group cannot be validly assessed by observing a single action. Instead, it requires consideration of a wide range of behaviors with respect to members of the group in question and selection of a representative set for observation. Although we are not aware of relevant empirical research, we would expect that a global measure of prejudicial attitudes will correlate well with such a multiple-act measure of discrimination.

The principle of compatibility can also be applied to the prediction of single behaviors. Consider, for example, students' attendance of class meetings in a certain course. Our discussion suggests that a global attitude, such as the attitude toward the course instructor, will be a poor predictor of this behavior. However, there is no need to assess a global attitude of this kind if we want to predict a specific behavior. Instead, we can obtain a measure of attitude that corresponds much more closely to the behavior in its action, target, context, and time elements, that is, the *attitude toward the behavior*. Thus we could measure students' attitudes toward attending course meetings. Indeed, investigators have assessed attitudes toward many kinds of behaviors, including attitudes toward smoking marijuana, drinking alcohol, having an abortion, participating in psychological research, and so forth. Such measures reflect rather narrow behavioral dispositions and should predict the corresponding behavior.

There is considerable support for the principle of compatibility at different levels of generality or specificity. A narrative review of 124 data sets (Ajzen & Fishbein, 1977) showed that, as expected, correlations between attitudes and behavior are substantial when these variables are assessed at compatible levels of specificity or generality; when the measures are incompatible, the correlations are very low and usually not significant. The correlation across studies between degree of compatibility and the magnitude of the attitude-behavior relation was found to be .83. However, the most compelling support for the importance of compatibility in attitude-behavior research comes from studies that have directly compared the predictive validity of attitudes that were compatible (i.e., attitudes toward behaviors) or incompatible (i.e., global attitudes toward general targets) with a single-act criterion. In Kraus's (1995) meta-analysis of eight studies that manipulated level of compatibility, the prediction of behavior from attitude toward the behavior resulted in a mean correlation of .54, whereas the mean correlation between global attitudes and single behaviors was only .13. Thus, just as global attitudes are good predictors of multiple-act measures of behavior, attitudes toward a behavior predict the specific behavior under consideration.

The Theory of Planned Behavior The principle of compatibility as applied to the prediction of specific behaviors is a central aspect of the *theory of planned*

behavior. First described in 1985 (Ajzen, 1985), the theory of planned behavior (TPB) is today one of the most popular social-psychological models for the prediction of behavior. It has its roots in Ajzen and Fishbein's (1980) theory of reasoned action which was developed in response to the observed lack of correspondence between general dispositions, such as racial or religious attitudes, and actual behavior. Instead of dealing with broad attitudes of this kind, the TPB focuses on the behavior itself, and it goes beyond attitudes to consider such other influences on behavior as social norms and self-efficacy beliefs.

Briefly, according to the theory of planned behavior, human action is influenced by three major factors: a favorable or unfavorable evaluation of the behavior (*attitude toward the behavior*), perceived social pressure to perform or not perform the behavior (*subjective norm*), and perceived capability to perform the behavior (self-efficacy; Bandura, 1997, or *perceived behavioral control*). In combination, attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral intention. As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived behavioral control, the stronger should be the person's intention to perform the behavior in question. The relative importance of the three predictors as determinants of intentions can vary from behavior to behavior and from population to population. Finally, given a sufficient degree of control over the behavior, people are expected to carry out their intentions when the opportunity arises. Unfortunately, although we may be able to measure some aspects of actual control, in most instances we lack sufficient information about all the relevant factors that may facilitate or impede performance of the behavior. However, to the extent that people are realistic in their judgments, a measure of *perceived* behavioral control can serve as a proxy for actual control and contribute to the prediction of the behavior in question. A schematic representation of the theory is shown in Figure 13.1. The solid arrow pointing from actual control to the intention-behavior link indicates that volitional control is expected

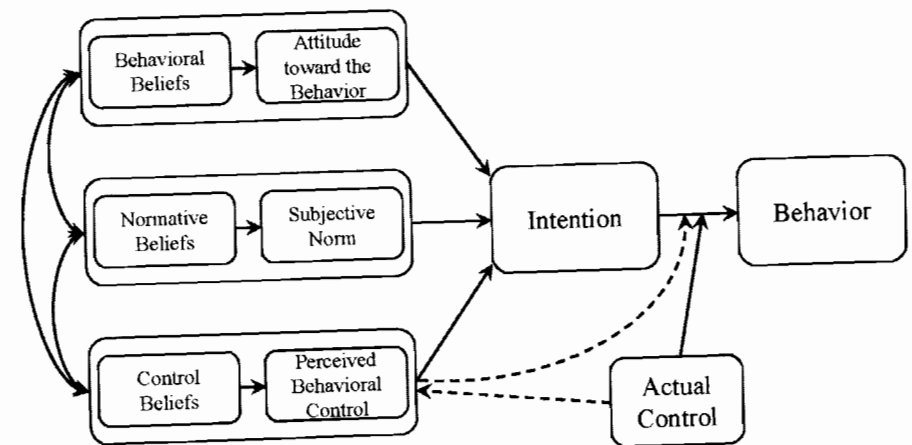


Figure 13.1 Theory of planned behavior.

to moderate the intention-behavior relation such that the effect of intention on behavior is stronger when actual control is high rather than low. That perceived behavioral control, when veridical, can serve as a proxy for actual control is shown by the dotted arrows in Figure 13.1 that connect actual control to perceived control and perceived control to the intention-behavior link.² (For a more detailed overview of the theory, see Ajzen, 2005.)

When applied to a particular behavior, say hiring a certain African-American applicant for a job, we would assess attitudes toward hiring the person in question, as well as perceptions of social pressure to do so (i.e., subjective norms), and perceived control over this behavior. Together, attitudes toward the behavior, subjective norms, and perceptions of control would be expected to predict intentions to hire or not to hire the applicant, and actual hiring behavior should correspond to the intention to the extent that the respondent has the authority to carry out his or her hiring decision.

The Cognitive Foundation of Behavior

The theory of planned behavior assumes that human social behavior is reasoned or planned in the sense that people take account of a behavior's likely consequences (behavioral beliefs), the normative expectations of important referents (normative beliefs), and factors that may facilitate or impede performance of the behavior (control beliefs). Although behavioral, normative, and control beliefs may sometimes be inaccurate, unfounded, or biased, attitudes, subjective norms, and perceptions of behavioral control are thought to follow spontaneously and reasonably from these beliefs, produce a corresponding behavioral intention, and ultimately result in behavior that is consistent with the overall tenor of the beliefs.

Behavioral Beliefs and Attitudes Like global attitudes, attitudes toward a behavior are assumed to be a function of beliefs, but in this case, the relevant accessible beliefs are beliefs about the behavior's likely consequences, termed behavioral beliefs. A behavioral belief is a person's subjective probability that performing a behavior of interest will lead to a certain outcome, for example, the belief that exercising (the behavior) improves physical fitness (the outcome). As described by the expectancy-value model discussed earlier, in their aggregate the behavioral beliefs are theorized to produce a positive or negative attitude toward the behavior. Specifically, the positive or negative valence of each outcome contributes to the overall attitude in direct proportion to the subjective probability that the behavior will produce the outcome in question (see Equation 1 earlier).

Normative Beliefs and Subjective Norms In an analogous fashion, accessible normative beliefs constitute the basis for perceived social pressure, or subjective norm. A normative belief is the expectation or subjective probability that a given referent individual or group (e.g., friends, family, spouse, coworkers, one's physician or supervisor) would approve or disapprove of performing the behavior under investigation. As shown in Equation 2, each accessible normative belief (n) is

assumed to contribute to subjective norm (SN) in direct proportion to the person's motivation to comply (m) with the referent individual or group, and the $n \times m$ products combine to produce the subjective norm.

$$SN \propto \sum n_i m_i \quad [2]$$

Control Beliefs and Perceived Behavioral Control Just as attitudes are assumed to be based on accessible behavioral beliefs and subjective norms on accessible normative beliefs, perceived behavioral control is assumed to be based on accessible control beliefs. These beliefs are concerned with the presence of factors that can facilitate or impede performance of the behavior. Control factors include required skills and abilities; availability or lack of time, money, and other resources; cooperation by other people; and so forth. A control belief is defined as a person's subjective probability that a given facilitating or inhibiting factor will be present. Each control belief contributes to perceived behavioral control, or a sense of self-efficacy, in direct proportion to the factor's perceived power to facilitate or impede performance of the behavior. Perceived behavioral control (PBC) is a function of the products of control belief (c) times perceived power (p) summed over all accessible control factors, as shown in Equation 3.

$$PBC \propto \sum c_i p_i \quad [3]$$

Empirical Support for the TPB

A large number of studies have used the theory of planned behavior to examine the psychological antecedents of actions in various domains. It is beyond the scope of the present chapter to review this body of research (for summaries and meta-analyses, see Ajzen, 1991; Albarracin, Johnson, Fishbein, & Muellerleile, 2001; Armitage & Conner, 2001; Downs & Hausenblas, 2005; Godin & Kok, 1996; Hagger, Chatzisarantis, & Biddle, 2002). Generally speaking, the theory has been well supported. With regard to the prediction of behavior, many studies have substantiated the predictive validity of behavioral intentions. Reviewing different meta-analyses covering diverse behavioral domains, Sheeran (2002) reported a mean correlation of .53 between intention and behavior. Also, it has been found that the addition of perceived behavioral control can improve prediction of behavior considerably, especially when performance of the behavior is difficult (Madden, Ellen, & Ajzen, 1992). For example, in a general sample of smokers, a measure of perceived behavioral control accounted for an additional 12% of the variance in smoking behavior over and above intentions; and among postnatal women, the increase in explained behavioral variance due to perceived behavioral control was 34% (Godin, Valois, Lepage, & Desharnais, 1992).

Meta-analyses of the empirical literature have also provided evidence to show that intentions can be predicted with considerable accuracy from measures of attitudes toward the behavior, subjective norms, and perceived behavioral control (Albarracin et al., 2001; Armitage & Conner, 2001; Hagger et al., 2002; Sheeran &

Taylor, 1999). For a wide range of behaviors, attitudes are found to correlate well with intentions; across the different meta-analyses, the mean correlations ranged from .45 to .60. For the prediction of intentions from subjective norms, these correlations ranged from .34 to .42, and for the prediction of intention from perceived behavioral control, the range was .35 to .46. The multiple correlations for the prediction of intentions ranged from .63 to .71.

Finally, the meta-analysis performed by Armitage and Conner (2001) also provided evidence for the proposition that attitudes, subjective norms, and perceptions of control can be predicted from corresponding sets of beliefs. The mean correlation between the expectancy-value index of behavioral beliefs and a direct measure of attitude toward the behavior was .50, and the same mean correlation obtained between the normative belief index and subjective norm; the control belief index showed a mean correlation of .52 with perceived behavioral control.

Explaining Intentions and Behavior A detailed examination of behavioral, normative, and control beliefs provides substantive information about a behavior's determinants. By comparing subgroups of participants who are currently performing and not performing the behavior, or those who intend to perform it in the future with those who don't, we can gain insight into the considerations that guide people's actions. Research by Conner, Sherlock, and Orbell (1998) provides an example of this form of subgroup analysis in the domain of illicit drug use. In the second of their two studies, members of a club completed a theory of planned behavior questionnaire with respect to using ecstasy in the next two months. The sample was divided into those who held positive or neutral intentions to use ecstasy in the next two months (neutral or above neutral on the intention scale) and those who held negative intentions. The two groups were then compared in terms of their behavioral, normative, and control beliefs.³ These comparisons revealed significant differences between participants with positive and negative intentions on almost all behavioral beliefs. For example, compared with the negative intention group, participants who held positive intentions judged it more likely that using ecstasy in the next two months would give them a sense of well-being, would be exciting, and would make them sociable; and as less likely that it would bring on mood swings, lead to (undesirable) physical side effects, or lead to the use of other drugs. There were, however, no significant differences in the judged likelihood that ecstasy use would produce a feeling of lethargy or that it would lead to more frequent use of the drug.

The influence of normative beliefs on intentions was also in evidence. In general, important others (close friends, partner, parents, other club members, and other ecstasy users) were believed to disapprove of ecstasy use. However, the subgroup of participants who intended to use ecstasy in the next two months saw their close friends and partners as disapproving less than did the participants who did not intend to use the drug. The differences with respect to other club members, other ecstasy users, and parents were not statistically significant; these referents were seen as about equally disapproving of the behavior. Finally, there were also significant differences in control beliefs. For example, people who intended to use

ecstasy in the next two months were less likely to believe that they would have to pay a high price for the drug, and more likely to believe that they would be offered ecstasy and be with friends who use the drug.

In short, the theory of planned behavior can provide a detailed account of the considerations that guide performance of a particular behavior. Beliefs about the behavior's likely consequences, about the normative expectations of important others, and about skills, resources, or other factors that can facilitate or impede performance of the behavior jointly influence the decision to engage or not to engage in the behavior of interest. By assessing these beliefs and comparing differences in beliefs between individuals who engage in the behavior and individuals who do not, we can gain valuable insight into the behavior's determinants.

SUMMARY AND CONCLUSIONS

In this chapter we tried to show that attitude—defined as a disposition to respond with some degree of favorableness or unfavorableness to a psychological object—is an important and very useful concept for understanding and predicting human social behavior. We have also seen, however, that a strong relation between attitudes and behavior cannot be taken for granted. Global attitudes can help us understand general patterns of behavior, but they are usually poor predictors of specific behaviors with respect to the object of the attitude. This is true whether explicit or implicit methods are used to assess global attitudes. Some insight into the effects of global attitudes on specific actions is provided by Fazio's (1990) MODE model. According to this model, only strong attitudes, readily accessible in memory, are likely to guide performance of specific behaviors. However, we have seen that even when people can be assumed to hold strong attitudes, as in the area of prejudice and discrimination, global attitudes often fail to predict specific behaviors.

It must be concluded that in many instances, global attitudes are simply too general to have much relevance for the performance of a particular behavior. Considerations associated with the specific behavior of interest have a more direct impact that can overpower whatever effect global attitudes may have. Consistent with the principle of compatibility, measures of attitude toward the behavior, measures that involve the same action, target, context, and time elements as the behavior itself, are found to predict specific actions much better than do global attitudes. Capitalizing on the principle of correspondence, the theory of planned behavior (Ajzen, 1991) has become a popular model for the prediction of specific actions. Much empirical research has confirmed the theory by showing that specific behaviors can be predicted quite well from corresponding intentions; that these intentions themselves are a function of attitudes toward the behavior, subjective norms, and perceptions of behavioral control; and that the origins of these three factors can be traced, respectively, to behavioral, normative, and control beliefs regarding the behavior of interest.

1. Over the past two decades, the concept of attitude strength has generated considerable interest among investigators (Eagly & Chaiken, 1998; Krosnick, Boninger, Chuang, Berent, & Carnot, 1993; Petty & Krosnick, 1995; Raden, 1985). Among the indicators of attitude strength is importance of the attitudinal domain, vested interest in the topic, certainty in one's position, direct experience with the attitude object, and information and reflection about the issue (Petty & Krosnick, 1995). Although these different aspects of attitude strength tend to correlate only moderately with each other (Krosnick et al., 1993; Raden, 1985), strong attitudes—no matter how operationalized—are assumed to be relatively stable over time, to be resistant to persuasion, and to be good predictors of behavior (see Bassili, this volume).
2. Although, conceptually, perceived control is expected to moderate the intention-behavior relation, in practice most investigators have looked at the additive effects of intention and perceptions of control. The reason for this practice is that empirically, even when an interaction is present in the data, statistical regression analyses often reveal only main effects. To obtain a statistically significant interaction requires that intention and perceived control scores cover the full range of the measurement scale. For most behaviors, however, a majority of respondents fall on one or the other side of these continua.
3. Only differences in belief strength were reported. It is not clear whether there were significant differences in outcome evaluations, motivations to comply with referents, or the perceived power of control factors.

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