Chapter 8

Prediction
of
Behavior

In the preceding chapters we have attempted to specify the determinants of beliefs, attitudes, and intentions. Some important problems are clearly still unexplored. Yet even assuming that we have a satisfactory understanding of the ways in which beliefs, attitudes, and intentions are formed, we are still faced with a question of greater practical significance, namely, the relation between these variables and a person's actual behavior. We have defined overt behavior as observable acts that are studied in their own right. Despite the commitment of the social sciences to the study of human behavior, relatively little research in the attitude area has investigated overt behavior as such. Instead, most studies have used observable acts to infer beliefs, attitudes, or intentions. Until very recently, empirical investigations have rarely concerned themselves with the relation of these variables to overt behavior.

It has usually been assumed that a person's behavior with respect to an object is in large part determined by his attitude toward that object. In this chapter we shall first review some of the research that has examined the attitude-behavior relation. We shall see that there is little evidence for a systematic relation between these variables. From the point of view of our conceptual framework, this is not unexpected. We have argued that a person's behavior is determined by his intention to perform that behavior. Although a person's attitude toward an object should be related to the totality of his behaviors with respect to the object, it is not necessarily related to any given behavior.

In order to gain a better understanding of the attitude-behavior relation, we shall examine the nature of different behavioral criteria. We shall see that, like intentions, behaviors can vary in terms of their specificity. The attitude-behavior relation will then be reexamined in light of the distinctions between behavioral criteria. We shall discuss alternative explanations for the low relation between at-

titude and behavior and analyze them within our conceptual framework. Finally, we shall consider the relation between intentions and behaviors and review some of the relevant research.

ATTITUDES AND BEHAVIOR

The relative neglect of the relation between attitude and behavior can in large part be attributed to the widespread acceptance of the assumption that there is a close correspondence between the ways in which a person behaves toward some object and his beliefs, feelings, and intentions with respect to that object. In fact, the term "attitude" was introduced in social psychology as an explanatory device in an attempt to understand human behavior. As we noted in Chapter 1, most investigators would agree with the definition of attitude as a learned *predisposition to respond* to an object in a consistently favorable or unfavorable manner. This definition implies a strong link between attitude and behavior, and the traditional view has been that any stimulus object comes to elicit an attitude which mediates or determines all responses to the object. It follows that if one could measure this attitude, one would be able to explain and predict a person's behavior.

The first step in this direction was to develop instruments or techniques that could be used to measure attitudes. These efforts eventually resulted in the development of the standard attitude scales discussed in Chapter 3. Much of the early research attempted to demonstrate the utility of the attitude concept by showing that people who behave in different ways also differ in their attitudes. Thus investigators found that union members have more favorable attitudes toward labor unions than management does, that pacifists have more negative attitudes toward war than nonpacifists do, that northerners are more favorable toward blacks than southerners are, etc. However, since the attitude scales used in these studies were developed in a way that almost ensured that they would distinguish between the comparison groups, these findings cannot be taken as evidence for a relation between attitude and behavior. Furthermore, the "behavioral" criterion in these studies can best be viewed as a behavioral syndrome rather than as a specific behavior toward the stimulus object. The finding that groups known to differ in their behaviors also differed in their measured attitudes nevertheless was taken as evidence confirming the assumption of a close link between attitude and behavior. Most investigators thus turned their attention to more controlled laboratory studies concerned with the determinants of attitude and attitude change. Studies of this kind continue to dominate research in the attitude area.

From time to time, however, studies were reported in which an attempt was made to examine the relation between attitude and behavior. In a review of this research Wicker (1969) was able to identify a relatively small number of studies in which "at least one attitudinal measure and one overt behavioral measure toward the same object [were] obtained for each subject" (p. 48). Table 8.1 presents Wicker's summary of research on the attitude-behavior relationship. On the basis of his consideration of these studies, Wicker concluded that "it is con-

Table 8.1 Summary of Studies of Attitude-Behavior Relationships (From Wicker, 1969)

Investigator(s)	Subjects	Attitude object	Overt behavior	n	Strength of relationship *
A. Jobs, industrial organizations and work groups					
Vroom (1964) (Review of 15 studies)	employees	one's job	job performance	range: 40–890	median $r = .14$ range .68 to −.03
Bernberg (1952)	aircraft plant employees	one's job	job absences	890	$r = .01$
Vroom (1962)	oil company employees	one's job	job absences	489	$r = −.07$
Weitz and Nuckols (1953)	insurance agents	one's job	job resignations	480	biserial $r = .20, .05$
Webb and Hollander (1956)	Air Force cadets	flight training program	dropping out of program	210	Kendall's $tau = .22, .11$
Sagi, Olmstead and Atelsek (1955)	college students	student activity groups	dropping out of group	123	(†)
B. Members of minority groups					
LaPiere (1934)	hotel and restaurant proprietors	Chinese	providing service to Chinese	128	9%
Kutner, Wilkins and Yarrow (1952)	restaurant and tavern proprietors	Negroes	providing service to a Negro	11	45%, 0%
DeFleur and Westie (1958)	college students	Negroes	willingness to have picture taken with a Negro and widely distributed	46	70%
Linn (1965)	college students	Negroes	willingness to have picture taken with a Negro and widely distributed	34	65%, 41%
Green [1972]	college students	Negroes	willingness to have picture taken with a Negro and widely distributed	44	$r = .43$
Fendrich (1967)	college students	Negroes	participation in group discussion on race relations	46	$gamma = .69, .12$

Investigator(s)	Subjects	Attitude object	Overt behavior	n	Strength of relationship *
Warner and DeFleur (1969)	college students	Negroes	signed agreement or disagreement to a request to engage in behaviors involving Negroes	123	63%
Mann (1959)	college students	Negroes	rated prejudice shown in discussion group	102	$r = .51, .22$
Katz and Benjamin (1960)	college students	Negroes	observed behaviors in racially mixed groups	32	(‡)
Rokeach and Mezei (1966)	college students	Negroes	choice of group members with whom to have coffee	68	54%
Kamenetsky, Burgess and Rowan (1956)	college students	Negroes	signing a petition for fair employment	100	biserial $r = .61, .59,$ .58, .54
Himmelstein and Moore (1963)	college students	Negroes	imitation of Negro model's petition signing	51	47%
Bray (1950)	college students	Negroes, Jews	conforming to Negro's or Jew's autokinetic movement judgements	50 per group	$r = .15$ (Jewish condit.) $r = .11$ (Negro condit.)
Berg (1966)	college students	Negroes	conforming to Negro's autokinetic movement judgements	60	$r = -.10, -.14, -.21$
Malof and Lott (1962)	college students	Negroes	conforming to Negro's judgements in Asch-type conformity situation	60	67%
Smith and Dixon (1968)	college students	Negroes	being conditioned by a Negro E in a Taffel verbal conditioning procedure	80	(§)
C. Miscellaneous objects					
Carr and Roberts (1965)	Negro college students	civil rights activities	participation in civil rights activities	332	range of r: .29 to .10
Dean (1958)	industrial employees	local labor union	attendance at local labor union meetings	248	25%

				40	range of r: .26 to −.09
Cattell, Heist, Heist and Stewart (1950); Cattell, Maxwell, Light and Unger (1950)	male college students and businessmen	football, movies, subject's chosen career, sleep	daily log of time and/or money spent		
Corey (1937)	college students	cheating	cheating on self-graded exam	67	$r = .02$
Freeman and Ataov (1960)	college students	cheating	cheating on self-graded exam	38	range of Kendall's tau: .10 to −.19
Tittle and Hill (1967)	college students	student political activity	voting in student election	301	range of $gamma$: .50 to .29
Bellin and Kriesberg (1967)	mothers of families eligible for public housing	public housing	applying for public housing	79	60%
Newton and Newton (1950)	maternity ward patients	breast feeding	'success' of breast-feeding judged from amount of breast milk taken by infant	91	74%
Potter and Klein (1957)	maternity ward patients	breast feeding	observed affection toward infant and efforts to facilitate feeding at time of nursing	25	$r = .65$
[Wicker and Pomazal, 1971]	college students	participating as a subject in psychological research	commitment to participate and actual participation as a subject in psychological research	257	$r = .17$

* Statistics of association are shown when reported; otherwise, the figure is the percentage of subjects whose verbal attitudes were consistent with their overt behaviors.

† Group members who remained had more favorable attitudes toward their groups than those who dropped out.

‡ An inverse relationship was found between attitudes and behaviors: the more prejudiced white subjects were more accepting of suggestions by Negroes than were the less prejudiced white subjects.

§ Neither high nor low-prejudice subjects showed significant conditioning effects with the Negro experimenters; when compared to appropriate controls, high-prejudice subjects showed significantly greater conditioning with white experimenters than with Negro experimenters.

siderably more likely that attitudes will be unrelated or only slightly related to overt behaviors than that attitudes will be closely related to actions" (p. 65). Despite repeated failures to demonstrate a strong relation between attitude and behavior, the basic assumption that human behavior is determined by attitudes continued to persist.

Multicomponent View of Attitude

Until recently, most textbooks of social psychology either completely ignored the attitude-behavior question or made sweeping statements to the effect that "Man's social actions—whether the actions involve religious behavior, ways of earning a living, political activity, or buying and selling goods—are directed by his attitudes" (Krech, Crutchfield, and Ballachey, 1962, p. 139). Attitudes were viewed as complex systems comprising the person's beliefs about the object, his feelings toward the object, and his action tendencies with respect to the object. Given this inclusive view of attitude as encompassing all the person's experiences with respect to the object, it would be difficult to assume anything other than a strong relation between attitude and behavior. At the same time, however, this multi-component view of attitude was used to explain the low empirical relations between measures of attitude and overt behavior.

Figure 8.1 shows Rosenberg and Hovland's (1960) schematic representation of the three-component view of attitude. Note that all responses to a stimulus object are mediated by the person's attitude toward that object. The different responses, however, are classified into three categories: cognitive (perceptual responses and verbal statements of belief), affective (sympathetic nervous responses and verbal statements of affect), and behavioral or conative (overt actions
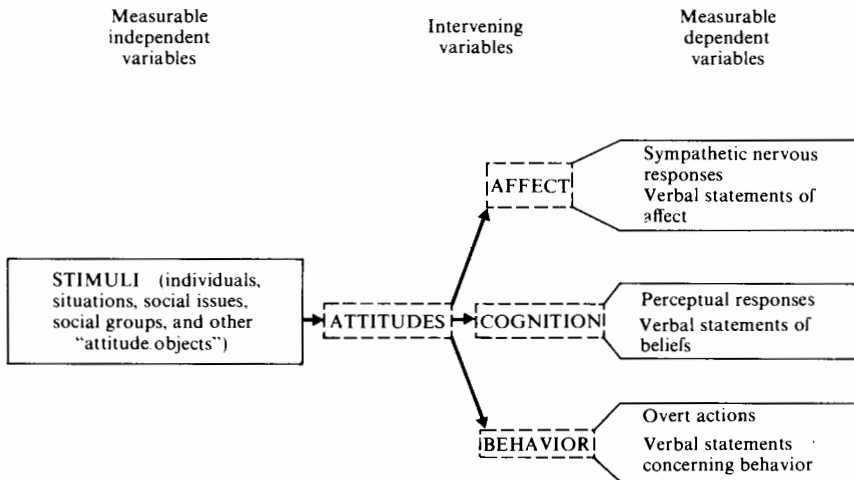

Fig. 8.1 Schematic conception of attitudes. (From Rosenberg and Hovland, 1960.)

and verbal statements concerning behavior). Corresponding to each of these response classes is one component of attitude.

According to this view, any response can be used to infer a person's attitude. It is perhaps for this reason that most research in the attitude area has treated very different response measures as equivalent or alternative indices of the same underlying attitude. Figure 8.1 also indicates, however, that certain responses are most indicative of the cognitive component, others of the affective component, and still others of the conative component. Since the assumption is that measures of these different components are not always highly related, a *complete* description of attitude requires that all three components of attitude be assessed by obtaining measures of all three response classes. It follows that measures of attitude based on only one or two response classes are incomplete and that use of such incomplete measures to predict overt behavior does not represent a fair test of the relation between attitude and behavior. The repeated finding of a low relation between attitude and behavior was explained by arguing that most measures of attitude merely assess the affective component. To obtain a complete measure of attitude, the cognitive and conative components would also have to be assessed.

On closer examination, however, we can see that this multicomponent view of attitude cannot provide an adequate explanation for the low attitude-behavior relation. First note that it is not clear whether the multicomponent view suggests that behavior is determined by attitude as a whole or merely by its conative component. The former interpretation implies that all three components need to be assessed whereas according to the latter interpretation it would be sufficient to obtain an index of the conative component alone. More important, we have discussed considerable evidence to show that indices based on a person's beliefs about an object ($\Sigma\, b_i e_i$), or on his intentions with respect to the object ($\Sigma\, I_i e_i$), constitute measures of the individual's attitude toward that object (A). In fact, we have seen that most measures of attitude are based either on beliefs or on intentions and that these measures are highly correlated with each other and with direct measures of evaluation. Later in this chapter we shall see that indices based on a person's behaviors (B) with respect to an object, taking each behavior's evaluative implication into account, are also highly related to his attitude toward the object in question (that is, $A = \Sigma\, B_i e_i$). These arguments can be summarized as follows:

Cognitive component		Affective component		Conative component
$\Sigma\, b_i e_i$	$=$	A	$=$	$\Sigma\, I_i e_i = \Sigma\, B_i e_i.$

From our point of view, measures of the cognitive, affective, or conative components are alternative ways of assessing the person's attitude. It follows that separate assessment of all three components is unlikely to lead to improved behavioral prediction.

Support for this position can be found in a study by Ostrom (1969), who attempted to obtain independent measures of cognition, affect, and conation and

to examine the relations of these components to overt behavior. A sample of judges were asked to classify a large number of verbal statements about the church into the three response classes defined by Rosenberg and Hovland (1960; see Fig. 8.1), i.e., into verbal statements of belief, affect, or behavior. On the basis of each set of statements, three attitude scales were constructed: a Thurstone scale, a Likert scale, and a Guttman scale resulting in three different measures of each of the three attitudinal components. In addition, the following self-rating scales were constructed to measure each component.

Affective component

| I feel strong liking for the church. | | | | | | | | | | | | | | | | | | | | | I feel strong disliking for the church. |

Cognitive component

| I believe the church has extremely desirable qualities. | | | | | | | | | | | | | | | | | | | | | I believe the church has extremely undesirable qualities. |

Conative component

| I act strongly supportive toward the church. | | | | | | | | | | | | | | | | | | | | | I act strongly hostile toward the church. |

Before we consider Ostrom's findings it is worth examining this procedure from a theoretical and methodological point of view. As we have noted in the preceding chapters, a measure of attitude should correlate highly with a global measure of intention to perform positive or negative acts, and both of these measures should be correlated with beliefs linking the object to various attributes and evaluations of those attributes. The three self-rating scales used by Ostrom should therefore be highly intercorrelated.

As to the standard attitude scales, if they are properly constructed, they should provide indices of the subject's location on the evaluative dimension regardless of whether "cognitive," "affective," or "conative" items were used to construct the scales. For example, the Thurstone scaling procedure makes use of judges to obtain estimates of each item's evaluative implications. So long as two sets of items, each representing the entire evaluative dimension, meet Thurstone's criteria of ambiguity and irrelevance, they constitute *by definition* parallel forms of the same test and therefore must yield the same results. Thus, irrespective of the kind of items used, if the standard attitude scales are properly constructed, they should all be highly intercorrelated. Ostrom's results support this analysis.

By using four methods for measuring each of the three attitudinal components, Ostrom was able to construct a multitrait-multimethod matrix.[1] The results indicated high convergent validity in that all four different types of attitude scales were found to be highly intercorrelated. In opposition to a multicomponent approach, there was little evidence for any discriminant validity. Measures of the

---

1. See Chapter 4 for a discussion of the multitrait-multimethod matrix.

three different attitudinal components were highly intercorrelated, demonstrating that indices based on the cognitive, affective, and conative response classes are best viewed as alternative measures of the same underlying evaluative dimension. With respect to the Likert scale, for example, cognition and affect correlated .79, cognition and conation .81, and a correlation of .79 was found between affect and conation. For the self-rating scale, these correlations were .77, .68, and .76, respectively.

In addition, Ostrom obtained seven self-reports of church-relevant behaviors, including days of church attendance per year, amount of money donated per year, whether or not the subject had even studied for the ministry, etc. At the end, the subject was given the opportunity to indicate his willingness to attend a future discussion by leaving his name and address with the experimenter. Each of the 12 attitude scales was correlated with each of the eight behavioral measures; thus there were 96 attitude-behavior correlations. They ranged from −.06 to .68, and most correlations were below .30. The only behavior that could be predicted with reasonable accuracy from the attitude scales was church attendance. More important, there were no appreciable differences in the predictive abilities of the three attitudinal components, and taking all three components into account would not improve prediction of behavior.[2] Thus the three-component view of attitude cannot provide a viable explanation for the low empirical relation between attitude and behavior.

"Other Variables" Approach

Despite the failure of the multicomponent view of attitude to account for low attitude-behavior relations, most investigators continue to regard attitudes as composed of cognitive, affective, and conative components. Further, attitudes continue to be regarded as primary determinants of a person's responses to the object, and any of these responses is assumed to provide an index of the person's attitude. At the same time, however, there is a growing recognition among investigators that there is no one-to-one correspondence between attitude and any given behavior. The most popular current views seems to be that

> . . . attitudes always produce pressure to behave consistently with them, but external pressures and extraneous considerations can cause people to behave incon-

---

2. In a more recent study, Kothandapani (1971) essentially replicated Ostrom's procedure, using birth control as his attitude object, and reported some evidence for the discriminant validity of scales measuring the three attitudinal components, as well as evidence that measures of the conative component were better predictors of the use of birth control methods than were measures of the cognitive and affective components. Although Kothandapani's results appear to contradict the position we have taken, it is worth observing that most discriminant validity was obtained with the Thurstone scale, a finding which is, by definition, impossible. Since most research in this area is inconsistent with Kothandapani's findings, we prefer to defer judgment until his results have been replicated.

sistently with their attitudes. Any attitude or change in attitude tends to produce behavior that corresponds with it. However, this correspondence often does not appear because of other factors that are involved in the situation. (Freedman, Carlsmith, and Sears, 1970 pp. 385–386)

Generally speaking, the "other variables" approach implies that attitude is only one of a number of variables that influence behavior and that the other variables must also be taken into account. Two interpretations can be given to this position.

Moderating effects of other variables. The first interpretation implies that the relation between attitude and behavior is *moderated* by other variables. For example, a high attitude-behavior relation might be found when subjects have the skills required to perform the behavior in question and a low relation when they lack the necessary skills. In this case, ability is viewed as a variable that *interacts* with attitude in determining behavior.

Independent effects of other variables. The second interpretation implies that other variables act in conjunction with attitude to determine behavior. That is, the other variables make an *independent* contribution to the prediction of behavior. For example, irrespective of their attitudes, high-ability subjects may be more likely to perform a given behavior than low-ability subjects. According to this view, other variables do not interact with attitude but instead they have *direct* effects on behavior.[3] Most investigators appear to assume that other variables have both moderating and independent effects on behavior.

A large array of "other variables" have been proposed to account for the inconsistent relation between attitude and behavior (see Ehrlich, 1969, and Wicker, 1969, for reviews of these variables). Among the variables suggested are other attitudes, competing motives, verbal, intellectual, and social abilities, individual differences, actual or considered presence of other people, normative prescriptions of proper behavior, alternative behaviors available, expected and/or actual consequences of various acts, and unforeseen extraneous events. However, as Wicker has pointed out, most of these factors have not been systematically studied, and there is surprisingly little research on the influence of any of these variables on behavior. "Often these factors are mentioned in discussion sections by investigators who failed to demonstrate attitude-behavior consistency. . . . The arguments for the significance of each factor are often plausible anecdotes and *post-hoc* explanations." (Wicker, 1969, p. 67)

Of the few studies that have explicitly attempted to test the other-variables explanation, most have employed a measure of intention rather than behavior as their criterion. Some were reviewed in the preceding chapter. These studies attempted to demonstrate the *moderating* effect of degree of exposure (Warner and DeFleur, 1969; Green, 1972) and intimacy (Green, 1972) on the attitude-behavior relation. As we have seen, these variables had no consistent independent

---

3. In an analysis of variance, the other variables (as well as attitude) would have main effects but would not need to interact with attitude.

effects on intentions, and they usually did not interact with attitude. Tarter (1969) studied the influence of an individual difference variable (individualistic versus collectivistic orientation) on the relation between attitude and "behavior." Again using intentions to release interracial photographs as the behavioral criterion, he found no evidence for the moderating effect of orientation on the relation between attitude and intention. In sum, then, not only have these studies used intentions rather than behaviors as their criterion measures, but the finding that "other variables" sometimes do and sometimes do not have independent and moderating effects on intentions contributes little to our understanding of the relation between attitude and behavior.

Wicker (1971) studied the independent effects of attitude toward the church and other variables on three religious behaviors. Each subject's attitude toward his own church was measured on five evaluative semantic differential scales. Three behaviors were to be predicted: (1) the number of Sundays the subject attended church during a 39-week period; (2) the amount of money contributed by the subject's family in the course of one year; and (3) the number of times the subject participated as a worker or a leader in the organized activities which occurred in the subject's church during a 3½ month period.

Three "other variables" were used as predictors in addition to attitude: perceived consequences of the behavior, evaluation of the behavior, and judged influence of extraneous events on the behavior. Nine presumably desirable consequences were specified, such as "setting a good example for one's children," "providing inspiration and help in coping with problems," and "making one more respected by the church pastor." Subjects indicated whether *regular attendance at Sunday worship service, regular contributions to the church,* and *taking an active part in church activities* did or did not lead to each of the nine consequences. Affirmative responses were given a score of +2, "uncertain" a score of +1, and a negative response was scored 0. The sum over the nine responses served as an index of perceived consequences for each of the three behaviors.

Evaluation of each behavior was assessed by computing complex indices which essentially represented the subject's attitudes toward *attending worship service every Sunday, contributing one month's income annually to the church,* and *spending more than 30 hours a week in church activities.*

To measure judged influence of extraneous events, Wicker constructed eight hypothetical situations for each of the three behaviors in which an unplanned extraneous event occurred. Subjects were asked to indicate the degree to which their church behaviors would be affected by the event. "For example, what would be the effect of a subject's worship service attendance if he had weekend guests who did not regularly attend church? How would a subject's contributions be affected if the congregation voted to spend funds on a project of which he disapproved?" (Wicker, 1971, p. 21) Subjects responded to each question on a four-point scale ranging from "the event almost certainly would not influence the behavior" (scored +4) to "the event almost certainly would reduce the likelihood of the behavior" (scored +1). The sum over the eight hypothetical events served as an

index of the judged influence of extraneous events with respect to each of the three behaviors.

The results of the study are summarized in Table 8.2. The first four columns of figures show the correlations of attitude and the three other variables with each of the three behaviors. The last column represents the combined predictive power of all four variables. Consistent with previous findings, the relation between attitude and behavior is low and inconsistent. The correlations are low but significant for church attendance and contributions, and nonsignificant for participation in church activities. In fact, none of the four predictors is significantly related to all three behaviors. With respect to church attendance and contributions, judged influence of extraneous events was found to be the best predictor, and adding the other variables did not improve the multiple correlations with behavior.[4] The prediction of participation in church activities was largely unsuccessful.

Table 8.2 Prediction of Church Behaviors from Attitude and Other Variables (Adapted from Wicker, 1971)

	Product-moment correlations				
Behavior	Attitude toward own church	Perceived consequences of behavior	Evaluation of behavior	Judged influence of extraneous events	Multiple correlation
Attendance	.31 †	.19 *	.31 †	.42 †	.50 †
Contributions	.22 †	.05	.37 †	.45 †	.53 †
Participation	.11	.20 *	.06	.14	.23

* $p < .05$
† $p < .01$

Overall, then, these results again indicate that attitudes and other variables may or may not be related to a given behavior. So far as our understanding of the attitude-behavior relation is concerned, little information has been gained. Without some theoretical framework that specifies the "other variables" that are relevant for the prediction of a given behavior, continued search for additional variables can only serve to confound the problem. Clearly, if a sufficient number of "other variables" are measured, it is always possible to find one or two variables that are related to some of the behaviors under consideration. Such an approach fails to advance our understanding of the relation between attitude and behavior, however.

---

4. Indeed, the multiple-regression analysis showed that only the judged influence of extraneous events carried a significant regression weight in the prediction of church attendance and that this variable, as well as evaluation of the behavior, had significant weights in the prediction of contributions. None of the four variables had significant regression weights in the prediction of participation in church activities.

Wicker selected some of the variables that had been suggested by other investigators as possible additional determinants of behavior. However, Rokeach (1968; Rokeach and Kliejunas, 1972) has argued that the low attitude-behavior relationships "suggest the need for a clearer conceptualization of the attitude concept and of the relationships between attitudes and behavior." More specifically, he has proposed that "behavior-with-respect-to-an-object-within-a-situation (B_{os}) is always a function (f) of at least two interacting attitudes: attitude-toward-object (A_o) and attitude-toward-situation (A_s) " (Rokeach and Kliejunas, 1972; p. 195). According to Rokeach, attitude toward the situation has to be considered in addition to the traditional measure of attitude toward the object in order to predict behaviors with respect to the object in the situation. The attitudes are weighted for their subjective importance, as in Eq. 8.1.

$$B_{os} = f(A_o A_s) = (w) A_o + (1\text{-}w) A_s. \tag{8.1}$$

Rokeach and Kliejunas (1972) argued that A_o and A_s are independent and that each will reliably predict behavior to at least some extent.

To test this model, Rokeach and Kliejunas attempted to predict students' self-reports of the number of times they had cut a given class when the cut was not caused by "illness, accident, unusual weather conditions, etc." Attitudes toward the professor or instructor teaching the class (A_o) were measured on a nine-point scale ranging from *I liked* to *I disliked the instructor very much*. Subjects indicated their attitudes toward the situation (A_s) by rating "the importance or unimportance of attending class" on a nine-point scale ranging from *somewhat important to me* to *very important to me*. Finally, the relative importance of the two attitudes was assessed by asking subjects to indicate the extent to which "the frequency of attendance or the frequency of cuts in this course [were] determined by (a) their feelings about the professor and (b) their general feelings of the importance or unimportance of attending class." Subjects responded to questions (a) and (b) by stating percentages that indicated the perceived contributions of the two factors, and the two percentages had to sum to 100. For example, a subject could indicate that his cuts were determined 60 percent by his feelings about the professor and 40 percent by his feelings about the importance of attending class.

Consistent with expectations, Rokeach and Kliejunas found that over all courses and all subjects, A_o and A_s were uncorrelated, and A_s correlated significantly $(r = .46)$ with behavior. Contrary to expectations, however, the A_o-behavior relation was not significant, and the multiple correlation, with both A_o and A_s used as predictors of behavior, was only slightly higher $(r = .49)$ than the correlation for A_s alone. With the use of subjective weights to predict behavior on the basis of Eq. 8.1, a correlation of .61 was obtained. However, this correlation did not differ significantly from the multiple correlation. Thus, although the results seemed to indicate that behavior could be predicted from attitude toward the situation, attitude toward the object was largely unrelated to behavior.

Analysis of "other variables" research. We have described two studies showing that such variables as evaluation of the behavior, attitude toward the situation, perceived consequences of the behavior, and judged influence of extraneous events are sometimes related to behavior. It may be instructive to examine these findings from the point of view of our conceptual framework. Our orientation suggests that the immediate determinant of a person's behavior is his intention to perform the behavior in question. In the preceding chapter we saw that a person's intention to perform a given behavior is determined by his attitude toward the behavior (A_B) and by his subjective norm (SN). If a strong relation between intention and behavior can be assumed, these two components should also be predictive of the overt behavior. Further, "other variables" not included in the model are expected to influence intentions (and hence behaviors) only to the extent that they have an effect on A_B, SN, or the relative weights of these two components.

Let us now take a closer look at the "other variables" studied by Wicker (1971) and Rokeach and Kliejunas (1972). Clearly, Wicker's measures of "evaluation of the behavior" and "perceived consequences of the behavior" can be viewed as measures of the subject's attitude toward the behavior (A_B). Neither of Wicker's two indices, however, is a very satisfactory measure of A_B. The first index, evaluation of the behavior, was derived from a consideration of discrepancies between attitudes toward six related behaviors, namely six levels of the behavior in question (e.g., attitude toward attending worship service every Sunday, missing once or twice a year, . . . , missing more than twice a month). The higher the score, the more likely the subject felt that only high levels of behavior were acceptable (Wicker, 1971).

Wicker's index concerning perceived consequences is also an imperfect measure of attitude toward the behavior. Recall that attitude toward the behavior is a function of the person's beliefs about the behavior's consequences and his evaluations of the consequences ($A_B = \Sigma\, b_i e_i$). Wicker obtained beliefs about consequences presumed to be desirable, but he had no direct measures of their desirability. Thus, although the two indices may be interpreted as measures of attitude toward the behavior, they represent only approximations to the attitude in question.

Wicker's measure of judged influence of extraneous events can best be viewed as the subject's intention to perform the behavior. The subject was essentially asked whether he would or would not engage in the behavior in a variety of hypothetical situations. The index based on the subject's responses thus represents a general intention to perform the behavior in question. In sum, Wicker obtained two imperfect measures of attitude toward the behavior and a measure of behavioral intention, in addition to his measure of attitude toward the church.

In a consideration of the relations between these variables, it is important to note that they have not always been measured at the same level of specificity. Table 8.3 summarizes the different measures obtained by Wicker. The first two rows show that the two measures of attitude toward the behavior are not identical. Clearly, a person's attitude toward "making regular contributions to the

Table 8.3 Description of Measures in Wicker's Study

Variable	Attendance	Contributions	Participation
Perceived consequences $[\sim\Sigma b_i e_i]$	Regular attendance at Sunday worship service	Regular contributions to the church	Taking an active part in church activities
Evaluation of behavior $[\sim A_B]$	Attending worship service every Sunday	Contributing one month's income to the church	Spending more than 30 hours a week in church activities
Judged influence of extraneous events $[\sim I]$	Intention to attend worship service	Intention to contribute to church	Intention to participate in church activities
Behavior $[B]$	Number of Sundays subject attended church	Amount of money contributed to church	Number of times subject participated as worker or leader

church" may be very different from his attitude toward "contributing one month's income to the church." Further, intentions and behaviors are also measured at different levels of specificity. A person's intention to "participate in church activities," for example, may differ greatly from his intention to "participate as a worker or leader." By the same token, the behavior of participating as a worker or leader is measured at a more specific level than is the general intention to participate in church activities. Finally, the attitudes toward the behavior are measured at different levels of specificity than is either the intention or the behavior.

The discrepancies in levels of specificity are especially apparent with respect to participation in church activities (see the last column in Table 8.3). Considerably greater correspondence in levels of specificity is found with respect to contributions and church attendance.

As we pointed out in the preceding chapter, the degree of relationship between two variables should decrease to the extent that these levels of specificity fail to correspond. The results reported by Wicker are consistent with this analysis. Overall, intercorrelations among attitudes, intentions, and behavior were low, ranging from $-.04$ to .45. The low correlations reflect not only discrepancies in levels of specificity but also the above-mentioned problems concerning measurement of the two "attitude toward the behavior" indices. Thus, even when levels of specificity were somewhat comparable, these two indices were not highly correlated. For church attendance, a low but significant correlation of .26 was found between evaluation of attending worship service every Sunday and perceived consequences of attending Sunday worship service regularly. When the levels of specificity were highly discrepant, the correlation was even lower. For example, for participation in church activities, a nonsignificant correlation of $-.04$ was obtained between perceived attitude toward taking an active part in church activities and evaluation of spending more than 30 hours a week in church activities.

In similar fashion, correlations between intention and behavior were higher when the levels of specificity tended to correspond than when they did not. Thus, for church attendance and monetary contributions (where levels of specificity tended to correspond), intentions and behavior correlated .42 and .45, respectively. A nonsignificant correlation of .14 was obtained between intention to participate in church activities and the number of times a subject participated in the role of worker or leader.

As mentioned earlier, Wicker's main finding was that "judged influence of extraneous events" (an intention) was the best predictor of attendance and contributions whereas participation was not predictable from any of the variables considered. Our reanalysis suggests that a person's intention may be a good predictor of his behavior but only when these two variables are measured at the same level of specificity. We shall return to this point below.

A reexamination of the measure of "attitude toward the situation" employed by Rokeach and Kliejunas (1972) reveals that it is not a measure of attitude, nor is it directed at the situation in which the behavior is performed. A measure of attitude toward the situation would have been obtained by asking subjects to

evaluate "the classroom situation." Instead, Rokeach and Kliejunas obtained a measure of the perceived importance of attending class. As such, it is perhaps more similar to an attitude toward the behavior than to an attitude toward the situation. However, we have noted that measures of importance may not be highly related to attitude. In fact, perceived importance of attending class may also reflect a person's normative belief as to whether he is supposed to attend class.

The results reported by Rokeach and Kliejunas indicated that cutting class could be predicted with greater accuracy by considering perceived importance of attending class than by considering attitude toward the professor. These results can be interpreted as showing that attitude toward the behavior and/or normative beliefs are better predictors of behavior than is attitude toward the target of the behavior. Although the importance of attending class was found to be uncorrelated with attitude toward the professor, this finding should not be taken as evidence that attitude toward a behavior (A_B) and attitude toward the object of the behavior (A_o) will *always* be uncorrelated. In the preceding chapter we reported some empirical findings showing high and significant correlations between A_B and A_o.

In sum, the "other variables" interpretation of the lack of consistent attitude-behavior relations is not incompatible with our conceptual framework. We have proposed that variables external to our model can influence behavior indirectly by affecting the determinants of behavioral intentions. This approach suggests that neither the attitude toward an object nor any other external variable will always be related to behavior. The "other variables" approach is based on the assumption that such attitudes *are* related to behavior, but that additional variables have to be considered in order to predict behavior accurately. Our analysis of research on the effects of "other variables" has revealed several methodological problems, and it may therefore be useful to reexamine the nature of research on the attitude-behavior relationship.

ATTITUDINAL PREDICTORS AND BEHAVIORAL CRITERIA

In our discussion above we noted the lack of correspondence between the labels that investigators apply to their variables and the measures they actually obtain. Variables assumed to be nonattitudinal (e.g., perceived consequences) may in fact be attitudinal in nature, and variables labeled "attitudes" may in fact be measures of other variables (e.g., importance). This recurring labeling problem in the attitude area calls into question the conclusion reached by an increasing number of investigators to the effect that empirical research shows little or no relation between "attitude and behavior." We have noted repeatedly that very different measures have all been labeled "attitude." We have also seen that there is some ambiguity in use of the term "behavior"—several studies dealing with the attitude-behavior relation have actually obtained measures of intention. Moreover, behavioral criteria may vary in terms of their level of specificity. In fact, the nature of the behavioral criteria has been largely neglected in studies concerned with atti-

tudinal prediction of behavior (Ehrlich, 1969; Fishbein, 1967b, 1973). It may thus be instructive to examine the "attitudinal" predictors and "behavioral" criteria in more detail. Such an analysis demonstrates that appropriate measures of attitude *are* related to appropriate measures of behavior and that the results obtained in different studies are not so inconsistent as they initially appear.

Behavioral Criteria

Throughout the book we have distinguished among beliefs, attitudes, and intentions, and we have demonstrated the importance of this distinction. It should be clear by now that these variables may differ greatly in their relations to some overt behavior. An analysis of the literature suggests that it is also important to make some distinctions among different types of behavioral criteria. Although most investigators have taken behavior as a given, and some (e.g., Deutscher, 1969) have even argued that direct observation of behavior is "the ultimate evidence of validity," it is necessary to realize that behavioral observations are nothing more or less than one kind of data utilized by a behavioral scientist. Like any other measure, records of overt behavior may be unreliable or invalid and may be given inappropriate labels. Fishbein (1967b) has noted that, at least in the attitude area, behavioral criteria have seldom, if ever, been subjected to the same rigorous analyses to which verbal attitude measures have been subjected. He argued that such analyses are an essential first step for an understanding of the relation between attitude and behavior.

Consistent with this argument, Fishbein (1973) has distinguished between several types of behavioral criteria that have been employed in studies of the attitude-behavior relationship. One frequently used criterion is the single observation of a *single act*. Recording of the behavior may be either dichotomous (e.g., the subject does or does not contribute money to charity) or continuous (e.g., the amount of money contributed). Another criterion in frequent use is an index based on *repeated observations* of the same single act (e.g., behavior across several trials in an experiment). Here a distinction can be made between repeated observations under homogeneous or heterogeneous conditions. A third type of criterion, in less frequent use, is an index based on single or repeated observations of different behaviors, i.e., a *multiple-act* criterion.

Basic to this classification scheme is the *single-act criterion*. The behavioral measure here indicates whether or not the person performed the behavior in question. As in the case of behavioral intentions, a single-act criterion can be viewed as consisting of four elements: behavior, target, situation, and time. Unlike the situation with regard to intentions, however, a single-act criterion is always specific in that it involves a directly observable response to a certain target, in a given situation, at a given point in time. In the first empirical investigation of the attitude-behavior relation, for example, LaPiere (1934) measured acceptance of Orientals in hotels and restaurants by observing whether or not a particular

Chinese couple (target) was or was not served or admitted (behavior) at a given establishment (situation) at a given point in time.

In contrast to the single-act criterion, repeated-observation and multiple-act criteria vary in terms of their specificity with respect to at least one element of the behavior. A *repeated-observation criterion* can be obtained by observing the same specific behavior directed at different targets, in different situations, or at different times. These repeated observations are in some way combined, and the resulting index is the repeated-observation criterion. Repeated-observation criteria thus represent generalizations across targets, across situations, or across time. For example, if LaPiere had wanted to generalize across targets, he could have observed whether a given respondent admitted *different* people in the same establishment at approximately the same point in time.[5] At a less general level of target specificity, he could have observed the respondent's behavior with respect to different Orientals. From this point of view, the distinction between repeated observations under homogeneous or heterogeneous conditions refers to the behavior's level of specificity in target, situation, or time. The greater the variation in a given element, the more general the repeated observation criterion with respect to that element.

A *multiple-act criterion* generalizes across the fourth element, namely, the specific behavior under consideration. A multiple-act criterion is obtained by computing some index across observations of different behaviors. By viewing the single-act criterion as a cell in a two-dimensional table that has repeated observations as columns and different behaviors as rows, the multiple-act criterion can be described as an index based on the entries in the cells of a given column. Table 8.4 shows that a multiple-act criterion is based on observation of several behaviors with respect to a given target, in a given situation, at approximately the same point in time.

Table 8.4 summarizes our discussion up to this point. The cell entries in the table represent single-act criteria; row marginals represent repeated-observation criteria; and column marginals represent multiple-act criteria. The entry in each cell will be an observation of an act that may be either dichotomous or continuous. In the dichotomous case, the entries will be either 1 or 0 (e.g., a subject does or does not donate money); in the continuous case, they can take on many different values (e.g., the amount of money donated). The entries in a given row represent the same continuous or dichotomous act with respect to different targets, in different situations, or at different points in time.

In our description of repeated observation and multiple-act criteria, we made no mention of the ways in which observations are combined to yield these criteria. Entries in the cells of a given row or column may be summed, averaged, scaled, etc., and each of these procedures may yield a different criterion score. Therefore

---

5. Needless to say, repeated observations can never be taken at exactly the same point in time.

Table 8.4 The Four Major Types of Behavioral Criteria
(Adapted from Fishbein, 1973)

				Observations				
		1	2	3	$\ldots$ j $\ldots$	n	
Behaviors	1	$B_{1,1}$	$B_{1,2}$	$B_{1,3}$	$\ldots B_{1,j} \ldots$	$B_{1,n}$	$R_1 = f(B_1.)$
	2	$B_{2,1}$	$B_{2,2}$	$B_{2,3}$	$\ldots B_{2,j} \ldots$	$B_{2,n}$	$R_2 = f(B_2.)$
	3	$B_{3,1}$	$B_{3,2}$	$B_{3,3}$	$\ldots B_{3,j} \ldots$	$B_{3,n}$	$R_3 = f(B_3.)$
	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\ddots$ $\vdots$ $\ddots$	$\vdots$	$\vdots$
	i	$B_{i,1}$	$B_{i,2}$	$B_{i,3}$	$\ldots B_{i,j} \ldots$	$B_{i,n}$	$R_i = f(\mathbf{B}_i.)$
	$\vdots$	$\vdots$	$\vdots$	$\vdots$	$\ddots$ $\vdots$ $\ddots$	$\vdots$	$\vdots$
	m	$B_{m,1}$	$B_{m,2}$	$B_{m,3}$	$\ldots B_{m,j}$	$B_{m,n}$	$R_m = f(B_m.)$

$$M_1 = f(B._1) \quad M_2 = f(B._2) \quad M_3 = f(B._3) \quad \ldots \quad M_j = f(B._j) \quad \ldots \quad M_n = f(B._n)$$

$$MR_a = f(R_m)$$
$$MR_b = f(M_n)$$
$$MR_c = f(B_{m,n})$$

$B_{m,n}$ = single observation of a single behavior
R_m = repeated observations of a single behavior
M_n = single observations of multiple behaviors
MR = repeated observations of multiple behaviors

an index based on a consideration of all row marginals may differ greatly from one based on all column marginals, and both may differ from a criterion score based on a consideration of the total set of cell entries. Finally, all indices based on repeated observations of more than one behavior can be viewed as composing a fourth type of behavioral criteria, namely *multiple-act, repeated-observation criteria.* As with behavioral intentions, this fourth criterion can vary in levels of specificity with respect to any of the four elements: behavior, target, situation, and time.

Constructing behavioral indices. Consider an investigator who has obtained a set of behavioral observations and who is now confronted with the task of constructing a repeated-observation or multiple-act criterion. Different problems are involved in constructing these two kinds of indices. Since the *repeated-observation criterion* deals with the *same behavior,* the investigator may be justified in simply summing or averaging the repeated observations. For example, if observations were taken of the amount of money a person contributed to his church on 52

consecutive Sundays, the sum would represent his total contributions in the course of a year, and the mean would provide a measure of the average contribution made each week. A different index could be obtained by counting the number of Sundays on which the person made some contribution.

A simple sum or mean across *different* behaviors, however, may not yield a very meaningful *multiple-act criterion*. Such a procedure may amount to adding apples and oranges. Generally speaking, the problems involved in obtained a multiple-act criterion score are identical to those encountered in obtaining a pencil-and-paper measure of attitude. Indeed, when properly constructed, multiple-act criteria are really nothing more than attitude scores that are based on behavioral observations rather than on verbal statements. In order to clarify this point, consider the parallels between an investigator who is constructing a Likert scale for measuring attitude toward the church and an investigator who wants to obtain a measure of religious behavior. The latter would simply identify a set of behaviors *which he believed were related to religiosity* (or to the individual's attitude toward the church). He would then go out and observe whether or not the individuals in his sample performed these behaviors or the degree to which they engaged in them. For example, the investigator might observe the number of times an individual attended church during a certain time interval, the amount of money he contributed to the church during this time interval, whether or not he attended a particular social event sponsored by the church, whether or not he owned a copy of the Bible, and so on.[6] The investigator now has a set of numbers (i.e., observations) for each respondent, and he is faced with the task of combining these numbers into a single index of "religious behavior."

So far, this investigator's procedure has been very similar to that of one who is constructing a Likert scale for measuring attitudes toward the church or toward religiosity. The behavioral observer first had to identify a set of behaviors (i.e., items) that he believed were related to religiosity. In a similar manner, the attitude scale constructor must first identify a set of opinion statements (i.e., items) that *he believes are related to attitudes toward the church* (or toward religiosity). He may, for example, select statements like, "One should attend church regularly," "People should be willing to support their church financially as well as morally," "A home without a Bible is a home without God," etc.[7]

---

6. Note that some of these behaviors would be classified as single-act criteria and others as repeated-observation criteria. For this reason we do not present a separate discussion of multiple-act–single-observation criteria and of multiple-act–repeated-observation criteria.

7. The attitude scale constructor will also try to select opinion statements that indicate antireligiousness (i.e., if an individual agrees with this statement he is less religious—has a more negative attitude toward the church—than if he disagrees). Although items of this type have seldom been utilized by behavioral observers, there is no reason to ignore them. For example, one can observe whether or not an individual signs a petition or votes for a political candidate who opposes the use of state funds for parochial schools or the tax-free status of religious organizations.

Once the attitude scale constructor has selected his set of opinion statements, he, like the behavioral observer, goes out and observes whether the individuals in his sample agree or disagree with his statements. The respondent may be asked to simply agree or disagree (i.e., be forced to make a dichotomous choice), or he may be asked to indicate the degree of his agreement (e.g., to respond on a five- or seven-place *agree–disagree* scale). At this stage, then, the attitude scale constructor, like the behavioral observer, has before him a set of numbers assumed to imply something about an individual's religiosity. Unfortunately, it is here that the similarity between these two types of investigators usually ends. Whereas the attitude scale constructor will test his assumptions by performing an item analysis, the behavioral observer will usually just accept his assumptions and decide on some arbitrary way of combining his numbers to arrive at a behavioral criterion score.[8] For example, he may first decide that people who have contributed more than $50 should be given a score of 5, that those who have contributed more than $25 but less than $50 should be given a score of 4, and so on. If he does this for each of his continuous variables, he can then simply sum his set of numbers and arrive at his multiple-act criterion.

In contrast, the attitude scale constructor first submits his items to a standard scaling procedure. As noted in Chapter 3, if using a Likert scale, he eliminates those items that fail to discriminate between subjects with favorable and unfavorable attitudes toward the church, or items that do not correlate with this attitude. In a sense, then, the investigator recognizes that some of the opinion items he selected do not serve as good indicants of the particular attitude he is measuring. Clearly, if the behavioral observer were to follow the same procedure, he too might find that some of the behaviors he has observed do not covary with the underlying dimension of religiosity. To put it a bit more bluntly, he might find that some of the behaviors he chose to observe have little to do with the degree of an individual's religiosity.

Two important conclusions can be drawn on the basis of these considerations. The first should be obvious: Not every behavior with respect to some object is related to the attitude toward that object. An investigator usually chooses to observe a given behavior because he assumes that it is relevant to the attitude under consideration. What we have tried to show is that an investigator's intuition can be wrong. Tests of the relation between attitude and a given behavior, therefore, can to a large extent be viewed as tests of the investigator's intuition. Given the assumption that attitude toward an object determines *all* responses to that object, an investigator is clearly free to choose any response to the object in testing the attitude-behavior relation. The considerations above indicate that this assumption is definitely invalid.

---

8. Frequently, the behavioral observer will not even try to construct a multiple-act criterion score but will merely treat each of his single-act observations as a different criterion. This procedure is as inappropriate as treating each item on a Likert scale or each bipolar adjective pair on a semantic differential as a separate dependent variable.

The second conclusion to emerge from our discussion is that a multiple-act criterion based on appropriately selected behaviors represents a measure of attitude and will be highly correlated with any other measure of the same attitude. Indeed, multiple-act criteria can be constructed by using any of the standard attitude scaling procedures: Guttman scaling, Likert scaling, and Thurstone scaling (see Chapter 3).[9]

When the multiple-act criterion is based on the entries in a given column of Table 8.3, it represents a measure of attitude toward a given object, in a given situation, at a given point in time. When it is based on observations of different behaviors with respect to a given object performed in different situations (i.e., on entries in different columns hetergeneous with respect to situation), it represents a general measure of attitude toward the object in question. A standard scaling procedure can also be applied in constructing repeated-observation criteria by combining the observations in a given row of Table 8.4. The resulting score would represent a person's attitude toward the behavior in question. If only time of observation was varied, the repeated-observation criterion would represent attitude toward performing the behavior with respect to a given target in a given situation. More general measures of attitude toward the behavior would be obtained if the columns represented variations in target, situation, and time.

Behavioral observations as indicants of attitude. In the preceding discussion we have suggested that behavioral observations can be used to measure the person's attitude. However, not every behavioral criterion can serve as a valid indicant of attitude. The most specific behavioral observation is the single-act criterion. It consists of a single observation concerning the performance (or nonperformance) of a particular behavior, with respect to a specified target, in a given situation, at a given point in time. Under the assumption of a strong relation between intention and behavior, such a specific behavior is determined by the actor's attitude toward performing the behavior (under the specified conditions) and his subjective norm with respect to this behavior. It follows that such a specific behavior may not even be indicative of the attitude toward the behavior since the behavior may be primarily determined by the subjective norm.

In contrast, multiple-act and repeated-observation criteria—when properly constructed on the basis of a standard scaling procedure—can serve as indicants of attitude. We have suggested that a properly constructed multiple-act criterion may be viewed as an index of attitude toward an object. By using a standard scaling procedure, the investigator ensures that each behavioral observation is related to the evaluative dimension with respect to the target object. When a given behav-

---

9. Although multiple-act criteria can also be constructed by arbitrarily combining behavioral observations, the validity of such criteria as attitude measures is an empirical question. So long as minimal care is taken in constructing a multiple-act criterion, however, the validity of the scale increases with the number of observations on which it is based.

ior is determined primarily by variables other than the attitude toward the object in question (variables such as subjective norms or competing attitudes), it is likely to be eliminated from the multiple-act criterion.

With respect to repeated-observation criteria, we have argued that such indices are indicative of a person's attitude toward performing a given behavior on different occasions. Use of a standard scaling procedure to construct the repeated-observation criterion again ensures that only observations relevant to this attitude are included. If on a given occasion the behavior is determined primarily by other variables, it will be eliminated from the repeated-observation criterion.

In conclusion, we have seen that attitude toward an object may be related to some single-act criteria but may be unrelated to others. Attitude toward an object, however, should correlate with a multiple-act criterion. Similarly, attitude toward a behavior is expected to be related to a repeated-observation criterion. These conclusions must again be qualified by considerations of correspondence in levels of specificity. Consider the relation between attitude toward an object and a multiple-act criterion. The particular behavioral criterion selected by the investigator determines the level of specificity of each of its four elements. For example, if a multiple-act criterion is based on all entries in a given column of Table 8.4, it represents a person's attitude toward a specific target in a given situation and at a given point in time. A verbal measure of attitude at this same level of specificity would correlate better with the multiple-act criterion than would a general measure of attitude toward the same target (without specification of situation and time). By the same token, lack of correspondence in levels of specificity of the target will also reduce correlations. For example, lack of correspondence is exhibited when a verbal measure of attitude toward a group of people (e.g., blacks, Orientals) is correlated with a multiple-act criterion based on behaviors with respect to a single specific member of the group. These same considerations also apply to the relation between attitude toward a behavior and a repeated-observation criterion.

Although investigators have not paid a great deal of attention to their behavioral criteria and have rarely distinguished between attitudes toward objects and attitudes toward behaviors, the notion that measures of attitude toward an object are related to the person's *pattern* of behaviors rather than to any single behavior is not new (cf. Thurstone, 1931; Doob, 1947; D. T. Campbell, 1963; Tittle and Hill, 1967). For example, as early as 1931, Thurstone pointed out that two persons may hold the same attitude toward some object but that "their overt actions [may] take quite different forms which have one thing in common, namely, that they are about equally favorable toward the object" (p. 262). Doob (1947) arrived at essentially the same conclusion on the basis of his behavior-theory analysis of attitudes. A given attitude may elicit any of a number of responses consistent with the attitude. The particular response selected by the individual will depend on his reinforcement history. For example, a large number of different behaviors may express liking for another person. Although two persons may like a third person equally well, the particular ways in which they express their liking will

depend on their prior reinforcement histories. Again, however, their behaviors will be similar in that, taken as a whole, they will indicate the same degree of liking for the third person. These arguments are consistent with our conceptual framework, which suggests that although traditional measures of attitude toward an object will be related to multiple-act criteria, they will not necessarily be related to a given behavior and thus may not predict single-act or repeated-observation criteria.

Reanalysis of Research on "Attitude-Behavior" Relationships

The conclusions reached in the preceding section are consistent with the majority of studies on the attitude-behavior relationship. To demonstrate this consistency it is necessary to reexamine the studies that have usually been viewed as tests of the relation between attitude and behavior (see Table 8.1). Specifically, it is necessary to consider the nature of both the attitudinal predictors and the behavioral criteria. Closer examination of these studies shows that the "attitudinal" predictor frequently does not constitute a measure of attitude, as defined in this book. In his classic study, for example, LaPiere (1934) did not obtain a measure of attitude. Instead, he measured behavioral intentions by asking his subjects whether they would "accept members of the Chinese race as guests in [their] establishments." A similar measure of intentions was used by Kutner, Wilkins, and Yarrow (1952) to predict behavior. Newton and Newton (1950) measured mothers' intentions or desires to breast-feed their babies and used that measure as their "attitudinal" predictor. Other investigators have used personality tests as their measures of "attitude." For example, Katz and Benjamin (1960) obtained a measure of authoritarianism, and J. H. Mann (1959) used the patriotism subscale from a measure of ethnocentrism. Freeman and Ataov's (1960) "attitudinal" predictor was an assessment of the degree to which subjects perceived that others were cheating in hypothetical situations.

When the predictor variable was a measure of attitude, sometimes the attitude was toward a behavior, but more often it was toward an object. For example, Tittle and Hill (1967) assessed attitude toward "personal participation in student political activity." Another measure of attitude toward a behavior is Kamenetsky, Burgess, and Rowan's (1956) assessment of attitude toward using legislative measures to abolish discrimination against Negroes in employment matters. Attitudes toward objects have usually been measured at intermediate levels of target specificity, such as attitudes toward Negroes (Berg, 1966; Bray, 1950; Smith and Dixon, 1968) or the church (Wicker, 1971; Ostrom, 1969; Fishbein and Ajzen, 1974). Occasionally the attitude object is somewhat more specific, such as "Negro college students who take part in civil rights demonstrations" (Carr and Roberts, 1965).

Just as these studies vary considerably in terms of their predictor variables, they also vary considerably in behavioral criteria. As noted earlier, many studies (e.g., DeFleur and Westie, 1958; Linn, 1965; J. A. Green, 1972) have had no

behavioral criterion but have measured intentions instead. Most investigations have used either a single-act criterion or a repeated-observation criterion. La-Piere's (1934) single-act criterion concerning acceptance of a Chinese couple in hotels and restaurants was described earlier. Tittle and Hill (1967) observed whether students did or did not vote in a student body election. Another single-act criterion was reported by Himmelstein and Moore (1963), who observed whether students did or did not sign a petition to extend library hours.

Repeated observations of a given behavior usually represent repeated trials in an experiment and thus are obtained under maximally homogeneous conditions. Smith and Dixon (1968), for example, recorded the number of trials on which the subject elicited the reinforced response in a verbal conditioning experiment. Similarly, Malof and Lott (1962) observed the number of trials on which the subject conformed with the incorrect judgments made by confederates. A somewhat different repeated-observation criterion was used by Bray (1950), who computed the discrepancy between judgments made by subjects and confederates over 50 trials. Newton and Newton (1950) recorded the average amount (in grams) of milk intake of a child on six occasions during the fourth day after birth. A somewhat more heterogeneous repeated-observation criterion was used by Tittle and Hill (1967), who obtained self-reports of the number of times a student voted in the last four student body elections.

Although multiple-act criteria are infrequently used, a few investigators have obtained them. Good examples are Tittle and Hill's (1967) indices based on self-reports of participation in 10 different political activities. Among the activities were frequency of participation in meetings of a student assembly, frequency of reading of the platforms of candidates for student political office, and frequency of voting over the last four elections. When these observations were submitted to Likert and Guttman scaling procedures, two different behavioral indices resulted. Since repeated observations of different behaviors were used, the obtained indices represent multiple-act, repeated-observation criteria. Another multiple-act criterion was constructed by Potter and Klein (1957), who recorded behavior of mothers during two nursing periods. Each recorded behavior was rated on a five-point scale ranging from "little or no effort to achieve successful nursing" to "manifestations of tenderness or affection." The multiple-act criterion was the mean rating of all behaviors performed by a given mother.

This analysis shows that many of the studies which have typically been viewed as testing the relation between attitude and behavior are actually of little relevance to that question. Of those studies that have obtained some measure of attitude and a behavioral criterion, most have attempted to predict a single-act or repeated-observation criterion from a traditional measure of attitude toward an object. As might be expected, these studies have met with little success. Although a few low but significant relations have been reported (e.g., Ostrom, 1969; Ajzen and Fishbein, 1970), most of these studies have found no relation between attitude and behavior (e.g., Berg, 1966; Bray, 1950; Smith and Dixon, 1968; Malof and Lott, 1962; Himmelstein and Moore, 1963).

In contrast, when attitude toward a behavior, rather than an object, has been used to predict single-act or repeated-observation criteria, significant findings have usually been obtained [10] (e.g., Tittle and Hill, 1967; Kamenetsky, Burgess, and Rowan, 1956; Ajzen and Fishbein, 1970; Ajzen, 1971b, Fishbein *et al.*, 1970). Further, it appears that the magnitude of the relationship varied with the degree of correspondence between levels of attitudinal-behavioral specificity. Finally, also consistent with expectations, whenever multiple-act criteria have been used, significant relations with attitude toward an object have been reported (e.g., Carr and Roberts, 1965; Bandura, Blanchard, and Ritter, 1969).

A Test of the Relations between Attitude toward an Object and Behavioral Criteria

In order to directly test the notion that traditional attitudes are related to multiple-act criteria but have no consistent relation with single-act criteria, Fishbein and Ajzen (1974) constructed a set of 70 behaviors dealing with matters of religion. Included were the following items: pray before or after meals, take a religious course for credit, attend nonreligious wedding ceremonies, donate money to a religious institution, date a person against parents' wishes, etc. Thirty items were repeated in a refusal format, e.g., refuse to donate money to a religious institution, refuse to state a religious preference during university registration. Sixty-two subjects were asked to check those behaviors they had performed. In addition, they completed five traditional scales measuring attitude toward religion. The first, a Guilford self-rating scale, asked subjects to indicate their attitude toward being religious by checking an 11-point scale ranging from *extremely favorable* to *extremely unfavorable*. The second measure, a form of the semantic differential, consisted of five 11-point evaluative bipolar scales with the following endpoints: *good–bad, harmful–beneficial, wise–foolish, pleasant–unpleasant,* and *sick–healthy*. The concept rated was "being religious," and the sum across all five scales was taken as an index of attitude toward religiosity. The other three attitude measures were standard religiosity scales based on opinion items. One was a Likert scale (Bardis, 1961), the second was a scale of Guttman format (Faulkner and DeJong, 1969), and the third was a Thurstone scale (Poppleton and Pilkington, 1963).

In order to obtain a multiple-act criterion, Fishbein and Ajzen employed an independent sample of 37 judges to provide Thurstone-type judgments for each of the 100 behaviors. That is, the judges rated on an 11-point scale the degree to which performance of the behavior was indicative of a favorable or unfavorable attitude toward being religious.[11] Items were scored negatively or positively on

---

10. The relation between attitude toward a behavior (A_B) and a single-act criterion depends on the relative importance of the attitudinal component in determining the person's intention to perform and actual performance of the behavior in question.

11. These subjects also made the same judgments for nonperformance of each of the 70 basic behaviors.

the basis of these judgments. Performance of a positive behavior and non-performance of a negative behavior were given a score of 1, and the remaining alternatives were scored 0. Finally, a multiple-act criterion was obtained by summing over the 100 self-reports of behavior.

Table 8.5 presents correlations among the five verbal attitude scales, their correlations with the multiple-act criterion, and their mean correlations with the 100 single-act criteria. The table shows a high degree of convergent validity among the five verbal attitude scales. Further, consistent with expectations, all attitude scales correlated highly with the multiple-act criterion, whereas the prediction of single-act criteria tended to be low and nonsignificant. These results support our argument that an index based on a large number of behaviors can be viewed essentially as an alternative attitude-measurement procedure.

Table 8.5 Correlations of Verbal Attitude Measures with Multiple- and Single-Act Criteria (Adapted from Fishbein and Ajzen, 1974)

		Verbal attitude scales				
		SR	SD	G	L	T
Verbal attitude scales						
Self-report	(SR)	—				
Semantic differential	(SD)	.800	—			
Guttman	(G)	.519	.644	—		
Likert	(L)	.762	.762	.790	—	
Thurstone	(T)	.584	.685	.744	.785	—
Multiple-act criterion Correlation with sum over 100 behaviors		.640	.714	.608	.684	.628
Single-act criteria Average correlation with 100 single behaviors		.137	.149	.121	.142	.131

$r_{.05} = .250$
$r_{.01} = .325$

To provide further support for the notion that multiple-act criteria can be viewed as behavioral attitude scales, the investigators used the 100 behavioral items described above to construct three multiple-act criteria meeting the requirements of Guttman, Likert, and Thurstone scaling procedures, respectively. Before we turn to the findings, it is of interest to note that the majority of items were rejected by all three scaling procedures. Further, even though very different selection procedures were involved, some items were found to meet the criteria of more than one scaling technique and were thus included in more than one type of scale. The implications of these results will be discussed shortly.

Consistent with expectations, the data presented in Table 8.6 show considerable convergent validity between the three types of multiple act criteria. Further, all three of the scaled multiple-act criteria were highly correlated with all five of the verbal attitude scales, providing further support for the argument that multiple-act criteria can best be viewed as behavioral attitude scores. The correlations between the three scaled multiple-act criteria and the 100 single-act criteria were again low and mostly nonsignificant.

Table 8.6 Intercorrelations of Multiple-Act Criteria and Verbal Attitude Scales (Adapted from Fishbein and Ajzen, 1974)

		Multiple-act criteria		
		G	L	T
Multiple-act criteria				
Guttman	(G)	—		
Likert	(L)	.776	—	
Thurstone	(T)	.631	.792	—
Sum over 100 behaviors		.699	.898	.789
Single-act criteria				
Mean correlation with				
100 single behaviors		.143	.178	.156
Verbal attitude scales				
Self-report		.451	.582	.701
Semantic differential		.591	.688	.727
Guttman		.531	.647	.570
Likert		.660	.656	.611
Thurstone		.575	.624	.542

$r_{.05} = .250$
$r_{.01} = .325$

Attitudes toward objects and single-act criteria. The empirical evidence discussed above indicates that traditional measures of attitude toward an object can be used to predict properly constructed multiple-act criteria. Further, Fishbein and Ajzen (1974) found that even without application of a standard scaling procedure, a multiple-act criterion obtained by summing over 100 behaviors (scored in terms of their evaluative implications) correlated highly with verbal measures of attitude.

In contrast, traditional measures of attitude were not found to be consistently related to *single-act criteria*. Of the 100 single-act criteria considered by Fishbein and Ajzen (1974), only 39 were significantly related to at least one of the five verbal attitude measures; very few were related to all five attitude scales; and even these correlations tended to be relatively low. Further, these behaviors did

not differ in any obvious way from those that could not be predicted. We are thus left with the unfortunate conclusion that traditional measures of attitude toward an object do not provide an adequate basis for the prediction of specific behaviors with respect to that object.

Conceptualizing multiple-act criteria as behavioral measures of attitude suggests one possible solution to this problem. This conceptualization indicates that the individual behaviors that constitute the multiple-act criterion score are essentially equivalent to items on an attitude scale. The question of the relationship between attitude and single-act criteria can then be restated in terms of the relationship between the multiple-act criterion (i.e., the behavioral attitude score) and the single behaviors of which it is comprised. Clearly this relationship depends on the particular manner in which single behaviors are combined to construct the multiple-act criterion.

Use of a standard attitude scaling procedure is one way of ensuring that the single-act criteria are in some way related to the attitude under consideration— i.e., that they constitute valid indicants of the attitude in question. However, this does not mean that performance or nonperformance of such a valid behavior will be *correlated* (i.e., linearly related) with the person's attitude. In Chapter 3 we saw that use of a standardized scaling procedure makes it possible to specify the theoretical relationship between the scaled behavioral attitude score and the individual behaviors that contribute to the score This relationship is indicated by the tracelines or operating characteristics which differ for items that meet the criteria of the different attitude scaling procedures. The hypothetical tracelines of behavioral items meeting Guttman, Likert, and Thurstone criteria are summarized in Fig. 8.2. Of course, little can be said about the prediction of single behaviors from attitude before the behavior's operating characteristic has been examined.

Figure 8.2 indicates that the traceline of a behavior in a Guttman scale is assumed to be a step function of the behavioral Guttman score. So long as a person's score is lower than the behavior's position on the scale, he will not perform the behavior, whereas a person whose score exceeds this position is expected
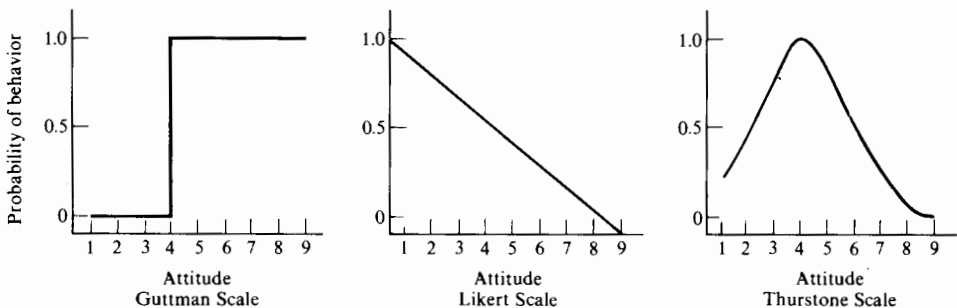

Fig. 8.2 Hypothetical tracelines of Guttman, Likert, and Thurstone scales for a behavior with a scale value of 4.

to perform it. For a perfect behavioral Guttman scale, it should therefore be possible to accurately predict all individual behaviors on the scale from a person's scale score. Thus, although *correlations* between a Guttman multiple-act criterion and the individual behaviors of which it is comprised may be low, one should be able to predict the behaviors from the scale scores by taking the traceline into account.

A behavior that has stood the test of Likert's internal consistency criterion is assumed to have a linear relation to the behavioral Likert score. Thus each behavior the scale comprises is expected to correlate highly with the multiple-act criterion.

Finally, behaviors meeting Thurstone's criterion of irrelevance are assumed to have nonmonotonic tracelines. Persons with behavioral Thurstone scores of the same favorability as the scale value of the behavior should be most likely to perform the behavior. Persons with less favorable or more favorable scores should be less likely to do so. The relationship between behavioral Thurstone scores and single-act criteria meeting Thurstone's criterion of irrelevance is therefore expected to be of an inverted U-shape. Thus, although *correlations* between a Thurstone multiple-act criterion and the individual behaviors of which it is comprised may be low, one should be able to predict the behaviors by taking the nonlinear traceline into account.   ·

Since multiple-act criteria can be viewed as measures of attitude, the theoretical relations described above are applicable to any measure of attitude. Therefore one can argue that even when a single-act criterion is a valid indicant of the attitude under consideration, it may not *correlate* with the attitude since it may have a nonlinear traceline. It is interesting to note that most tests of the attitude-behavior relation are based on the assumption of a linear relation. That is, most investigators test whether individuals with favorable attitudes are more likely to perform a positive behavior than are individuals with unfavorable attitudes (or vice versa for a negative behavior) by computing correlations, *t*-tests, or similar indices. We have tried to show that this assumption may be wrong even when the behavior is a valid indicant of attitude. Although behaviors meeting Guttman or Thurstone criteria can be predicted from the behavioral attitude score by taking their tracelines into account, there is no simple way of predicting these behaviors from a verbal attitude score. Predicting behaviors that meet Guttman or Thurstone criteria involves a comparison between the locations of a person's behavioral attitude score and the location of the behavior on the same quantitative evaluative dimension. To make such predictions from verbal attitude scores would involve similar comparisons and would thus require that the verbal attitude scores be mapped onto the same quantitative dimension. Even with a high correlation between multiple-act criterion and verbal attitude score, a good mapping is not easy to achieve (cf. Fishbein and Ajzen, 1974).[12] These issues pose little difficulty

---

12. One possible exception concerns the relation between verbal and behavioral Thurstone scores which are assumed to involve the same quantitative dimension.

for single-act criteria that meet the requirements of Likert scaling. These behaviors are expected to correlate with the behavioral attitude score; they should therefore also correlate with any other measure of attitude.

In sum, it is theoretically possible to predict any valid single-act criterion from a verbal measure of attitude by taking its traceline into account, but from a practical point of view, it appears that verbal measures of attitudes toward objects can be used only to predict single-act criteria meeting the requirements of Likert scaling (i.e., only behaviors with approximately linear tracelines).

Some evidence for the hypothesis that single-act criteria can be predicted from traditional measures of attitude if the criteria have tracelines that approach linearity was reported by Fishbein and Ajzen (1974). Of the 100 religious behaviors considered in that study, 32 were found to meet Likert scaling requirements in that they correlated significantly with the total score over all 100 behaviors. Most of these 32 single-act criteria also correlated significantly with the verbal attitude scales; only five could not be predicted from at least one of the scales. In contrast, of the remaining 68 behaviors, 56 did not correlate significantly with any of the five verbal attitude scales. It thus appears indeed possible to predict single-act criteria meeting Likert scaling requirements.

The reader should realize that this conclusion is problematic from a practical point of view. In order to ascertain that a given behavior indeed has a linear traceline, one must observe a large number of behaviors in the same domain. Behaviors with linear tracelines are identified by high correlations with the total behavioral score. Without first observing the behavior, as well as a large number of other behaviors, one cannot specify in advance whether a given single-act criterion should correlate with traditional measures of attitude.

Linearity of single-act criteria. To solve this problem, let us examine the characteristics of behavioral items that meet or do not meet Likert scaling requirements. A single-act criterion is excluded from a behavioral Likert scale because performance or nonperformance of the behavior does not discriminate between people with high and low multiple-act criterion scores, i.e., between people with favorable and unfavorable attitudes. A behavior may fail to discriminate for at least two reasons. First, its evaluative implications may be unclear. Individuals with positive attitudes may perform it because they believe it has favorable implications, but individuals with negative attitudes may also perform it because they believe it has unfavorable implications. There are also some behaviors that have neither favorable nor unfavorable implications. Such a behavior might be performed by individuals with high as well as low attitudes. More important, even behaviors with clear evaluative implications may fail to discriminate. Clearly, there are some behaviors that are likely to be performed (or not performed) by most members of a given population, irrespective of their attitudes. For example, irrespective of a person's attitude toward the church, he is unlikely to throw stones at church windows, and he will usually return the greetings of a minister or priest. Behaviors with such high (or low) *base rates* cannot be predicted from attitudes. Although

it has long been recognized that restriction of range in criterion scores reduces correlation coefficients, the problem of high or low behavioral base rates has been largely neglected in studies of the attitude-behavior relationship.[13]

To reiterate, the problem that confronts us is the identification of behavioral items that distinguish people with favorable and unfavorable attitudes. One possible solution is to develop some independent index of linearity. It may be argued that a positive behavior has a traceline that approaches linearity to the extent that the probability of its performance is high for people with favorable attitudes *and* low for people with unfavorable attitudes. The opposite should be true for negative behaviors.[14] Note that this definition is closely related to Likert's criterion of internal consistency. One can perhaps best express these notions in terms of conditional probabilities, where $p(B|A+)$ is the probability of the behavior, given a positive attitude, and $p(B|A-)$ is the probability of the behavior, given a negative attitude. Fishbein and Ajzen (1974) proposed that the greater the absolute difference between these two conditional probabilities, the more the behavior's traceline approaches linearity.

The implication is that the higher this *linearity index,* the stronger should be the correlation between a measure of attitude and the behavior in question. To test these notions, Fishbein and Ajzen had two independent samples of subjects provide estimates of conditional probabilities for their 100 behaviors. They asked the first sample to think of 100 *religious* students and to indicate how many of these students perform each of 50 behaviors. The subjects were then asked to think of 100 *nonreligious* students and to indicate how many of these students perform each of the remaining 50 behaviors. For the second sample of subjects, the two sets of behaviors were exchanged. Thus, for each of the 100 behaviors, estimates of $p(B|A+)$ and $p(B|A-)$ were obtained. A third sample of subjects were asked to think of 100 *typical* students (without reference to religiosity) and to indicate how many of these students perform each of the 100 behaviors, providing a measure of the behavior's prior probability or base rate, $p(B)$.

These measures of $p(B|A+)$, $p(B|A-)$, and $p(B)$, as well as the linearity index $|p(B|A+) - p(B|A-)|$, were correlated with the correlations between each behavior and the five verbal attitude scales. The results are presented in Table 8.7. Consistent with expectations, the linearity index provided significant predictions of the strength of attitude-behavior relationships, irrespective of the attitude scale employed. Further, these predictions were superior to predictions based on either one of the two conditional probabilities or on the prior probability of the behavior.

---

13. The inclusion of habit in "other variable" explanations of the attitude-behavior relationship may be viewed as one attempt to recognize the importance of behavioral base rates (cf. Triandis, 1967, 1971).

14. In fact, most investigators select behavioral criteria that they assume have these characteristics. More often than not, unfortunately, their intuition appears to be misleading.

Table 8.7 Prediction of Attitude-Behavior Correlations from the Linearity Index (Adapted from Fishbein and Ajzen, 1974)

Verbal attitude scales	$p(B\|A+)$	$p(B\|A-)$	Linearity index	$p(B)$
SR	.074	−.113	.409	−.040
SD	.152	−.116	.455	−.002
G	.319	.170	.466	.262
L	.146	.017	.432	.084
T	.166	.068	.399	.130

$r_{.05} = .195$
$r_{.01} = .259$
SR = self-report scale; SD = semantic differential; G = Guttman scale; L = Likert scale; T = Thurstone scale

Thus the linearity index appears to allow the investigator to specify in advance whether the traceline of a given single-act criterion approaches linearity with respect to a given attitudinal dimension, and it provides some indication of the degree to which the behavior will be related to a measure of that attitude.[15] Essentially, then, the linearity index provides a means for an investigator to check his intuition that a given single-act criterion will be related to some measure of attitude. When the linearity index is high, attitude should be correlated with single-act criteria. In general, however, most single-act criteria have low linearity indices, and they cannot be predicted from traditional measures of attitude toward the object. Further, even behaviors with high linearity indices tend to have relatively low correlations with attitude. These considerations suggest that traditional measures of attitude toward an object cannot be relied on to predict single-act criteria with respect to the object.

INTENTIONS AND SINGLE-ACT CRITERIA

Our conceptual framework suggests an alternative approach to the prediction of single-act criteria. According to our approach there should be a high relation between a person's intention to perform a particular behavior and his actual performance of that behavior. Essentially, then, we are suggesting that single-act

---

15. Linearity indices can be obtained not only with respect to attitude but also with respect to any other stable disposition, such as personality variables or demographic characteristics. (See Jaccard, 1974, for an application of the linearity index to the prediction of single-act criteria from personality variables.) Conceptualizing the linearity index in terms of conditional probabilities also makes it possible to apply Bayes's theorem in an attempt to further understand the factors that determine linearity of relationships between a given disposition and a single-act criterion. (See Fishbein and Ajzen, 1974, for a more detailed discussion.)

criteria are really not very difficult to predict. If one wants to know whether or not an individual will perform a given behavior, the simplest and probably most efficient thing that one can do is to ask the individual whether he intends to perform that behavior. Since much of human behavior appears to be under volitional control (Ryan, 1970), the best single predictor of an individual's behavior will be a measure of his intention to perform that behavior. This does not mean that a measure of intention will always correlate perfectly with a single-act criterion; there are several factors that influence the size of any given intention-behavior relationship.

Three major factors can be identified that influence the magnitude of the relationship between intention and behavior: the degree to which intention and behavior correspond in their levels of specificity; stability of the intention; and the degree to which carrying out the intention is completely under the person's volitional control.

Correspondence in levels of specificity. Perhaps the most important factor influencing the size of the intention-behavior relation is the degree to which the intention is measured at the same level of specificity as the behavior to be predicted. Recall that specificity of intentions and behaviors can vary in terms of the behavior itself, the target, the situation, and time. The greater the correspondence in levels of specificity, the higher should be the correlation between intention and behavior. Suppose, for example, that today's date is Thursday, July 19, 1974 and that you are attending class at Omega University, which is situated in a small town that, among other things, has three movie theaters. Further, suppose that one of the theaters, the Rialto, is showing a rerun of "Casablanca" at 7:30 and 9:30 p.m. Suppose that it is important for you to predict whether or not another student will attend the 7:30 showing at the Rialto. It seems fairly obvious that the best prediction that you can make will be based on a measure of his intention to perform that particular behavior. That is, the best single predictor will be an item like the following.

> I intend to go to the 7:30 showing of "Casablanca" at the Rialto Theater on the night of July 19, 1974
>
> probable ____|____|____|____|____|____|____ improbable

Further, it should be clear that this item will lead to better prediction than

> I intend to go to the Rialto Theater on the night of July 19, 1974

or

> I intend to go to the movies on the night of July 19, 1974;

which, in turn, will be better predictors than

> I intend to go to the Rialto Theater

or

> I intend to go to the movies.

It would be possible to continue with these examples, but the point should be clear: the lower the correspondence between the intention's and the behavior's levels of specificity, the poorer the prediction will be.

Given that intention and behavior are measured at the same level of specificity, one expects a high relation between these variables. In other words, our conceptual framework suggests that a person's performance of some behavior at a given point in time is determined by his intention to perform the behavior at that point in time.

Stability of the intention. Clearly, a person's intention may change over time. It follows that a measure of intention taken some time prior to observation of the behavior may differ from the person's intention at the time that his behavior is observed. The longer the time interval between measurement of intention and observation of behavior, the greater the probability that the individual may obtain new information or that certain events will occur which will change his intention. Thus the longer the time interval, the lower the correlation between intention and behavior.

Very often, the behavior under consideration can occur only after some sequence of previous behaviors has been performed. For example, although a high school sophomore may intend to go to college, he will be able to carry out this intention only after he has performed other behaviors (graduated from high school, passed the college entrance exams, etc.). The greater the number of intervening steps, the lower the intention-behavior correlation will be. Here again, the problem is primarily one of the stability of the intention, rather than of its relation to behavior per se. The greater the number of intervening steps, the higher the probability that the completion of (or failure to complete) any single step will result in new information which may produce a change in the individual's intention.[16]

A somewhat similar problem concerns the degree to which carrying out the intention is dependent on other people or events. The higher the dependency, the lower the intention-behavior correlation is likely to be. If a person's intention is based on the expectation that another person will behave in a certain way, or on the expectation that some event will occur, and the expectation is not confirmed, this information may well lead to a change in intention.

It thus appears that in the interval between measurement of intention and observation of behavior, certain events can occur that may produce changes in an individual's intentions. To predict the behavior from the initial measure of intention, it may be necessary to consider other variables in addition to the intention. This will be particularly true when (a) there is a long time interval between the

---

16. It would be possible to consider the individual's intentions to perform each of the intervening behaviors, and the consideration of this set of intentions may lead to a better prediction of the ultimate behavior than the intention to perform that behavior per se.

measure of intention and the observation of behavior; (b) the behavior can occur only following some other sequence of behaviors; and (c) the performance of the behavior is dependent on other people or events. However, if one can obtain a measure of the intention immediately before the performance of the behavior, these additional variables will have already been taken into account, and the intention will accurately predict the behavior.

We are not here implying that the problems discussed above are unimportant. Indeed, one is often concerned with predicting future behaviors, and sometimes it is helpful or necessary to make these predictions months or years in advance of the actual behavioral act. Under such circumstances, one cannot rely solely on a measure of intention; one must also consider other variables. In Chapter 7 we showed that a person's intention to perform a given behavior is determined by his attitude toward performing that behavior and by his subjective norm concerning the behavior. It may thus be argued that the factors which have to be considered are those factors that are likely to influence one or both of these variables.

Volitional control. So far we have assumed that the behavior in question is under the actor's volitional control. In the preceding section we noted that performance of a behavior may depend on other people or on the occurrence of certain events. Therefore a person may be unable to carry out his intention. If performance of the behavior requires certain abilities or resources that the individual does not possess, or if it depends on the cooperation of another person, he may be unable to perform the behavior even if he intends to. A case in point is the person who intends to stop smoking, drinking, or using drugs but is unable to do so. The person's intention will influence what he *tries* to do by leading him to initiate certain preparatory acts; the behavior in question, however, is not performed. Once the person realizes that he is unable to perform the behavior, he is likely to change his intention. The new intention should be predictive of his future behavior.

Another possible breakdown in the intention-behavior relation may be due to a person's *habits*. Although a person may intend to do one thing, by "force of habit" he does something else. Before leaving home, a person may intend to try a new route to his office, but later he finds himself driving along the same route he takes every day. In fact, many well-learned skills (e.g., playing the piano, driving a car) are performed almost automatically without much conscious effort. Most behaviors of interest to social scientists, however, do not involve such automatic sequences of motor responses. Instead, investigators attempt to predict a person's decisions, participation in various activities, purchasing behavior, voting for political candidates, and interactions with other people. We have argued that these kinds of behaviors are under volitional control and thus can be predicted from the person's intentions.

Lack of ability, then, appears to be the only factor that may lead to a breakdown of the relation between intention and a behavior that is under volitional

control. For the most part, however, people do not intend to perform behaviors that they realize are beyond their ability, and thus a person's intention, when appropriately measured, will usually predict his behavior.

Research on the Intention-Behavior Relation

Within our conceptual framework we assume that behavioral intentions are the immediate determinants of the corresponding overt behaviors. The discussion above has made it clear, however, that many factors may influence the magnitude of the intention-behavior relation. Only when the intention is measured at the same level of specificity as the behavior and has not changed between time of measurement and observation of the behavior, will it be highly predictive of the behavior in question. The wide range of intention-behavior relations that can be obtained is illustrated in an unpublished study by Ajzen, who asked students to indicate their intentions to perform each of 24 behaviors "in the foreseeable future." Intentions to take a psychology course for credit, to write letters home regularly, to go home for Christmas, to attend basketball games, to write fan mail to movie actors, etc., were measured on seven-point scales ranging from *I will* to *I will not*. About three months later, the students were contacted by telephone and asked whether or not they had performed each of the 24 behaviors since the time they had participated in the initial experiment. Although the majority of correlations were significant, they ranged from 0 to .77, with an average correlation of .34.

Many factors may have contributed to this great variation in the magnitude of intention-behavior relations. One problem is purely methodological and has to do with the behavior's base rate. Suppose that there is a perfect relation between intention and behavior, but because of measurement error, a perfect correspondence between these variables is obtained for only 99 percent of the subjects. To simplify computations, assume that intentions, like behaviors, are dichotomous (i.e., a person either intends or does not intend to perform the behavior). Now consider two behaviors, one with a very high base rate (everyone performs this behavior) and one with an intermediate base rate (50 percent of all people perform this behavior). Table 8.8 shows 2 × 2 contingency tables and the correlations between intentions and the high and low base rate behaviors. When the base rate is very extreme, a single exception to the correspondence between intention and behavior can reduce the correlation from 1 to 0. On the other hand, a single exception has little effect on the correlation when the behavior has a moderate base rate. Clearly, the behavioral base rate can greatly affect the size of the intention-behavior correlation. When correlations are used to estimate the strength of the intention-behavior relation, the behavioral base rate must be taken into consideration. Many of the low correlations in Ajzen's study were associated with extremely high or low base rate behaviors, such as attending meetings of Zero Population Growth, writing fan mail to movie actors, and going to movies regularly.

Table 8.8 Influence of Base Rates on Intention-Behavior Relation

High Base Rate

Perfect correspondence		*One exception*	

Perfect correspondence:

		Intention						Intention		
		Yes	No					Yes	No	
		a	b					a	b	
	Yes	99	0	99			Yes	99	0	99
Behavior						Behavior				
		c	d					c	d	
	No	0	1	1			No	1	0	1
		99	1					100	0	
		r = 1.00						*r* = .00		

Moderate Base Rate

Perfect correspondence		*One exception*	

		Intention						Intention		
		Yes	No					Yes	No	
		a	b					a	b	
	Yes	50	0	50			Yes	50	0	50
Behavior						Behavior				
		c	d					c	d	
	No	0	50	50			No	1	49	50
		50	50					51	49	
		r = 1.00						*r* = .98		

$$*r = \frac{ad - bc}{\sqrt{(a+b)\,(c+d)\,(a+c)\,(b+d)}}$$

Other low correlations may have been due to lack of opportunity on the part of some subjects to perform a given behavior they intended to perform or to unforeseen events, such as unexpected invitations to join friends at a basketball game, unexpected visitors, lack of financial resources, etc. Since these factors were not controlled, they may have changed the intentions of some subjects, thereby reducing the observed relation between the initial intentions and overt behaviors.

In contrast, several experiments have shown that when such factors are controlled, and when intentions and behaviors are measured at the same levels of specificity, high intention-behavior correlations are obtained. In Chapter 7 we discussed several studies dealing with the prediction of intentions on the basis of attitude toward the behavior and normative beliefs. Many of these studies have also included a measure of overt behavior. In the two studies using the Prisoner's Dilemma game (Ajzen and Fishbein, 1970; Ajzen, 1971b), the number of times subjects chose the cooperative alternative (i.e., alternative X) was predicted from their intentions to choose that alternative. In the three games played, the correlations over all subjects were .841, .897, and .822. Hornik (1970) asked

subjects in his two-person war game how many missiles they intended to maintain to the end of the next trial, and he used this measure of intention to predict the number of missiles actually maintained. Correlations between intention and behavior were high. For example, the correlation between intentions measured after trial 25 correlated .867 with actual behavior on trial 26.

A different kind of behavior was predicted by Holman (1956), who presented students with a list of football games and for each game asked them to indicate whether they would or would not attend. After the football season was over, subjects were asked to report the games they had attended. A correlation of .80 was found between number of games attended and number of games subjects said they would attend.

A high intention-behavior correlation was also obtained by McArdle (1972). Patients at a V.A. hospital who were diagnosed as having a drinking problem indicated whether they intended to sign up for the hospital's Alcoholic Treatment Unit (ATU) by placing a check mark on a seven-point *likely–unlikely* scale. This question was part of a long questionnaire. Immediately following administration of the questionnaire, the patients were given a sign-up sheet for admission to the ATU. Intentions to sign up and actual signing behavior were found to correlate .76.

Finally, there is considerable evidence that people's intentions to vote for a given candidate are highly correlated with their self-reported voting behaviors (e.g., Fishbein and Coombs, 1974; Feldman and Fishbein, 1963b; A. Campbell *et al.,* 1960; Lazarsfeld, Berelson, and Gaudet, 1944). For example, Fishbein and Coombs (1974) found that correlations between intentions to vote and actual voting in the 1964 presidential election were .888 for Goldwater and .785 for Johnson.

Levels of specificity. The results presented so far indicate that high correlations can be obtained between appropriate measures of behavioral intentions and corresponding overt behavior. As we have noted earlier, one factor that may reduce the intention-behavior relation is lack of correspondence in levels of specificity. A case in point is LaPiere's (1934) study in which intentions to accept Chinese as guests in hotels and restaurants were compared with the actual acceptance of a particular Chinese couple at those establishments. Approximately six months after traveling with a Chinese couple throughout the United States, LaPiere sent a letter to each establishment they had visited asking the respondents whether "they would accept members of the Chinese race as guests in their establishments." With only one exception, the 250 establishments visited had accepted the Chinese couple; but of the 128 establishments that replied to LaPiere's letter, only one indicated that it would accept Chinese. However, Ajzen *et al.* (1970) have noted that the description of the attitude object and the situation is sufficiently incomplete and ambiguous in the letter-questionnaire that it probably constituted a very different stimulus from the actual Chinese couple. The relationship LaPiere found might have been different if the question had been worded, "Would

you accept a young, well-dressed, well-spoken, pleasant, self-confident, well-to-do Chinese couple accompanied by a mature, well-dressed, well-spoken . . . educated European gentleman as guests in your establishment?" (p. 270)[17]

Fishbein (1966) reported some data showing the effects of variations in correspondence between levels of specificity in his study dealing with premarital sexual intercourse (PSI) among undergraduates. In this study, female subjects rated their general intentions to engage in PSI on a seven-point bipolar scale. On a second such scale they rated their intentions to engage in PSI *this semester*. The behavioral criterion was a self-report of sexual behavior during the course of the semester, obtained at the end of the semester. The general intention to engage in premarital sexual intercourse and self-reported behavior correlated .564. The more specific intention to engage in this behavior in the course of the semester showed a stronger relationship with behavior: The correlation was .676. Thus, as expected, the intention-behavior correlation increased with the degree of correspondence in levels of specificity. The reason that even the specific intention-behavior correlation was relatively low may in part have been that a whole semester had intervened between the measurement of these two variables. Many uncontrolled factors may have produced changes in the intention.

Stability of intentions. That behavioral intentions may change over time has been repeatedly demonstrated by political polls. For example, early in 1972 only 32 percent of the respondents in a national poll indicated that they would vote for McGovern if he ran against Nixon. Immediately prior to his nomination as the Democratic candidate for President, 41 percent indicated that they would vote for him. Following the Eagleton affair, this figure dropped to 34 percent. In the week prior to the election the figure had increased to 36 percent. McGovern actually received 38 percent of the popular vote. Not only do these data indicate that intentions change over time but, more important, that intentions measured immediately prior to the behavior tend to be better predictors than intentions measured some time in advance.

Although these data were based on group means, similar results were reported by Fishbein and Coombs (1974) for individual subjects. Intentions to vote for Goldwater in the 1964 presidential election correlated .796 with self-

17. Ajzen *et al.* (1970) also pointed out that "many of the respondents may have regarded the questionnaire not as an opportunity to speculate on what they would do in such a situation but as a convenient opportunity to avoid any possible trouble. Thus, the responses may not be honest expressions of intention. In addition, LaPiere had no way to determine if the person who responded to the questionnaire was the same person who had served him and the Chinese couple in the actual situation. Particularly in larger establishments, the person serving the Chinese couple and the person who responded to the questionnaire may not have been the same. Further, there may have been a number of changes in personnel during the six months between the observations of behavior and the questionnaire." (p. 270)

reported voting behavior when the intention was measured one month prior to the election and .888 when it was measured during the week preceding the election.

Further support for the notion that many intentions may change over time and thus lead to lowered correlations with behavior comes from Hornik's (1970) study, in which subjects played a two-person war game against a simulated partner. In the game, the players can convert "missiles" into "factories" or reconvert factories into missiles (see Pilisuk and Skolnick, 1968). The simulated partner played either a HAWK strategy (deceptive play, retaining all or most of his missiles on each trial), a GRIT strategy (taking small unilateral initiatives toward disarmament), or an RPM strategy (reward, punish, or match response to maximize the subject's disarmament). The measure of intention asked subjects to state how many missiles they intended to maintain till the end of the next trial. Overt behavior was the number of missiles actually maintained. Measures of intention were obtained at the beginning and after each block of five trials. In the GRIT and RPM conditions, in which the simulated confederate followed systematic cooperative strategies, the subjects' intentions became consistently and significantly more cooperative over trials. In the HAWK condition, in which the simulated confederate played six competitive response patterns in a random fashion, there was no systematic change in the mean number of missiles the subjects intended to maintain from trial to trial, although these intentions were not consistent (i.e., stable) over time. Further, it was predicted that the correlation between behavioral intention and game behavior would be highest when the intention is measured in close proximity to the behavior that serves as the criterion, and that this correlation would decline with increasing amounts of interaction between the measurement of intention and the observation of behavior. Hornik's data strongly supported these predictions. For example, behavior on trials 11 through 35 was highly related to intentions on trial 25; the mean correlation across conditions was .866 ($p < .001$). The average correlation between intentions on trial 10 and the same behavioral criterion was only .387 ($p < .05$), and intention at the beginning of the experiment (before trial 1) showed a nonsignificant correlation of .277 with the criterion.

It thus appears that the best measure of intentions for the prediction of a given behavior is one that is taken in close temporal proximity to the behavior that is to be predicted. Hornik's study also demonstrates that changes in intentions are affected by the nature of the events that intervene between measurement of intention and observation of behavior. Evidence for this notion also comes from a study by Darroch (1971), who employed a modified version of the DeFleur and Westie (1958) photographic-release technique. Polaroid pictures were taken of the subject with a black or a white confederate. Subjects were shown the photographs and asked to release them for a variety of purposes by signing appropriate release forms. Approximately one month prior to the picture-taking session, measures of specific behavioral intentions (as well as of other variables) had been obtained. Correlations between the number of releases signed and behavioral inten-

tions varied from .262 to .584 for the different pictures taken, with an average of .462. (The subject was photographed with confederates varying in race and sex.)

A number of reasons may be suggested for these relatively low correlations. Variance in the predictor (intention) and the criterion (behavior) was found to be low; many subjects intended to sign and actually signed most release forms (i.e., base rates were high). In addition, approximately four weeks intervened between measurement of intentions and behavior. Moreover, at the beginning of the second session, a persuasive communication was introduced in an attempt to influence the subjects' normative beliefs. Unfortunately, no assessment was made of the effects of this manipulation on intentions. However, following the manipulation, measures were obtained of the subject's felt comfort in each picture, the degree of pleasure he would feel if his parents saw each picture, his perception of his friends' willingness to appear in a similar picture, and his judgment of the quality of each picture. On the assumption that these measures reflect to some degree the normative manipulation, as well as any other changes that may have occurred in the time interval, it should be possible to improve the prediction of behavior by considering these variables in addition to intentions. This expectation was confirmed by multiple correlations which ranged from .590 to .767, with an average multiple correlation of .735.

In her study of alcoholics, McArdle (1972) also investigated the effects of persuasive communications on behavior. As noted earlier, in the initial interview subjects expressed their intentions to sign up for the Alcoholic Treatment Unit and were given the opportunity to actually sign up. Three days later they were exposed to one of several persuasive communications designed to increase their sign-up rates and were then again given the opportunity to sign. Although the correlation between intention and the first measure of behavior was .76, that correlation was reduced to .63 following the persuasive communication.

We have argued that if Darroch or McArdle had obtained a measure of intention *after* exposing subjects to the persuasive communications, the intervening events would have been taken into account, and these posterior intentions would have predicted behavior more accurately. Although McArdle did not obtain a direct measure of posterior intention, she had an indirect estimate of this intention based on attitude toward the behavior and normative beliefs (see Chapter 7). Consistent with expectations, this estimate correlated .77 with behavior.

A more direct test of this hypothesis was reported by Ajzen and Fishbein (1974), who conducted a series of three studies in which the task of three-person groups was to balance a board in the shape of an equilateral triangle by raising or lowering their respective corners of the board.[18] On each trial the group members were permitted to send a written communication to one of their coworkers instructing him to raise or lower his corner. Two behavioral measures were taken:

---

18. A detailed description of the apparatus can be found in Raven and Eachus (1963), Raven and Shaw (1970), and Fishbein *et al.* (1970).

the number of instructions the subject sent to each coworker (communicative behavior) and the proportion of instructions from each coworker with which the subject complied (compliance behavior). Differences between the two coworkers on these two measures were used as the dependent variables. Similarly, differences were computed between the intentions to communicate with the two coworkers and between the intentions to comply with them, measured immediately prior to the first trial.

The correlation between intentions and communicative behavior was reasonably high ($r = .690$; $p < .01$); the correlation with compliance was much lower, though still significant ($r = .211$; $p < .01$). There is reason to suspect that the subjects changed their behavioral intentions as a result of their interactions on the task. First, with regard to communication, a person may initially intend to send instructions to one of his coworkers. But if he learns in the course of the interaction that this group member tends not to comply with his instructions, he is likely to change his evaluation regarding communication to this member, and he will modify his behavioral intentions accordingly. In support of this argument, a significant correlation of .528 was obtained between compliance by a given partner and the subject's communicative behavior toward that partner.

Second, concerning the subject's compliance behavior, it appears reasonable that his intention to comply with a given coworker will be influenced by the nature of the instruction he receives from the coworker. This argument is supported by the significant negative correlation ($r = -.456$) of compliance behavior with the absolute discrepancy between the instructions received by a subject and his own perception of the best course of action. That is, compliance decreased as the perceived unreasonableness of the instruction increased.

We expect addition of these mediating factors to the initial measures of behavioral intentions to improve the prediction of overt behavior. As Table 8.9 shows, this expectation was confirmed when the subject's intention to communicate and the coworker's compliance were regressed on communicative behavior. The regression weight of compliance by the coworker was .390 ($p < .01$), and the multiple correlation was .777. Similarly, a multiple correlation was computed with intention to comply and the above-mentioned index of discrepancy as predictors, and with compliance behavior as the criterion. The regression weight of the index of discrepancy was $-.431$ ($p < .01$), and the multiple correlation with behavior was .464. Thus the mediating variables made significant contributions to the prediction of overt behavior, independent of the specific intention measured at the *beginning* of the interaction.

More important, it is to be expected that the subject's intentions toward the *end* of the experiment will have been affected by these processes. In the study under consideration, posttest measures of behavioral intentions were obtained. When these posttest measures were used in multiple correlations on behavior, the regression weights of the mediating variables dropped to nonsignificance. The regression weight of compliance by coworkers in "postdicting" communications was .140, and the weight of the index of discrepancy was .122 in the postdiction of

Table 8.9 Correlations, Regression Coefficients, and Multiple Correlations of Behavioral Intentions (I), Perceived Percentage of Compliance (PPC), and Incompatibility Index (II) on Behavior (Communications and Compliance) (Adapted from Ajzen and Fishbein, 1974)

Behavior	Correlation coefficients		Regression coefficients		Multiple correlations
	I	PPC	I	PPC	
Communications					
Pretest	.690*	.605*	.532*	.390*	.777*
Posttest	.883*	.605*	.801*	.140	.890*
	I	II	I	II	R
Compliance					
Pretest	.211*	−.456*	.086	−.431*	.464*
Posttest	.502*	−.146	.560*	.122	.513*

* $p < .01$

compliance. The multiple postdictions of behavior were thus almost entirely due to the posttest behavioral intentions. The posttest correlations between intentions and behavior were .883 for instructions and .502 for compliance.

These findings provide some support for the notion that processes intervening between the measurement of intention and the observation of behavior will tend to reduce the relationship between these two variables by changing behavioral intentions. Prediction of behavior can be improved by either measuring the intentions after these changes have occurred or by taking the intervening events into account.

Volitional control. We have seen that when properly measured, intentions are highly predictive of corresponding overt behaviors. It can be shown, however, that the intention-behavior relation may break down if performance of the behavior depends on certain abilities or resources that the actor does not possess or if it depends on the cooperation of other people. For example, in Fishbein's (1966) study of premarital sexual intercourse among undergraduates, it was found that intentions were better predictors of behavior for females ($r = .676$; $p < .01$) than for males ($r = .394$; n.s.). This finding is consistent with the argument that lack of ability or opportunity may lower the correspondence between behavioral intentions and behavior. Clearly, females in our society may meet fewer obstacles than males when they attempt to execute their intentions to engage in premarital sexual intercourse. The reason that the correlation between intention and behavior was only .676 even for females can most likely be found in the fact that a whole semester intervened between the measurement of these two variables. Many uncontrolled factors may have produced changes in behavioral intentions.

Sometimes even behaviors that are apparently not under volitional control seem nevertheless to be related to intentions. In a study by Newton and Newton (1950) expectant mothers were classified as having positive, negative, or doubt-

ful intentions to breast-feed their babies. After delivery, all mothers were told and encouraged to breast-feed. Milk supply on the fifth day following delivery was used to classify the mothers into three behavioral categories: successful (enough milk so that supplementary formulas were not necessary after the fourth hospital day), unsuccessful (continued breast-feeding, but supplementary formulas were necessary after the fourth day), and abortive (ceased efforts to breast-feed). The results of the study, presented in Table 8.10, show that breast-feeding behavior became more successful as intentions became more positive. Computing a measure of association[19] between intention and behavior results in a significant coefficient of .48. Thus, for example, mothers with positive intentions supplied more milk (an average of 59 grams per feeding on the fourth day) than did those with doubtful (42 grams) or negative (35 grams) intentions. Clearly, however, milk supply was not completely under volitional control. Even with positive intentions, some mothers were unable to supply a sufficient amount of milk for their babies.

Table 8.10 Relation Between Intention and Breast-feeding Behavior (Adapted from Newton and Newton, 1950)

Behavior	Positive		Intentions Doubtful		Negative	
Successful	74%	(38)	35%	(6)	26%	(6)
Unsuccessful	24%	(12)	47%	(8)	44%	(10)
Abortive	2%	(1)	18%	(3)	30%	(7)

Number of subjects in parentheses

To summarize briefly, we have tried to show that prediction of single-act criteria is not only possible but that it is relatively easy. Since much human behavior is under volitional control, most behaviors can be accurately predicted from an appropriate measure of the individual's intention to perform the behavior in question. For a high correlation between intention and behavior to obtain, however, two prerequisites have to be met. First, the intention has to be measured at the same level of specificity as the behavioral criterion, and second, the measure of intention must reflect the person's intention at the time he performs the behavior. Since intentions are usually measured some time prior to performance of the behavior, intervening events may change the behavioral intention and thus reduce its relation to behavior. Prediction of behavior can be improved by taking these intervening events into account. Although several factors may influence the size of any given intention-behavior relation, an investigator should usually be able to identify and appropriately measure an intention that will be highly correlated with the particular behavior he would like to predict.

19. A Phi coefficient was computed on Newton and Newton's (1950) data.

Given a high degree of correspondence between a person's intention and his actual behavior, one would expect the factors determining intentions also to be closely related to behavior. In Chapter 7 we discussed a theory for the prediction of intentions, and we showed that behavioral intentions are predictable from the attitudinal and normative components of the theory. It follows that whenever a high intention-behavior relation is observed, the behavior in question should also be predictable from attitude toward the behavior (A_B) and subjective norm (SN). Conversely, even when the two components accurately predict the intention, they will not predict the behavior if the intention measured is itself inappropriate for prediction of the behavior in question. We have already seen that A_B and SN can predict behavior with a high degree of accuracy. McArdle (1972) did not obtain a direct measure of intention but instead measured these two components. The multiple correlation of the two components with behavior was .77.

Additional evidence for these notions comes from several of the studies discussed earlier. We have discussed a number of studies that found a high correlation between intention and behavior, and in the preceding chapter we showed that many of the same intentions could be predicted with high accuracy from the attitudinal and normative components. As would be expected, these studies also showed that the two components were highly predictive of overt behavior. For example, in their study using two Prisoner's Dilemma games, Fishbein and Ajzen (1970) found multiple correlations of .732 and .793 between the two components of the model and strategy choices in the two games. In fact, owing to the high intention-behavior correlations, whatever factors were found to have significant effects on intentions were also found to have the same effects on the corresponding behaviors.

CONCLUSION

In this chapter we have discussed the prediction of overt behavior. We have seen that behavior can be measured at different levels of specificity and that it is important to distinguish between different types of behavioral criteria. Three major behavioral criteria were identified: single-act, repeated-observation, and multiple-act criteria. We showed that when properly constructed, repeated-observation criteria are essentially behavioral measures of attitudes toward behaviors, and multiple-act criteria are behavioral measures of attitudes toward objects.

We have argued that the best predictor of a person's behavior is his intention to perform the behavior, irrespective of the nature of the behavioral criterion. Intentions and behaviors were both shown to vary in terms of behavior, target, situation, and time. Whereas repeated-observation criteria represent behavioral measures across targets, situations, or time, multiple-act criteria represent measures across different behaviors. An appropriate measure of intention corresponds in its level of specificity to the behavior that is to be predicted. Thus, to predict such a single-act criterion as a person's attendance at the 7 A.M. Mass at St. Mary's Cathedral on the coming Sunday morning, the measure of intention has to

refer to exactly the same behavior. That is, the person's intention to attend the 7 A.M. Mass at St. Mary's Cathedral this coming Sunday has to be measured. Similarly, the repeated-observation criterion "number of worship services at St. Mary's Cathedral attended in the course of one year" requires a measure of intention such as "How many worship services at St. Mary's Cathedral do you intend to attend during the coming year?" To predict a multiple-act criterion, it is usually necessary to obtain an even more general measure of intention. A multiple-act criterion based, for example, on observation of several religious behaviors at St. Mary's Cathedral (e.g., number of worship services attended, amount of money contributed, singing in the church choir, and teaching Sunday school) could be predicted from the following measure of intention: "I intend/do not intend to act supportive toward St. Mary's Cathedral."

Within our conceptual framework, intentions are viewed as the immediate antecedents of corresponding overt behaviors. The apparent simplicity of this notion is somewhat deceptive, however. Since it is often impossible or impractical to measure a person's intention immediately prior to his performance of the behavior, the measure of intention obtained may not be representative of the person's intention at the time of the behavioral observation. Intervening events that may lead to changes in intentions will therefore also have to be taken into consideration. For example, if a person intends to buy a car three months hence, any change in his financial position, the price of the car, or the availability of gasoline may influence his intention and must therefore be taken into account if accurate behavioral prediction is to be achieved. Barring such changes in intentions, an appropriate measure of intention will usually allow accurate prediction of behavior.

Understanding a person's behavior, however, requires more than just knowledge of his intention. It is not very illuminating to discover that people usually do what they intend to do. If behavioral *prediction* is the primary objective, the simplest and probably most efficient way to accomplish this is to obtain an appropriate measure of the person's intention. If *understanding* his behavior is the primary objective, the factors determining his intention must be specified. Chapter 7 was devoted to a discussion of these factors. We presented a theoretical model which specifies two major determinants of intentions: attitudes toward the behavior and subjective norms. These two components must be measured at the same level of specificity as the intention. Given high correspondence between intention and behavior, one can also view the attitudinal and normative components as the determinants of the behavior. In fact, when intention and behavior are highly related, everything we have said about the factors influencing intentions can also be applied to an understanding of the determinants of behavior. Thus, it should not be surprising to find that attitude toward the behavior is often related to performance of the behavior.

In contrast, traditional measures of attitude toward an object can influence a given behavior only indirectly, and thus low and inconsistent relations between these attitudes and single-act or repeated-observation criteria are to be expected.

Unlike most traditional approaches, therefore, our approach has been to suggest that attitude toward an object will usually have at best a low relation to any given behavior with respect to that object. As would be predicted on the basis of our analysis of behavioral criteria, however, attitudes toward objects are found to be related to multiple-act criteria which may be viewed as behavioral measures of these same attitudes.