



Universität Potsdam

Thomas Eckes, Barbara Krahé, Bernd Six

Predicting behavior in natural settings : four field studies

first published in:
Attitudes and Behavioral Decisions / A. Upmeyer (Ed.). - New York [u.a.] :
Springer, 1989. - S.163-182

Postprint published at the Institutional Repository of Potsdam University:
In: Postprints der Universität Potsdam
Humanwissenschaftliche Reihe ; 72
<http://opus.kobv.de/ubp/volltexte/2009/3386/>
<http://nbn-resolving.de/urn:nbn:de:kobv:517-opus-33862>

Postprints der Universität Potsdam
Humanwissenschaftliche Reihe ; 72

Predicting Behavior in Natural Settings: Four Field Studies

Bernd Six, Barbara Krahé, and Thomas Eckes

Despite continuous challenges, highlighted in the work of two of the field's most influential critics, LaPiere (1934) and Wicker (1969), attitude-behavior research has continued to be one of the most prolific areas in mainstream social psychology (cf. Canary & Seibold, 1984). To account for this persisting interest in relating attitudes to subsequent behavior, a straightforward and simple explanation has been presented by Kahle (1984, p. 105): "The basic rationale for understanding attitudes hinges on the notion that attitudes will reveal something about probable behavior. Since behaviors are difficult to predict and to measure, the assumption has been that attitudes would provide a shortcut to understanding behaviors."

As this statement implies, the conceptual validity of the attitude concept has been defined and evaluated in terms of its capacity to account for substantial proportions of behavioral variance. Two recent trends in conceptualizing and operationalizing attitudes as predictor variables of subsequent behavior will be discussed in the next section, thus providing the foundation for the research reported in the remainder of the chapter: (1) the search for general models of behavior prediction based on a limited set of predictor variables, and (2) the identification of moderator variables that critically affect the relationship between attitudes and behaviors.

Basic Concepts and Applied Perspectives in Attitude-Behavior Research

In order to be effective as "shortcuts to understanding behavior," prediction models must be as parsimonious and, at the same time, as generally applicable as possible. Therefore, the models that are briefly described here confine themselves to no more than three to four predictors. In his model of "interpersonal behavior," Triandis (1977) specifies a person's habits, behavioral intentions, and facilitating external conditions as the most important predic-

tors of behavior. Jaccard (1981) presents a "subjective expected utility" model where behavior is seen as a joint function of the valence of the anticipated outcome and the strength of the expectancy that the behavior will lead to this outcome. According to Zanna and Fazio's (1982) model, the salience and accessibility of attitudes toward an attitude object determines the selection of a specific behavior: salient attitudes/evaluations guide a person's behavior toward those actions that are congruent with the attitudes.

Starting from a sociological perspective, models of "contingent consistency" emphasize the impact of situational pressures on behavioral decisions (e.g., Acock & Scott, 1980; Andrews & Kandel, 1979). Finally, Bentler and Speckart (1979) incorporate a person's prior behavior in their model which is otherwise almost identical to Fishbein's (1980) "theory of reasoned action" (see next section). All these models are able to quote some supportive evidence, although there does not seem to be a broad enough empirical basis to warrant a comparative appraisal and evaluation at the present stage (cf., however, Brinberg, 1979; Fredericks & Dossett, (1983).

Among the recent attempts to specify generally applicable models of behavior prediction, the Fishbein (1980) theory of reasoned action is undoubtedly the most prominent single theoretical conception. Basically, in Fishbein's model, behavior is regarded as a function of the behavioral intention which, in turn, is based on two antecedent variables: a person's attitude toward the behavior and the subjective norms associated with performing the behavior. The Fishbein model has been applied successfully to a wide range of behavioral issues both within and outside laboratory settings (Ajzen & Fishbein, 1980; Geise, 1984).

The general validity of the model has been questioned, however, by a number of studies in which modified sets of predictor variables led to better predictions than the original model (Davis & Runge, 1981; Kantola, Syme, & Campbell, 1982; Manstead, Proffitt, & Smart, 1983; Wittenbraker, Gibbs, & Kahle, 1983; for a conceptual critique cf. Sarver, 1983). These findings suggest that prediction models of medium range which take into account the characteristics of the behavioral categories to which they are addressed may prove superior over general models of behavior prediction.

This is also the point of departure for the present research which is based on the proposition that medium-range prediction models designed for explicitly defined categories of behavior should be more successful than universally applicable models which necessarily neglect the distinctive features of different behavioral domains in favor of their common elements.

By definition, general models of behavior prediction assume that the link between attitudes and behavior operates in the same way for all individuals. In contrast, the moderator variable approach, which constitutes the second major trend in recent attitude-behavior research, is based on the proposition that it is possible to identify subgroups of individuals who show higher levels of correspondence between attitudes and behavior than others. The identification of such subgroups is guided by theoretically derived moderator

variables that are postulated to impinge on the causal links between predictor variables and behavior.

Two moderator variables that have been extensively studied are "self-monitoring" (Snyder, 1974) and "self-consciousness" (Fenigstein, Scheier, & Buss, 1975). High self-monitors tend to monitor their behavior against external cues in their social environment and may therefore be expected to show less attitude-behavior consistency than low self-monitors, who tend to rely on internal cues and standards as guidelines of their behavior. This hypothesis was supported by several empirical studies. (Ajzen, Timko, & White, 1982; Snyder & Swann, 1976; Zanna, Olson, & Fazio, 1980). Similarly, higher attitude-behavior consistency was shown for individuals high rather than low in "private self-consciousness" (Scheier, Buss, & Buss, 1978; Underwood & Moore, 1981).

In a recent series of studies, Fazio, Zanna, and Olson investigated the influence of prior experience with the attitude object on attitude-behavior correspondence (Fazio & Zanna, 1981; Zanna & Olson, 1982; Zanna et al., 1980). They demonstrated that direct behavioral experience with the attitude object increases the predictive value of attitudes for subsequent behavior as compared with attitudes formed via indirect means.

In stressing the crucial role of familiarity with an attitudinal issue, this research is immediately relevant to the present approach which investigates both behaviors with which individuals are familiar through the course of everyday experience and attitude-behavior problems which individuals encounter for the first time.

Thus far we have been basically concerned with conceptual issues associated with analyzing attitude-behavior relationships. To conclude this section, some methodological considerations are in order pertaining to the study of attitudes and behavior in a natural context. In the attempt to investigate attitude-behavior relationships in natural settings, the studies reported in the following sections take account of the increasing demand for "mundane realism" of social psychological research. Yet, the task of designing empirical procedures for addressing such ecologically valid attitude-behavior instances involves specific methodological problems, particularly in terms of ensuring the reliability of the obtained data.

One aspect of special relevance to this problem refers to the time interval between the measurement of the attitudinal variables and the recording of the behavioral information. While the interval between these two data points can be kept relatively small in many laboratory settings, it may extend over weeks or even months in naturally occurring attitude-behavior problems, such as the decision for and the subsequent actual participation in educational or health-care programs. This means that attitude-behavior relationships observed over such extended periods are likely to be weaker than those observed in close temporal proximity. In evaluating the validity of specific models of attitude-behavior relationship on the basis of empirical evidence, the characteristic properties of evidence from different settings, for

example, the time interval between attitudinal and behavioral measures or the extent to which the investigator has control over intervening variables must be taken into account.

Searching for Medium-Range Models of Behavior Prediction

Based on the general considerations outlined in the last section regarding theoretical and methodological requirements for analyzing attitude-behavior relationships in natural settings, the research reported in this chapter aims to specify and examine "medium-range" prediction models of behavior. These models should take into account the distinctive features of the behavior under prediction, while at the same time being sufficiently general to be applicable to a range of behaviors within a specified domain or category.

For this purpose, two such medium-range prediction models were developed and applied to the task of predicting behavior in four widely different behavioral domains. In order to examine the usefulness of these models over "omnibus models" of behavior prediction, the Fishbein (1980) revised version of the original Fishbein (1967) model was included as a third model in the present approach.

The first model (M1) incorporates four predictor variables focusing on (1) the person's attitude toward the available behavioral alternatives, (2) the general attitude toward the domain or context in which the behavior is located, (3) cost-benefit considerations referring to each behavioral alternative, and (4) the strength of the behavioral intention.

The second medium-range prediction model (M2) also consists of four predictors: (1) attitudes toward the interaction partners associated with different behavioral alternatives, (2) perceived situational conditions facilitating or constraining the person's realization of the behavior, (3) attitudes toward the behavior, and (4) behavioral intention.

Finally, the third model (M3), proposed by Fishbein (1980), specifies three behavioral predictors: (1) attitude toward the behavior, (2) subjective norms, and (3) behavioral intention. A summary of the predictors in each model is given in Figure 7-1.

For each model, it was hypothesized that positive scores (favorable toward the behavior) on all predictors should lead to the occurrence of the behavior, while negative scores on at least one predictor should lead to the nonoccurrence of the behavior.

In order to allow a *comparative evaluation* of the three models over a range of different behavioral domains, four categories were defined, based on a 2×2 classification of behaviors along the following dimension: (1) main target of behavior (self vs. other(s)) and (2) consequences for the actor (high vs. low). M1 was expected to be most successful in predicting behaviors directed mainly toward the self as target, M2 was designed to predict behaviors di-

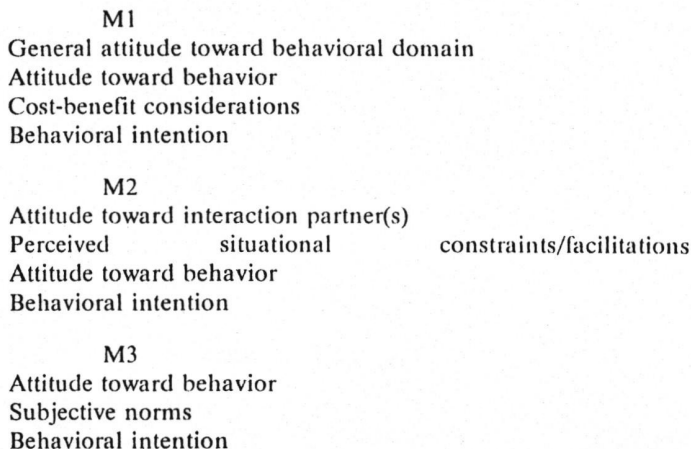


Figure 7-1. Predictor variables of the three models.

rected mainly toward other person(s). Both models were expected to be more successful in their respective categories than the general M3. To test these hypotheses, the variables of each model had to be operationalized in each of the four projects.

Putting the Models to Test

The first task in applying the three models to specific attitude-behavior problems within the present taxonomy consisted in selecting representative examples for each category. Based on ratings made by a group of 50 expert social psychologists on a sample of naturally occurring behavioral problems in terms of the two dimensions of "target" and "consequences," one prototypical representative of each of the four categories was chosen for empirical investigation:

1. Decision for or against conscientious objection
 Main target: self
 Consequences for the actor: high
2. Regular participation in sports events
 Main target: self
 Consequences for the actor: low
3. Parents' participation in primary health care
 Main target: other
 Consequences for the actor: high

4. Helping behavior toward the physically handicapped

Main target: other

Consequences for the actor: low.

In each of the four projects, instruments to measure the seven distinctive predictors of the three prediction models had to be developed. A standard procedure for developing these methodological devices was adopted in each project:

1. The theoretical definitions of the predictor variables were translated into guidelines for semistructured exploratory interviews to obtain an item pool representing each predictor.
2. Items that were unanimously rated by three independent raters as representing the respective predictor variables were compiled into a preliminary Likert-type questionnaire and administered to a pretest sample.
3. Item analyses (both classic and probabilistic; cf. Mokken, 1971) performed on the pretest data led to the final questionnaires employed in the main part of each project to operationalize the predictor variables. Each item was followed by a 6-point response scale ranging from (1) completely disagree to (6) completely agree.

To test the predictive validity of the three models in a comparative way, the same method of analysis was used in each project. Since in studies 1 and 4 the criterion variables were inherently dichotomous, a mode of analysis capable of testing the validity of predictions at the level of nominal data had to be found. In their prediction analysis of cross-classification, Hildebrand, Laing, & Rosenthal (1977) suggest the DEL coefficient as a proportionate reduction in error (PRE) measure applicable to the present type of data, which was therefore used as a basis to examine the extent to which each of the three models was successful in predicting behavior. A brief description of the rationale of DEL analysis is presented in "The Logic of DEL Analysis," this chapter.

To illustrate the characteristic features of the problem areas under investigation, each of the four projects is described individually in the following sections.

Study 1: Predicting Conscientious Objection

According to Article 4.3 of West Germany's Basic Law, "no one may be compelled against his conscience to render war service involving the use of arms." Therefore, the German constitution assures every male citizen the basic right of "conscientious objection to service in the military." Unless found unfit for military service, every young man at the age of 18 is faced with the decision either to join the military forces as a conscript or to submit an application for conscientious objection. Applicants acknowledged as conscientious objectors by a jury committee are liable to perform a substitute

community service lasting one-third longer than compulsory military service.

Thus the decision for or against conscientious objection constitutes an important real-life attitude-behavior problem, each option entailing a number of different, but equally serious consequences for the actor. It was rated by our expert sample as a behavior mainly addressed toward the self as target and being associated with high consequences for the actor and was therefore selected to represent this behavioral category.

Method

As a first step, the variables of the three prediction models (cf. Figure 7-1) had to be defined more specifically with regard to the issue of conscientious objection. These definitions, addressed at this particular attitude-behavior problem involving the two options of (1) joining the military and (2) applying as conscientious objector, are presented in Figure 7-2.

Employing the standard procedure as previously described, a 59-item questionnaire was developed to represent the 7 predictors. Each item was followed by a 6-point response scale ranging from completely agree to completely disagree. This instrument was presented to a sample of 247 young men (average age 17.8 years) facing the decision for or against conscientious objection.

Although applications for conscientious objection can be submitted at any time after the so-called *Wehrerfassung* (registration), the majority of applications are submitted within six months following the mustering procedure. Therefore, all subjects were contacted again six months later to

General attitude toward behavioral domain: person's attitude toward military defense and conscription (e.g., attitude toward deployment)

Attitude toward behavior: evaluation of the instrumental value of the two options (e.g., in terms of securing peace)

Cost-benefit considerations: personal costs/benefits associated with either option (e.g., longer duration of substitute service)

Attitude toward interaction partner(s); attitudes toward soldiers and members of military hierarchy

Perceived situational constraints/facilitations (e.g., estimated likelihood of success of application)

Subjective norms: attitude toward the two options held by important others (e.g., parents, classmates)

Behavioral intention: subjective probability of choosing either option.

Figure 7-2. Predictor definitions in relation to conscientious objection.

collect information about their decision. The return rate for this second contract was 42.9%, leading to a total of 106 subjects for whom both predictor and criterion measures were obtained.

The Logic of DEL Analysis

The examination of the three prediction models was based on the method of DEL analysis suggested by Hildebrand et al. (1977). As this method is rarely used in attitude-behavior research, its basic assumptions and procedures are described briefly in the following paragraph.

DEL analysis provides a means of evaluating qualitative predictions through multivariate analyses of contingency tables. It starts from structural hypotheses specifying which events in a contingency table verify or falsify the prediction(s). These structural hypotheses are formulated in terms of a *prediction logic* which substitutes the classic logical principle of implication ($x \Rightarrow y$) by $x \rightsquigarrow y$ (x is a sufficient condition for y). This approach has a number of advantages over more conventional measures of association (cf. Hildebrand et al., 1977, chap. 2):

DEL analysis permits the testing of custom tailored, a priori predictions considering not only the overall probability structure but also the different events specified in the structural hypothesis.

DEL analysis provides a prediction-specific measure of association indicating both the kind and the degree of dependence between two or more variables.

DEL analysis allows both "one-to-one" and "one-to-many" predictions, that is, it is not constrained by the condition that exactly one value of the dependent variable must be predicted for each state of the independent variable(s).

DEL analysis provides a measure of prediction success (the ∇ coefficient) which can be operationally interpreted as a PRE measure. PRE measures indicate the percentage of error reduction as a result of using the states of the independent variable(s) to predict the states of the dependent variables.

DEL analysis permits accurate estimates with modest sample sizes.

As a first step toward evaluating a prediction, each hypothesis specifying the relationship between two or more categorical variables is translated into a prediction-logic statement or structural hypothesis which defines the events (i.e., cells of the contingency table) that verify and falsify the hypothesis. The ∇ coefficient quantifies the increase in prediction success achieved by the structural hypothesis. The general formula for ∇ is as follows:

$$\nabla = 1 - \frac{\sum_i \sum_j w(ij) P(ij)}{\sum_i \sum_j w(ij) P(i.) P(.j)}$$

A ∇ of 1.00 indicates zero probability of errors or perfect association. $\nabla = .00$ indicates that the error rate is unaffected by the structural hypothesis. Negative scores of ∇ occur if the prediction based on the structural hypothesis leads to more errors than expected by chance. Hildebrand et al. (1977, chap.9) demonstrate that the sampling distribution of ∇ is asymptotically normal so that confidence intervals and significance levels can be established for empirically obtained ∇ coefficients.

According to the general hypothesis underlying the comparison of the three prediction models, positive scores (i.e., favorable toward the behavior) on all predictors of the model should lead to the occurrence of the behavior, while negative scores on at least one predictor should lead to the nonoccurrence of the behavior.

Based on the logic of DEL analysis, predictions of the three models were translated into the contingency tables shown in Figure 7-3. As M1 and M2 contain the same number of predictors, their corresponding contingency tables are formally identical.²

Within each model, subjects were classified as having a positive score on a predictor when the means of their responses to the predictor-related items in the questionnaire was greater than 4. Subjects were classified as having a negative score on a predictor when their means across the predictor-related items were less than 3. Subjects whose means fell in the middle range of the scale were eliminated from the sample because no meaningful predictions about their behavioral decisions could be derived from their responses.

¹ $w(ij) = 1$ if cell (ij) belongs to a set of falsifying events; $w(ij) = 0$ if otherwise/
 $P(ij) =$ relative frequency of cell $(ij)/P(i.) =$ relative frequency of row $i/P(.j) =$ relative frequency of column j .

²Errors cells are indicated by dots.

	M1, M2		M3	
	N of positive predictors		N of positive predictors	
	0-3	4	0-2	3
Behaviour occurs				
Behaviour does not occur				

Figure 7-3. Contingency tables for M1, M2, and M3.

Results and Discussion

Results of the DEL analyses performed on the three models predicting decisions for or against conscientious objection are presented in Table 7-1. In addition to the ∇ coefficients and significance levels, an index of the percentage of successful predictions (PSP) is provided for each model.

For all three models, significant reductions in error are obtained, ranging between 35% for M3 and 66% for M2. The two medium-range models, M2 in particular, achieve better results than the more general M3. These results indicate that the probability of making correct predictions about peoples' decision for or against conscientious objection is increased by between 35% and 66% if information about the specific attitudinal variables addressed by the different prediction models is taken into account. However, the hypothesis related to the initial classification of behaviors, namely that M1 should prove most successful in the present category (self as target, high consequences) was not confirmed by the present data.

Table 7-1. ∇ Coefficients: Conscientious Objection

	M1	M2	M3
∇	.44	.66	.35
p <	.01	.001	.05
PSP	.80	.84	.79

Study 2: Predicting Regular Participation in Sports Events

In this project, a behavior was examined which was rated by our expert sample to be again mainly addressed toward the self as target, but associated with low consequences for the actor. The specific behavioral aspect selected for prediction in this project was regular attendance at soccer matches. In contrast to the previous project involving a decision that had to be taken once at a fixed point in time, this study provided us with the opportunity to investigate behavioral patterns or regularities over an extended period of time.

Method

The development of the attitudinal measures was preceded by the task of specifying the meaning of each predictor in the context of the present study. The predictor definitions related to the issue of regular attendance at soccer matches are presented in Figure 7-4.

A questionnaire measuring these predictors was developed using the procedure described on p. 168. The resulting 38-item questionnaire was distributed to 300 male visitors of a home match of a First Division Club at the beginning of the season. Eighty-seven subjects returned their questionnaires.

General attitude toward behavioral domain: peoples' attitude toward soccer as a public institution (e.g., attitude toward soccer associations)

Attitude toward behavior: evaluation of the instrumental value of the behavior (e.g., in terms of recreation)

Cost-benefit considerations (e.g., expenses incurred)

Attitude toward interaction partner(s); attitudes toward fellow soccer fans (e.g., soccer hooliganism)

Perceived situational constraints/facilitations

Subjective norms: others' important attitudes toward visiting soccer team matches (e.g., wife, co-workers)

Behavioral intention; number of matches in the season intended to visit.

Figure 7-4. Predictor definitions in relation to regular attendance at soccer matches.

After the end of the first round, these subjects were contacted again and asked how many of the six remaining home matches they had attended. Of the 87 subjects, 94% returned the behavioral data, bringing the final sample size to 82. They were regarded as having fulfilled the behavioral criterion if they had visited at least four of the six matches.

Results and Discussion

The method of DEL analysis was used again to examine and compare the three prediction models. The contingency tables and structural hypotheses specified for each model were identical to Study 1 (cf. Figure 7-3).

The results of the DEL analysis for predicting regular participation in soccer matches are presented in Table 7-2. Again, the PSP index is included to indicate the overall percentage of successful predictions.

Unlike the previous study, the general M3 produced better results than M1. This finding again lent no support to the initial matching of prediction models to behavioral categories. As in Study 1, M2 provided the largest propor-

Table 7-2. ∇ Coefficients: Regular Attendance at Soccer Matches

	M1	M2	M3
∇	.25	.56	.35
p <	.06	.001	.01
PSP	.72	.79	.68

tionate reduction in error. For both M2 and M3, the increase in prediction success over a chance-based prediction is highly significant.

Study 3: Predicting Parents' Participation in Primary Health Care

The present project examined parents' readiness to participate in primary health care for their children as provided free of charge by the West German health insurance system. A total of eight such preventive check-ups, spread over the first three years of the child's life, is offered to parents under this scheme. Although the offer is publicized and recommended by pediatricians, nurses, and various other professional institutions, the rate of participation is not considered satisfactory (cf. DAK Report, 1982). The present study was concerned, in the context of the general theoretical aims of the present research, with investigating the determinants of parents' regular participation in primary health care for their children. This behavioral domain was rated by our expert sample as being typically addressed toward another person and involving high potential consequences for the actor.

Method

Applying the general definitions of the predictor variables to the specific features of this behavioral domain, the following descriptions were devised to provide the basis for the exploratory interviews (cf. Figure 7-5).

A total of 100 women who had recently given birth to a child volunteered to participate in this study and completed a 38-item questionnaire measuring the predictor variables. Of the original participants, 80 could be contacted a

General attitude toward behavioral domain: peoples' attitude toward primary health care in general

Attitude toward behavior: evaluation of the instrumental value of the behavior (i.e., of attending the preventive check-ups)

Cost-benefit considerations: personal costs/benefits associated with the behavior (e.g., not having to worry about child's development)

Attitude toward interaction partner(s): attitudes toward the child (this predictor was measured by a scale developed by Lukesch & Tischler, 1975, on mothers' child-rearing attitudes)

Perceived situational constraints/facilitations (e.g., transport problems)

Subjective norms: attitude toward the behavior held by important others (e.g., partner, parents)

Behavioral intention: subjective probability of regular participation.

Figure 7-5. Predictor definitions in relation to primary health care.

second time to obtain the behavioral information. They constitute the final sample for the present analysis. In planning the course of this project, we had to conform to the fixed time schedule for the various check-ups. The first two check-ups are usually carried out while the infant is still in the hospital, the remaining check-ups being scheduled as follows:

- Check-up 3: between 4th and 6th week
- Check-up 4: between 3rd and 4th month
- Check-up 5: between 6th and 7th month
- Check-up 6: between 10th and 12th month
- Check-up 7: after 24 months
- Check-up 8: between 3½ and 4 years.

In order to cover a range of three scheduled check-ups, the attitudinal data were collected individually from each participant either at home or while still in the hospital before the third check-up. The behavioral information, documented by the health-care "pass" in which every check-up is confirmed by the pediatrician, was collected about six months later after the fifth check-up date.

Results and Discussion

For the behavioral criterion to be fulfilled, subjects in the present study had to attend all three check-ups scheduled between the two data points. The contingency tables underlying the DEL analysis were identical to the one in Figure 7-3. Before quoting the results of the analysis, however, a specific statistical problem inherent in the present data must be pointed out. Contrary to expectations based on the sources previously quoted, the vast majority of subjects had positive scores on all predictors *and* fulfilled the behavioral criterion by participating in each of the three check-ups. There were only three subjects who had attended less than three check-ups. While this finding may be seen as an instance of almost perfect consistency between attitudes and behavior, the resulting highly skewed distributions of both predictor and behavioral variables present major problems for any statistical analysis. As far as DEL analysis is concerned, this means that the distribution of marginal probabilities is such that no substantial *proportionate reduction* of prediction errors may be achieved. Irrespective of the predictions derived from each of the three models, ∇ coefficients computed for these data will be low. Therefore, the ∇ coefficient is no longer an appropriate index to evaluate the structural hypotheses specified by the three models. Instead, the percentage of successful predictions (PSP) can be interpreted as a comparative index of prediction success (cf. Table 7-3).

As expected, ∇ coefficients for all three models are low and insignificant. Looking at the PSP values, however, it is clear that three models were in fact successful in accounting for systematic relationships between predictor variables and behavioral decisions between 64% and 94% of the cases. In terms

Table 7-3. ∇ Coefficients: Primary Health Care

	M1	M2	M3
∇	-.03	.00	.14
p <	.92	.51	.21
PSP	.94	.64	.88

of relative prediction success, M1 turned out to be most effective, followed by the general M3 and M2. Again, despite the satisfactory results of the models in predicting behavior, the original hypothesis that M2 should be most successful when the main target of the behavior is another person rather than the actor himself was not supported by the present data.

Study 4: Predicting Helping Behavior Toward the Physically Handicapped

The final category within the initial classification of behaviors referred to activities mainly addressed toward another person but associated with low consequences for the actor. Performing a brief helping act toward a physically handicapped person (e.g., opening a door or picking up something he had dropped) was selected on the basis of the expert ratings as a behavior typically representing this category.

Method

Adopting the same general procedure as previously described, the first step of the present study consisted in specifying the meaning of the predictor variables with regard to the problem of helping a physically handicapped person. Figure 7-6 provides the predictor definitions used as to elicit predictor-related items in the subsequent semistructured interviews.

A sample of 145 undergraduate students volunteered to participate in this study. Subjects' scores on each of the predictor variables were measured by 36-item questionnaire. In order to obscure any relationship between the questionnaire administration and the subsequent collection of the behavioral data, the two data points were separated by a time interval of about five months.

In order to select situations involving low consequences for the actor, a pretest was conducted in which the "difficulty" of different helping situations/behaviors was rated on a 4-point scale by a sample of 30 undergraduate students. On the basis of these ratings, two situations were selected: (1) a person walking on crutches drops a pile of computer printouts and (2) a person in a wheelchair drops a book. Additionally, the pretest revealed that gender differences between helper and handicapped person

General attitude toward behavioral domain: peoples' attitude toward society's treatment of the physically handicapped

Attitude toward behavior: evaluation of the instrumental value of the behavior (e.g., in terms of preventing self-help and independence)

Cost-benefit considerations: personal costs/benefits associated with either option (e.g., behavioral uncertainty, fear of rejection)

Attitude toward interaction partner(s); attitudes toward the physically handicapped

Perceived situational constraints/facilitations (e.g., time pressure, presence of other potential helpers)

Subjective norms: attitude toward helping behavior held by important others (e.g., parents, peers)

Behavioral intention: subjective probability of helping in a given situation.

Figure 7-6. Predictor definitions in relation to helping behavior toward a physically disabled person.

did not affect ratings of "difficulty." Therefore, a male confederate played the part of the disabled person throughout the study.

While the behavioral data in the previous studies were obtained in the form of reported behavior substantiated by objective evidence, the present investigation required the use of observational techniques to collect the behavioral information. An experimental context had to be contrived which made it possible to identify each subject unobtrusively to relate their behavior to the predictor measures collected at the first data point. Each of the original subjects were individually invited to a study on semantic similarity after which they were confronted with the disabled person in one of the two situations described. Subjects' behavior was filmed by a hidden camera. Forty-six participants turned up for the second data point, and their behavior toward the disabled person was recorded. The behavioral criterion was fulfilled when the subjects picked up the dropped items or made a verbal offer of help. This latter criterion was included because some subjects only noticed the disabled person relatively late when he had already begun to pick up the items himself.

The results of the DEL analyses performed on these behavioral records under the hypotheses of the three models are presented in Table 7-4. As the negative ∇ coefficients indicate, predictions based on the three models lead to an increase rather than a reduction in error rates. Neither of the models specifies rules of predictions which contribute to the understanding of the subjects' behavioral decisions. Measures (e.g., the multiple determination coefficient R^2 which can only adopt positive values) are based on ex post predictions that can never be less successful than their corresponding chance or "zero" model.

Table 7-4. ∇ Coefficients: Helping Behaviors
Toward the Physically Handicapped

	M1	M2	M3
∇	-.14	-.42	-.33
p <	.74	.99	.94
PSP	.42	.40	.25

Compared with the overall pattern of results reported thus far, it is evident that the present study produced the least satisfactory results for all three prediction models. One tentative explanation for this failure might be seen in the smaller sample size resulting from the relatively high proportion of drop-outs due to the vulnerability of the empirical set-up. In any case, results from this study will clearly impose qualifications on the general evaluation of the present approach.

General Discussion

The studies reported cover a broad spectrum of behaviors differing in importance and complexity from rather short-term, trivial behavioral acts to decisions involving long-term personal consequences. In accordance with the claim for mundane realism, all four studies addressed attitude-behavior problems and behavioral decisions naturally occurring in the course of everyday life. At the same time, they were selected to facilitate the comparative evaluation of prediction models differing in terms of the generality of their predictive claims.

Summarizing the findings from the four studies, it may be concluded that the two medium-range prediction models examined in the present research did produce satisfactory levels of prediction success in three of the four empirical studies. M2, in particular, generally turned out to be more successful than the Ajzen and Fishbein (1980) M3. No support, however, was found for the a priori matching of the two newly developed models to the behavioral categories—defined along the two dimensions of “target of behavior” and “consequences for the actor”—of which the four behaviors examined were typical representatives. This finding seems to suggest that these dimensions, although permitting meaningful differentiations within the behavioral spectrum, do not address features critically relevant to the specific task of predicting behavior on the basis of personal and situational determinants.

Finally, three characteristics of the present empirical research should be mentioned that prevent the findings to be measured strictly against the standards set up by laboratory evidence on attitude-behavior relationships.

1. All four projects were field studies in which the controllability of intervening external influences is considerably reduced.

2. Due to the time laws inherent in each of the four behavioral instances, there were considerably longer intervals (about six months) between the administration of the predictor measures and the collection of the behavioral data than in the majority of studies carried out in laboratory settings. As Fishbein and Ajzen (1975), for instance, point out, even time intervals of no more than one day lead to a substantial decrease in obtained attitude-behavior consistency. Katz (1982) found that attitudes are more than twice as predictive of behavior when both variables are measured at the same data point than when they are measured at an interval of two weeks. Instead of conforming to the principle of temporal proximity between attitudinal and behavioral measurement, however, future research should address itself to the task of developing a methodology that is capable of long-term predictions of behavior.

3. A further characteristic of the present research refers to the use of objective documents and direct observation rather than self-reports as behavioral measures. The reliance on self-reports of behavior in the majority of attitude-behavior research involves a major conceptual problem, namely that this type of behavioral information based on retrospective accounts remains, strictly speaking, within the same cognitive modality as the attitudinal measures and may be expected, on this ground alone, to lead to higher attitude-behavior consistencies.

Looking at the present project in terms of its implications for future research in this area, three main aspects can be identified:

1. It emphasizes the need for a taxonomy of behavioral categories that is empirically demonstrated to be valid in relation to the task of differential prediction of behaviors located in different categories. Such a classification must take into account the fact that for certain behavioral domains there is only one possible behavioral criterion (e.g., applying vs. not applying for conscientious objection) whereas others consist of a broad range of behavioral alternatives from which the actor may choose. An empirical strategy for determining prototypical behavioral instances within a given domain is provided, for instance, by the "act frequency approach" suggested by Buss and Craik (1984).

2. The second claim derived from the present findings relates to the necessity of exploring new methods of behavior measurement that allow reliable registration of behavior over extended time periods. One potential contribution toward this task may be derived from a recent study by Lord (1982) on the related problem of behavioral consistency across situations. From the start, he kept his subjects informed about the aims of his study addressed at the consistency of conscientious behavior, thus securing their active participation in terms, for example, of allowing the experimenter to check their lecture notes or control the tidiness of their rooms.

Where this approach is not feasible, an alternative way of collecting

ecologically valid behavioral data may consist in using "knowledgable informants" named by the participants as witnesses of their behavior. This so-called peer rating procedure was shown to yield highly informative and reliable data in recent studies by Cheek (1982) and Moskowitz and Schwarz (1982).

3. Future studies aiming at a comparative evaluation of medium-range versus general prediction models should extend the range of the comparison by incorporating further general models like those suggested by Bentler and Speckart (1979) or Triandis (1977). Apart from assessing the relative suitability of general versus medium-range models in predicting behavior, this procedure would promote more rigorous conceptual and empirical comparisons between the different general models. Ultimately, such a strategy could contribute toward the aim of establishing clearly separable and therefore parsimonious models of behavior prediction.

Acknowledgments. The present research was supported by the German Science Foundation (Grant Si-297). The authors would like to thank Hermann Baque, Doris Kern, Martin Koller, and Gundula Krönke for their assistance in the collection of data.

Copies of all original instruments can be obtained from the authors on request.

References

- Acock, A., & Scott, W.I. (1980). A model for predicting behavior: The effect of attitude and social class for high vs. low visibility political participation. *Social Psychology Quarterly*, *43*, 59-72.
- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Ajzen, I., Timko, C., & White, J.B. (1982). Self-monitoring and the attitude-behavior relation. *Journal of Personality and Social Psychology*, *42*, 426-435.
- Andrews, K.H., & Kandel, D.B. (1979). Attitude and behavior: A specification of the contingent consistency hypothesis. *American Sociological Review*, *44*, 298-310.
- Bentler, P.M., & Speckart, G. (1979). Models of attitude-behavior relations. *Psychological Review*, *86*, 452-464.
- Brinberg, D. (1979). An examination of the determinants of intentions and behavior: A comparison of two models. *Journal of Applied Social Psychology*, *9*, 560-575.
- Buss, D.M., & Craik, K.H. (1984). Acts, dispositions, and personality. In B.A. Maher & W.B. Maher (Eds.), *Progress in experimental personality research* (vol. 13, pp. 241-301). New York: Academic Press.
- Canary, D.J., & Seibold, D.R. (1984). *Attitudes and behavior: An annotated bibliography*. New York: Praeger.
- Cheek, J.M. (1982). Aggregation, moderator variables, and the validity of personality tests: A peer rating study. *Journal of Personality and Social Psychology*, *43*, 1254-1269.
- DAK (Deutsch Angestellten-Krankenkasse). (1982, September). *Sozialreport*.
- Davis, M.H., & Runge, T.E. (1981). Beliefs and attitudes in a gubernatorial primary: Some limitations on the Fishbein model. *Journal of Applied Social Psychology*, *11*, 93-113.
- Fazio, R.H., & Zanna, M.P. (1981). Direct experience and attitude-behavior consistency. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (vol. 14, pp. 161-202). New York: Academic Press.

- Fenigstein, A., Scheier, M.F., & Buss, A.H. (1975). Private and public self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology*, *43*, 522-527.
- Fishbein, M. (1967). Attitudes and the prediction of behavior. In M. Fishbein (Ed.), *Readings in attitude theory and measurement* (pp. 477-492). New York: Wiley.
- Fishbein, M. (1980). A theory of reasoned action: Some applications and implications. In M.M. Page (Ed.), *Nebraska symposium on motivation 1979* (pp. 65-116). Lincoln: University of Nebraska Press.
- Fishbein, M., & Ajzen, I. (1975). *Belief, attitude, intention, and behavior*. Reading, MA: Addison-Wesley.
- Fredericks, A.J., & Dossett, D.L. (1983). Attitude-behavior relation: A comparison of the Fishbein-Ajzen and the Bentler-Speckart models. *Journal of Personality and Social Psychology*, *45*, 501-512.
- Geise, W. (1984). *Einstellung und Marktverhalten*. Frankfurt/M.: Deutsch.
- Hildebrand, D.K., Laing, J.D., & Rosenthal, H. (1977). *Prediction analysis of cross-classifications*. New York: Wiley.
- Jaccard, J. (1981). Attitudes and behavior: Implications of attitude toward behavioral alternatives. *Journal of Experimental Social Psychology*, *11*, 181-191.
- Kahle, L. (1984). *Attitudes and social adaptation*. Oxford, England: Pergamon.
- Kantola, S.J., Syme, G.J., & Campbell, N.A. (1982). The role of individual differences and external variables in a test of the sufficiency of Fishbein's model to explain behavioral intentions to conserve water. *Journal of Applied Social Psychology*, *12*, 70-83.
- Katz, J. (1982). The impact of time proximity and level of generality on attitude-behavior consistency. *Journal of Applied Social Psychology*, *12*, 151-168.
- LaPiere, R.T. (1934). Attitudes vs. actions. *Social Forces*, *13*, 230-237.
- Lord, C.G. (1982). Predicting behavioral consistency from an individual's perception of situational similarities. *Journal of Personality and Social Psychology*, *42*, 1076-1088.
- Lukesch, H., & Tischler, A. (1975). Überprüfung und Revision eines Fragebogens zur Diagnostik elterlicher Erziehungseinstellungen von E. Littmann und E. Kasielke. *Probleme und Ergebnisse der Psychologie*, *51*, 19-54.
- Manstead, A.S.R., Proffitt, C. & Smart, J.L. (1983). Predicting and understanding mothers' infant feeding intentions and behavior: Testing the theory of reasoned action. *Journal of Personality and Social Psychology*, *44*, 657-671.
- Mokken, R.J. (1971). *A theory and procedure of scale analysis*. The Hague: Mouton & Co.
- Moskowitz, D.S., & Schwarz, J.C. (1982). Validity comparisons of behavior counts and ratings by knowledgeable informants. *Journal of Personality and Social Psychology*, *42*, 518-528.
- Sarver, V.T. (1983). Ajzen and Fishbein's "theory of reasoned action": A critical assessment. *Journal for the Theory of Social Behavior*, *13*, 155-163.
- Scheier, M.F., Buss, A.H., & Buss, D.M. (1978). Self-consciousness, self-report of aggressiveness, and aggression. *Journal of Research in Personality*, *12*, 133-140.
- Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality and Social Psychology*, *30*, 526-537.
- Snyder, M., & Swann, W.B. (1976). When actions reflect attitudes: The politics of impression management. *Journal of Personality and Social Psychology*, *34*, 1034-1042.
- Triandis, H.C. (1977). *Interpersonal behavior*. Monterey, CA: Brooks-Cole.
- Underwood, B., & Moore, B.S. (1981). Sources of behavioral consistency. *Journal of Personality and Social Psychology*, *40*, 780-785.
- Wicker, A. (1969). Attitudes versus actions: The relationship of verbal and overt behavioral responses to attitude objects. *Journal of Social Issues*, *25*, 41-78.

- Wittenbraker, J., Gibbs, B.L., & Kahle, L.R. (1983). Seat-belt attitudes, habits and behaviors: An adaptive amendment to the Fishbein model. *Journal of Applied Social Psychology, 13*, 406-421.
- Zanna, M.P., & Fazio R.H. (1982). The attitude-behavior relation: Moving toward a third generation of research. In M.P. Zanna, E.T. Higgins, & C.P. Herman (Eds.), *Consistency in social behavior: The Ontario symposium* (vol. 2, pp. 283-301). Hillsdale, NJ: Erlbaum.
- Zanna, M.P., & Olson, J.M. (1982). Individual differences in attitudinal relations. In M.P. Zanna, E.T. Higgins, & C.P. Herman (Eds.), *Consistency in social behavior: The Ontario symposium* (vol. 2, pp. 75-103). Hillsdale, NJ: Erlbaum.
- Zanna, M.P., Olson, J.M., & Fazio, R. (1980). Attitude-behavior consistency: An individual difference perspective. *Journal of Personality and Social Psychology, 38*, 432-440.