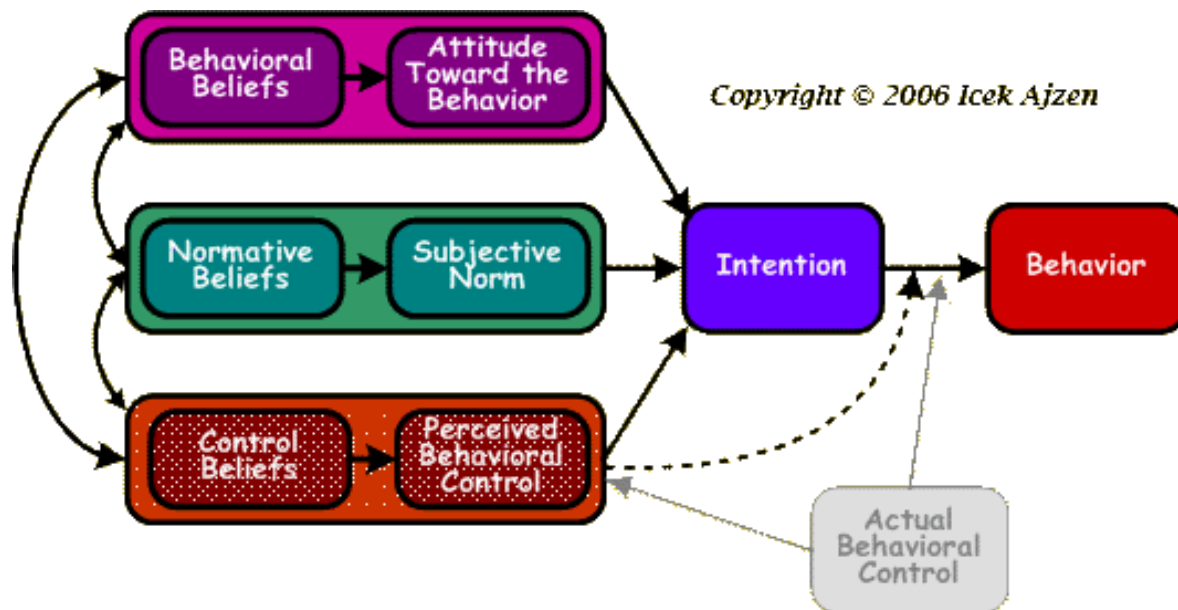


# Behavioral Interventions Based on the Theory of Planned Behavior

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## Brief Description of the Theory of Planned Behavior

According to the theory, human behavior is guided by three kinds of considerations: beliefs about the likely outcomes of the behavior and the evaluations of these outcomes (behavioral beliefs), beliefs about the normative expectations of others and motivation to comply with these expectations (normative beliefs), and beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors (control beliefs). In their respective aggregates, behavioral beliefs produce a favorable or unfavorable *attitude toward the behavior*; normative beliefs result in perceived social pressure or *subjective norm*; and control beliefs give rise to *perceived behavioral control*. In combination, attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral *intention*. As a general rule, the more favorable the attitude and subjective norm, and the greater the perceived control, the stronger should be the person's intention to perform the behavior in question. Finally, given a sufficient degree of *actual* control over the behavior, people are expected to carry out their intentions when the opportunity arises. Intention is thus assumed to be the immediate antecedent of behavior. However, because many behaviors pose difficulties of execution that may limit volitional control, it is useful to consider perceived behavioral control in addition to intention. To the extent that perceived behavioral control is veridical, it can serve as a proxy for actual control and contribute to the prediction of the behavior in question. The following figure is a schematic representation of the theory.



## Behavioral Interventions

Interventions designed to change behavior can be directed at one or more of its determinants: attitudes, subjective norms, or perceptions of behavioral control. Changes in these factors should produce changes in behavioral intentions and, given adequate control over the behavior, the new intentions should be carried out under appropriate circumstances.

### *Formative Research*

#### *Eliciting and Measuring Accessible Beliefs*

Because attitudes, subjective norms, and perceived behavioral control are assumed to be based on corresponding sets of beliefs, behavioral interventions must try to change the beliefs that, according to the theory, ultimately guide performance of the behavior. It is important to realize, however, that this explanatory function is associated only with *salient* beliefs or, to use the currently favored term, beliefs that are readily *accessible* in memory. Pilot work is required to identify accessible behavioral, normative, and control beliefs. Respondents are given a description of the behavior and are asked a series of questions designed to elicit accessible beliefs (for details, see “Constructing a TPB Questionnaire” on this website). The responses can be used to identify *personal accessible beliefs*, i.e., the unique beliefs of each research participant, or to construct a list of *modal accessible beliefs*, i.e., a list of the most commonly held beliefs in the research population.

Once accessible beliefs have been identified, a standard TPB questionnaire can be constructed (again, see “Constructing a TPB Questionnaire” on this website for instructions). This questionnaire is administered in the second stage of the formative research. It includes direct measures of attitudes, subjective norms, perceptions of behavioral control, intentions, and actual behavior. By using multiple regression or structural equation analyses, we can determine the relative contributions of attitudes, subjective norms, and perceptions of behavioral control to the prediction of intentions; and the relative contributions of intentions and perceptions of control to the prediction of behavior. In addition, the questionnaire also assesses behavioral beliefs (beliefs strength and outcome evaluations), normative beliefs (strength and motivation to comply), and control beliefs (strength and perceived power). By measuring these beliefs, we gain insight into the underlying cognitive foundation, i.e., we can explore why people hold certain attitudes, subjective norms, and perceptions of behavioral control. The beliefs provide a “snapshot” of the behavior’s cognitive foundation in a given population at a given point in time.

#### *Developing and Pretesting the Intervention*

Once it has been decided which beliefs the intervention will attempt to change, an effective intervention method must be developed. This is where the investigator’s experience and creativity comes into play. The theory of planned behavior can provide general guidelines, described below, but it does not tell us what kind of intervention will be most effective. We could consider persuasive communications, perhaps in the form of newspaper ads, flyers distributed in certain neighborhoods, or TV service messages. Alternatively, we might want to

try face-to-face discussions, observational modeling, or any other applicable method. The purpose of this third phase of the formative research is to demonstrate that the intervention developed does indeed influence the beliefs it is designed to change.

### *Targeting the Intervention*

#### *Mean Levels of Predictor Variables*

When selecting a target for the behavioral intervention, one obvious consideration is whether there is much room for change in the designated target. Consider, for example, an intervention designed to increase breast self-examination among African-American women over 40. If the formative research shows that, on average, women in this population hold very positive attitudes toward the behavior in question, an intervention designed to make their attitudes more favorable is unlikely to influence their behavior. The formative research may, however, reveal relatively low perceptions of control over performing breast self-examinations. In that case, an intervention designed to raise perceived behavioral control would be called for.

#### *Relative Weights of Predictor Variables*

If the formative research shows that there is room for change in two or all three predictors, it is possible to consider their relative weights in the prediction of intentions and behavior to target the intervention. Generally speaking, the greater the relative weight of a given factor, the more likely it is that changing that factor will influence intentions and behavior (see Ajzen, 1971). Consider, for example, a case where attitudes toward the behavior explain a great deal of variance in intentions, subjective norms and perceptions of behavioral control contribute relatively little, and intentions account for most of the variance in behavior. It would seem reasonable to direct the intervention at behavioral beliefs in an attempt to make attitudes toward the behavior more favorable, thus affecting intentions and behavior.

This is not the only possible approach, however, and it may not even be the most effective approach. Estimates of the relative weights of attitudes, subjective norms, and perceptions of behavioral control are provided by standardized regression coefficients or by path coefficients. These weights are usually interpreted as corresponding to the relative importance of the predictors. Unfortunately, however, regression or path coefficients are affected by factors that may have little to do with the relative importance of the different predictors. Importantly, they are influenced by the degree of variance in the items used to assess the predictors. To return to the above example, imagine that a large proportion of women in the population have low perceived control over performing breast self-examinations. Because of the low variability in responses, this factor would not correlate well with intentions or behavior and would thus receive a low regression or path coefficient. Nevertheless, an intervention that succeeded in raising the level of perceived behavioral control among an appreciable proportion of women could produce a considerable increase in the rate of breast self-examinations. Moreover, following the intervention, there may be much more variability in perceived behavioral control, and we may now see a strong coefficient for this factor in the prediction of intentions and behavior.

The relative weights of attitudes, subjective norms, and perceptions of behavioral control may thus not be very good guides for the targeting of an intervention. So long as a given predictor is at a relatively low level prior to the intervention, a significant increase in that predictor can have a strong impact. On the other hand, a weak regression or path coefficient may correctly indicate that the predictor in question is not an important factor for the behavior and population under consideration. In that case, even if it were changed, it would have little impact on behavior.

We conclude, therefore, that it is reasonable to target an intervention at any one of the three major predictors in the theory of planned behavior (so long as there is room for change), but that it may be safer to target predictors that account for significant variance in intention and behavior.

### *Belief Strength Versus Scale Value*

Behavioral beliefs associate a behavior with certain outcomes and other attributes, and they determine the attitude toward the behavior in line with the subjective values of these outcomes and attributes. The stronger the belief (i.e., the greater the perceived probability that the behavior will produce a given outcome) and the more favorable or unfavorable the outcome, the stronger the impact of the belief on the attitude. Similarly, subjective norms are determined by beliefs that specific referent individuals or groups approve of the behavior (belief strength) and motivation to comply with those referents. And perceived behavioral control is a function of the perceived probability that certain control factors are present (belief strength) and the power of these factors to facilitate or inhibit performance of the behavior. (For a more detailed discussion, see “Constructing a TPB Questionnaire” on this website.) An expectancy-value formulation can be used to describe the relation between each of the theory’s three major predictors and their underlying beliefs. Denoting belief strength as  $b$ , and the associated scale value of the belief (outcome evaluation, motivation to comply, or control power) as  $s$ , the aggregated set of beliefs is described as  $\sum b_i s_i$ . An intervention is successful when it produces a change in the value of this aggregated measure of belief strength by scale value.

To change attitude, subjective norm, or perceived behavioral control, it is possible to attack either the strength of some of the relevant beliefs, or to attack their scale values. Imagine, for example, that among the accessible behavioral beliefs about performing breast self-examination is the belief that this procedure can lead to discovery of lumps that turn out to be benign, and that this possibility is valued negatively. In our intervention, we could try to persuade women either that this outcome is much less likely than they expect (change belief strength) or that discovery of benign lumps is not undesirable, perhaps because it is possible to get a quick check in the doctor’s office. It is an empirical question which of these two approaches will work better. In any event, it is important to realize that changing one or two beliefs may not be sufficient to produce a change in attitude. In fact, a change in one belief may be offset by an unanticipated change in another beliefs. Thus, women who are persuaded that discovering benign lumps is actually desirable (because it leads to visits to the doctor’s office) may also come to believe that having regular check-ups is more effective than performing self-examinations. Only when the balance of beliefs in the total aggregate shifts in the desired direction can we expect a change in

attitude toward the behavior. Similar considerations apply to normative beliefs and motivation to comply, and to control beliefs and perceived power.

### *Attacking Accessible Beliefs Versus Introducing New Beliefs*

It is often easier to produce change by introducing information designed to lead to the formation of new beliefs than it is to change existing beliefs. Elicitation in the pilot study identifies not only beliefs that are accessible in the population of interest, but also many beliefs that are not readily accessible, i.e., beliefs mentioned by only a small number of respondents. For example, one or two participants in the pilot study may mention that breast self-examination produces a feeling of competence. Because most women do not associate this outcome with the behavior, it could be made a target of the intervention. To the extent that women come to believe it, their attitudes toward breast self-examination may become more favorable.

### *Accuracy of the New Beliefs*

Beliefs represent the information people have about a behavior: its likely consequences, the normative expectations of others, and the likely impediments to its performance. Behavioral interventions provide information that change some of these beliefs, or that lead to the formation of new beliefs. It is important that the information provided be as accurate as possible. The ethical reasons for this requirement are obvious, but there are other reasons as well. We may be able to change attitudes, subjective norms, or perceptions of behavioral control by providing powerful but inaccurate information relevant to these factors. In the short term, this may actually be quite effective in that we may see behavioral expressions of the changes produced by the intervention. In the long run, however, people will realize that the promised consequences do not materialize, that important referents do not really expect them to perform the behavior, or that they do not, after all, have the required skills and resources to perform it. As a result, intentions and behavior will often revert to what they were prior to the intervention. Only when the new beliefs accurately reflect reality can we expect that the effect of the intervention will persist over time.

### *From Intentions to Behavior*

Interventions directed at behavioral, normative, or control beliefs may succeed in producing corresponding changes in attitudes, subjective norms, and perceptions of behavioral control — and these changes may further influence intentions in the desired direction. The intervention will still be ineffective, however, unless individuals are in fact capable of carrying out their newly formed intentions. It is therefore incumbent on the investigator to ensure that there is a strong link from intentions to behavior. When this relation is weak, steps must be taken to strengthen it. One of the most effective means available to date is to induce individuals to form an *implementation intention*, i.e., to form a specific plan detailing when, where, and how the desired behavior will be performed (cf. Gollwitzer, 1999). The formulation of such plans makes it easier for people to carry out their intended actions.

*References*

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