

# Extending the Theory of Planned Behavior: A Review and Avenues for Further Research

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This paper describes and reviews the theory of planned behavior (TPB). The focus is on evidence supporting the further extension of the TPB in various ways. Empirical and theoretical evidence to support the addition of 6 variables to the TPB is reviewed: belief salience measures, past behavior/habit, perceived behavioral control (PBC) vs. self-efficacy, moral norms, self-identity, and affective beliefs. In each case there appears to be growing empirical evidence to support their addition to the TPB and some understanding of the processes by which they may be related to other TPB variables, intentions, and behavior. Two avenues for expansion of the TPB are presented. First, the possibility of incorporating the TPB into a dual-process model of attitude-behavior relationships is reviewed. Second, the expansion of the TPB to include consideration of the volitional processes determining how goal intentions may lead to goal achievement is discussed.

The theory of planned behavior (TPB) is a widely applied expectancy-value model of attitude-behavior relationships which has met with some degree of success in predicting a variety of behaviors (Ajzen, 1988, 1991, 1996a; Conner & Sparks, 1996; Godin & Kok, 1996). The TPB details the determinants of an individual's decision to enact a particular behavior. Rather than review the evidence in support of the TPB (Ajzen, 1991; Conner & Sparks, 1996; Eagly & Chaiken, 1993; Godin & Kok, 1996; Jonas & Doll, 1996; Manstead & Parker, 1995; Sutton, 1998), the present paper examines avenues for development of this theory as a way of furthering our understanding of the relationship between attitudes and behavior. This is achieved in two ways: a review of the evidence supporting the addition of six different variables to the TPB, and a review of two avenues for expanding this theory. Six additional variables are reviewed: belief salience, past behavior/habit, perceived behavioral control versus self-efficacy, moral norms, self-identity, and affective beliefs. Two avenues for model expansion are considered: multiple processes by which attitudes influence

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behavior, and the role of volitional variables in understanding the relationship between intentions and behavior.

### Theory of Planned Behavior

The TPB (Ajzen, 1985, 1988, 1991) is an extension of the theory of reasoned action (TRA; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975), which continues to attract attention in social psychology (Eagly & Chaiken, 1993; Olson & Zanna, 1993; Sheppard, Hartwick, & Warshaw, 1988). Both models were designed to provide parsimonious explanations of informational and motivational influences on behavior. Both can be considered as deliberative processing models, as they imply that individuals make behavioral decisions based on careful consideration of available information. The TRA had its origins in Fishbein's work on the psychological processes by which attitudes cause behavior (Fishbein, 1967a) and in an analysis of the failure to predict behavior from knowledge of individuals' attitudes. The TRA suggests that the proximal determinant of volitional behavior is one's intention to engage in that behavior. *Intentions* represent a person's motivation in the sense of her or his conscious plan or decision to exert effort to enact the behavior. Intentions and behavior are held to be strongly related when measured at the same level of specificity in relation to the action, target, context, and time frame (Fishbein & Ajzen, 1975; principle of compatibility) and when the time interval is short enough to ensure that intentions have not changed (see Randall & Wolff, 1994, for a meta-analytic review of this issue). Attitudes toward a specific behavior exert their impact on behavior via intentions. In suggesting that behavior is solely under the control of intention, the TRA restricts itself to volitional behaviors. Behaviors requiring skills, resources, or opportunities not freely available are not considered to be within the domain of applicability of the TRA, or are likely to be poorly predicted by the TRA (Fishbein, 1993).

The TPB attempts to also predict nonvolitional behaviors by incorporating perceptions of control over performance of the behavior as an additional predictor (Ajzen, 1988, 1991). Consideration of perceptions of control are important because they extend the applicability of the theory beyond easily performed, volitional behaviors to those complex goals and outcomes which are dependent upon performance of a complex series of other behaviors (e.g., losing weight). The TPB depicts behavior as a function of behavioral intentions and perceived behavioral control (PBC). PBC is the individual's perception of the extent to which performance of the behavior is easy or difficult (Ajzen, 1991). The concept is similar to Bandura's (1982) concept of self-efficacy. Control is seen as a continuum with easily executed behaviors at one end (e.g., brushing one's teeth) and behavioral goals demanding resources, opportunities,

and specialized skills (e.g., becoming a world-class chess player) at the other. The link between intentions and behavior reflects the fact that people tend to engage in behaviors they intend to perform. However, the link between PBC and behavior is more complex. This relationship suggests that we are more likely to engage in (attractive/desirable) behaviors we have control over and suggests that we are prevented from carrying out behaviors over which we have no control.<sup>2</sup> Conversely, it is suggested that if intentions are held constant, behavior will be more likely to be performed as PBC increases.

In the TRA, attitudes are one predictor of behavioral intentions. Attitudes are the overall evaluations of the behavior by the individual. Applying the principle of compatibility, the relevant attitudes are those toward performance of the behavior, assessed at a similar level of specificity to that used in the assessment of behavior. The TRA also specifies subjective norms as the other determinant of intentions. Subjective norms consist of a person's beliefs about whether significant others think he or she should engage in the behavior. Significant others are individuals whose preferences about a person's behavior in this domain are important to him or her. Subjective norms are assumed to assess the social pressures on individuals to perform or not to perform a particular behavior. The TPB incorporates a third predictor of intentions, PBC. Hence, behavioral intention is a function of three direct determinants: attitudes, subjective norms, and PBC. Ajzen's (1985) early presentations of the TPB suggested that PBC and intentions would interact in their predictions of behavior such that intentions would become stronger predictors of behavior as PBC increased.

Just as intentions are held to have determinants, so the attitude, subjective norm, and PBC components are also held to have determinants (sometimes referred to as indirect determinants of intentions). The attitude component is a function of a person's salient behavioral beliefs, which represent perceived outcomes or attributes of the behavior. Following expectancy-value conceptualizations (Peak, 1955), the model quantifies outcomes as the multiplicative combination of the perceived likelihood that performance of the behavior will lead to a particular outcome and evaluation of that outcome. These expectancy-value products are then summed over the various salient consequences. Subjective norm is a function of normative beliefs, which represent perceptions of specific significant others' preferences about whether one should or should not engage in the behavior. This is quantified in the model as the subjective likelihood that specific salient groups or individuals (referents) think the person should or should not perform the behavior, multiplied by the person's

<sup>2</sup>See Eagly and Chaiken (1993) for a discussion of possible interactions between attitudes and PBC.

motivation to comply with that referent. Motivation to comply is the extent to which the person wishes to comply with the wishes of the referent. These products are then summed across salient referents.

Judgments of PBC are influenced by beliefs concerning whether one has access to the necessary resources and opportunities to perform the behavior successfully, weighted by the perceived power of each factor to facilitate or inhibit behavior (Ajzen, 1988, 1991). The perception of factors likely to facilitate or inhibit the performance of the behavior are referred to as *control beliefs*. These factors include both internal control factors (e.g., information, personal deficiencies, skills, abilities, emotions) and external control factors (e.g., opportunities, dependence on others, barriers). People who perceive that they have access to the necessary resources and that there are the opportunities (or lack of obstacles) to perform the behavior are likely to have a high degree of PBC (Ajzen, 1991).<sup>3</sup>

The model is held to be a complete theory of behavior in that any other influences on behavior are held to have their impact via influencing components of the TPB. However, it is perhaps more correctly regarded as a theory of the proximal determinants of behavior. The model gives a description of the processes by which attitudes and beliefs determine behavior, but not of the process whereby other variables (e.g., personality) influence components of the TPB. It is assumed that the TPB describes a causal process by which variables such as attitudes impact on behavior. However, most tests of the TPB (and TRA) have employed correlational designs which do not allow us to test this causal assumption.

Meta-analytic reviews of the TPB provide strong support for the predictive validity of the TPB in terms of the percentage of variance explained in behavior and intentions by the components of the TPB (Godin & Kok, 1996; Sutton, 1998). While there are problems with this measure of effect size (Sutton, 1998), the effect sizes are nevertheless impressive: Godin and Kok (1996) reported that the TPB can account for 41% of the variance in intentions ( $R = .64$ , 76 correlations) and 34% of the variance in behaviors ( $R = .58$ , 35 correlations) for a range of health behaviors. However, we should note that the majority of this research employs self-report measures and that the evidence supporting the causal aspect of the model is considerably weaker (Jonas & Doll, 1996) and in need of further experimental demonstration.

#### Additional Variables in the TPB

The sufficiency of the TRA/TPB has received considerable attention (see Eagly & Chaiken, 1993, for a review), with suggestions of a number of additional

<sup>3</sup>See Ajzen and Fishbein (1980) for details of measurement of TRA components, and Ajzen (1991) for measurement of TPB components.

constructs which might be usefully added to the models. Indeed, Ajzen (1991) describes the model as open to further elaboration if further important proximal determinants are identified:

The theory of planned behavior is, in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behavior after the theory's current variables have been taken into account. (p. 199)

One of the advantages of the TRA/TPB is the parsimonious account they provide of the determinants of behavior. Hence, as well as empirical evidence, we would argue that a theoretical description of the role of additional variables within the TPB is required if a theoretically coherent model is to result. This theoretical description should specify the process by which the new variable influences intentions and behavior, its relationship to existing components of the TPB, and the range of conditions over which such a variable might be expected to have an impact. We here review the evidence supporting six such extensions to the TPB: belief salience, past behavior/habit, perceived behavioral control versus self-efficacy, moral norms, self-identity, and affective beliefs.

### *Belief Salience*

In both the TRA and the TPB, attitudes are held to be determined by underlying salient beliefs. This part of the model, the relationship between attitudes and beliefs, has its origins in Fishbein's (1967a, 1967b) summative model of attitudes. It is assumed that a person may possess a large number of beliefs about a particular behavior, but that at any one time only some of these are likely to be salient. It is the salient beliefs that are assumed to determine a person's attitude. However, it is not a simple matter to ascertain which beliefs are salient (Ajzen, Nichols, & Driver, 1995). Fishbein and Ajzen (1975) suggest that this is best tapped by the ease with which a belief is mentioned in free elicitation, and suggest that, as a rule of thumb, the first five to nine elicited beliefs should be considered salient.

Towriss (1984) noted that while the theory would appear to suggest the use of individually salient beliefs, respondents are normally presented with those beliefs most frequently mentioned in a pilot study with a similar sample (modally salient beliefs), following the procedures outlined by Ajzen and Fishbein (1980). This procedure has a number of disadvantages. First, there is the suggestion that the elicitation procedures (e.g., asking for advantages and disadvantages of the behavior) for obtaining behavioral beliefs about specific behaviors sample an excessively cognitive subset (i.e., instrumental beliefs) of

the influences that actually play on people's attitudes (Wilson, Dunn, Kraft, & Lisle, 1989) and fail to elicit beliefs which are more difficult to articulate (e.g., affective or moral influences; Sparks, 1994), yet are potentially important influences on attitude formation.<sup>4</sup>

A second problem is that the TPB is primarily concerned with individuals' beliefs. The supplying of beliefs by researchers may not adequately capture the beliefs salient to the individual, no matter how extensive the pilot work. Three studies have explored the use of individually generated beliefs within the TRA (Agnew, 1998; Rosin, Tuorila, & Uutela, 1992; Rutter & Bunce, 1989). Agnew (1998) used a within-subjects design to examine both individually generated and modal beliefs about condom use. Across the three studies, individually generated beliefs were significantly ( $z_{diff} = .25, p < .01$ ) more strongly related to intentions (frequency-weighted mean  $r = .49$ ) than were modal beliefs (frequency-weighted mean  $r = .29$ ).<sup>5</sup> Agnew also reported the more pertinent relationship between beliefs and the direct measure of attitude. Individually generated beliefs were only marginally significantly more strongly related to overall attitudes ( $r = .46$  vs.  $.38, p_{diff} < .10$ ). Thus, while the use of individually generated beliefs may avoid some of the problems of employing modal salient beliefs, it does not appear to reduce measurement error sufficiently to increase levels of prediction of attitudes necessary to compensate for the additional effort required in data collection.

Most research with this paradigm has relied on the frequency-of-elicitation method to identify modally salient beliefs. Beliefs elicited in this manner do indeed appear to be predictive of attitudes. For example, Petkova, Ajzen, and Driver (1995) report that by using this method, the 12 most frequently elicited beliefs were significantly more strongly related to attitudes than the 12 least frequently elicited beliefs ( $r = .66$  vs.  $.50$ ). In addition, Ajzen et al. (1995) report that more frequently elicited beliefs had lower response latencies than did less frequently elicited beliefs. Hence, the use of modal salient beliefs may result in high levels of predictive validity (van den Putte, 1991, reports a mean correlation of  $.53$  between the sum of behavioral beliefs and attitudes across the 113 studies reviewed). However, one limitation of the free elicitation method of identifying salient beliefs is that it is unclear where to place the criterion (or cutoff point) in the sequence of elicitation (Ajzen et al., 1995). Selecting too many beliefs as salient may result in problems of descriptive validity for the model. On the basis of evidence that individuals have quite limited information-processing capabilities, van der Pligt and Eiser (1984) argue that the high

<sup>4</sup>See Bech-Larsen, Nielsen, Grunert, and Sorensen (1997) for a useful comparison of elicitation methods in consumer research.

<sup>5</sup>The sum of the product of beliefs and evaluation was used in each case.

cognitive demands imposed by an expectancy-value view may impose severe limitations on the number of beliefs an individual can process. Rather than the five to nine beliefs assumed by Fishbein and Ajzen (1975) to underlie attitudes, van der Pligt and Eiser suggest that three to five beliefs may represent the limit. However, presenting only the three to five most frequently elicited beliefs may fail to adequately represent all individuals' salient beliefs.

Van der Pligt and Eiser (1984) suggest the idea of dimensional salience as one way to tackle this problem. Dimensional salience taps the importance of an attribute or outcome of the behavior as a determinant of the person's attitude toward the behavior (van der Pligt & de Vries, 1998b). Van der Pligt and Eiser (1984) argue that researchers should investigate the beliefs that are most salient to specific individuals or groups, and suggest a variant of the usual procedure for assessing beliefs. They suggest that when respondents are presented with a common set of modally salient beliefs to rate, they should also be asked to indicate the personally most salient beliefs. van der Pligt and de Vries (1998b) suggest that this can be achieved via ranking or rating each belief for importance in relation to determining one's attitude. Budd (1986) followed this approach when looking at students' attitudes toward cigarette smoking. In this study, respondents were presented with 18 belief items to rate and were then asked to choose the five beliefs most salient to them. It was found that belief-attitude correlations with the 5 most salient beliefs were stronger ( $r = .62$ ) than were correlations with the 13 least salient beliefs ( $r = .07$ ). Elliot, Jobber, and Sharp (1995) similarly found the 5 most salient beliefs to be significantly more predictive of attitudes ( $r = .72$  vs.  $.38$ ) and intentions ( $r = .69$  vs.  $.48$ ) than were the 14 modally salient beliefs. Van der Pligt and de Vries (1998a) also studied smoking and reported that smoking behavior could be predicted as well from the 3 individually salient beliefs as from all 15 modally salient beliefs. Importantly, the salience of beliefs (belief importance) was not correlated with their perceived probability (belief strength) or desirability (outcome evaluation). This contradicts the view that importance ratings do not add to measures of belief strength and evaluation because they are correlated with these measures. In addition, smokers and nonsmokers consistently differed on which beliefs were considered important.

Thus, measures of belief salience may provide one way to improve the descriptive validity of Fishbein's (1967a, 1967b) summative model of attitudes when using modal salient beliefs. Van der Pligt and de Vries (1998a, 1998b) also suggest that obtaining information about the salience of beliefs (e.g., via belief importance ratings) may make it possible to assess the structure of beliefs underlying attitudes and could usefully inform the design of interventions to change behavior. Thus, at least in terms of using the TPB to develop interventions to

change behavior, belief importance measures may represent a useful additional variable. This approach allows one to design interventions which target those beliefs that are salient to the subpopulation of interest. It is presumably these salient beliefs which determine overall attitude. Clearly, the causal impact of salient (or important) beliefs on attitudes and intentions needs to be addressed in future research.

### *Past Behavior and Habit*

The influence of past behavior on current behavior is an issue which has attracted considerable attention in this area (see Eagly & Chaiken, 1993, for a review). It is argued that many behaviors are determined by one's past behavior rather than by cognitions such as those described in the TRA/TPB (Sutton, 1994). The argument is based on the results of a number of studies showing past behavior to be the best predictor of future behavior. For example, Mullen, Hersey, and Iverson (1987) used the TRA to examine changes in the consumption of sweet and fried foods, smoking, and exercise over an 8-month period. For each behavior, initial behavior was the strongest predictor of later behavior. Similar results have been reported for the TRA (Bentler & Speckart, 1979; Charng, Piliavin, & Callero, 1988; Godin, Colantonio, Davis, Shephard, & Simard, 1986; Kahle & Beatty, 1987; Wittenbraker, Gibbs, & Kahle, 1983) and TPB (Bagozzi & Kimmel, 1995; Godin, Valois, & Lepage, 1993; Norman & Smith, 1995). Clearly, past behavior does not cause subsequent behavior. However, frequent performance of a behavior may bring subsequent behavior under the control of habitual processes, although a behavior does not necessarily become habitual just because it has been performed many times. Several studies have conceptualized past behavior as "habit," rather than as frequency of past behavior, although in measurement terms the distinction is often unclear. For example, Towler and Shepherd (1991) added measures of PBC and habit to the TRA, and found that habit had an independent effect on intention, while PBC did not. Similarly, Godin et al. (1993) found that habit was the most important predictor of exercising behavior, over and above all TPB variables.

A search of relevant databases and journals (see Armitage & Conner, 1998, for details of search strategies employed) reveals a number of studies examining the impact of past behavior on TPB variables (see marked articles in reference list). Table 1 provides correlations of TPB variables with past behavior across the studies reporting relevant data. While there are theoretical distinctions to be made between the two concepts, measures of past behavior and habit have typically been worded in exactly the same way, so we did not make the distinction here between habit and past behavior that authors such as Triandis (1977) would argue for. Of particular note are the relatively large past

Table 1

*Role of Past Behavior*

Relationship	<i>N</i> of tests <sup>a</sup>	Fisher's <i>Z</i>	<i>r</i> <sup>b</sup>	<i>r</i> <sup>2</sup>
Past behavior–future behavior	1	0.89	.68	.46
Past behavior–intention	16	0.56	.51	.26
Past behavior–attitude	9	0.37	.35	.12
Past behavior–subjective norm	9	0.29	.28	.08
Past behavior–PBC	10	0.38	.36	.13
Past behavior–behavioral beliefs	4	0.29	.28	.08
Past behavior–normative beliefs	4	0.29	.28	.08
Past behavior–control beliefs	2	0.15	.15	.02

<sup>a</sup>Reviewed studies marked in reference list. <sup>b</sup>Weighted by *N* of subjects.

behavior–future behavior, past behavior–intention, past behavior–attitude, and past behavior–PBC correlations. Ajzen (1991) regards the role of past behavior as a test of sufficiency of the TPB and argues that its effects should be mediated by PBC in particular: Repetition of behavior should lead to enhanced perceptions of control. On this basis, one might predict that past behavior should be most strongly correlated with PBC. Clearly, the data in Table 1 do not support this view. What is of particular interest is the contribution of past behavior to the predictions of intentions and behavior once the TPB variables are taken into account.

Ajzen (1991) reports that across three studies, the amount of variance added to the prediction of behavior by past behavior ( $M = 2.1\%$ ) was so small as to reflect common method variance due to use of similar response formats for the two measures. We found 11 studies (Bagozzi & Kimmel, 1995; de Vries, Dijkstra, & Kuhlman, 1988; Godin & Gionet, 1992; Godin & Lepage, 1988; Godin, Valois, Jobin, & Ross, 1991; Godin, Valois, & Lepage, 1993; Godin, Valois, Lepage, & Desharnais, 1992; Godin, Vezina, & Leclerc, 1989; Norman & Smith, 1995; Træen & Nordlund, 1993; Yordy & Lent, 1993) containing 12 data sets which reported the relevant data for predictions of intentions, and 5 studies (Bagozzi & Kimmel, 1995; de Vries, Backbier, Kok, & Dijkstra, 1995; Godin et al., 1992, 1993; Norman & Smith, 1995) containing seven data sets which reported the relevant data for predictions of behavior. After taking account of attitude, subjective norms, and PBC, past behavior, on average, explained a further 7.2% of the variance in intentions (mean frequency-weighted

correlation range = 0 to 18.2%). Similarly, past behavior explained a mean 13.0% of variance in behavior after taking account of intentions and PBC (mean frequency-weighted correlation range = 3 to 27.5%).<sup>6</sup> These values are probably too large to be solely attributable to common method variance effects and indicate either the usefulness of assessing past behavior or the fact that responses to the two behavior measures (past and future) were attributable to some other nonmeasured variable (e.g., self-identity).

Future studies might usefully include measures of past behavior in order to further examine the extent to which its impact on intentions and behavior is mediated by TPB variables. However, on the basis of published research, there appears to be an empirical case to support past behavior as a predictor of unique variance in intentions and behavior in the TPB. However, this research does not address the important question of the process by which past behavior impacts on TPB variables and behavior.

Aarts, Verplanken, and van Knippenberg (1998) extend this literature in two ways. First, they suggest that habit or past behavior may act as a moderator of the relationship between TPB variables (intentions, PBC) and behavior. It is only for infrequently performed (or nonhabitual) behaviors that these variables are assumed to be related. In the case of habitual behaviors, cognitions specified in the TPB have little role to play in predicting enactment of the behavior. Verplanken, Aarts, van Knippenberg, and Moonen (1998) provide evidence in support of this moderation effect in a field experiment. Car use was found to be predictable from intentions, PBC, habit, and a Habit  $\times$  Intention interaction. Examination of the interaction reveals that intention was only significantly related to behavior when habit was weak. Thus, habitual behaviors may not be amenable to prediction by models such as the TPB. Future research might usefully attempt to extend this literature beyond travel mode choice.

Aarts et al. (1998) also provide evidence to suggest a mechanism by which habit determines behavior. Where behavior is habitual for an individual, he or she appears to be more likely to use simplified decision rules (i.e., enact the same behavior as enacted in past). For example, Verplanken, Aarts, and van Knippenberg (1997) found that those who had frequently performed a behavior previously (using a particular mode of transport, in this case) when given the opportunity, searched for less information about which travel mode to use and were more likely to focus on information about the habitual choice than alternative choices, compared to those who less frequently performed the behavior. It may be that past behavior acts as a source of information. Aarts et al. (1998) argue that habitual behaviors become capable of being automatically activated by features of the situation and context in which the

<sup>6</sup>See Ouellette and Woods (1996) for a more extensive meta-analysis of the role of habit.

behavior occurs (Bargh, 1990; Bargh & Barndollar, 1996). Future research might usefully examine the factors which cause habitual behaviors to come under the influence of controlled processes such as those described in the TPB. However, there do appear to be good empirical and theoretical reasons to incorporate habit measures (frequency of past behavior) as predictors of behavior in the TPB alongside intentions and PBC, at least for frequently performed behaviors.

### *Perceived Behavioral Control/Self-Efficacy*

Congruent with Ajzen's (1991) argument that self-efficacy and PBC are synonymous, several researchers (e.g., de Vries et al., 1988) have utilized measures of self-efficacy (as opposed to PBC) within the TPB. However, Ajzen's (1991) own description of the relationship between PBC and behavior focuses on PBC as both a proxy measure of actual control and a reflection of skills and ability (Manstead & van Eekelen, 1998). The implication is that PBC may be separated into two control processes. The first is related to Bandura's (1982) self-efficacy beliefs, the second to perceived controllability over behavior (cf. Rotter's, 1966, locus of control). Indeed, Bandura (1992) has argued "that locus of control and self-efficacy bear little or no relation to each other" (p. 124). In spite of this, researchers have tended to regard PBC and self-efficacy as being synonymous, both conceptually and operationally (e.g., Ajzen, 1991). The present review therefore focuses on studies which have contrasted self-efficacy and PBC within the same study.

Within TPB research, there is a growing body of evidence to support the theoretical distinction between self-efficacy and PBC. Empirical evidence for this distinction has been provided by Dzewaltowski, Noble, and Shaw (1990), McCaul, Sandgren, O'Neill, and Hinsz (1993), a series of studies by Terry and colleagues (e.g., Terry & O'Leary, 1995; White, Terry, & Hogg, 1994), Armitage (1997), and Manstead and van Eekelen (1998). The studies reported to date provide clear evidence for a distinction between self-efficacy and PBC. Moreover, the fact that these studies cover diverse behaviors (e.g., food choice, exercise, academic achievement) suggests that the self-efficacy-PBC distinction is robust. Consistent across all of these studies is the strong relationship between self-efficacy and behavioral intention: People intend to engage in behaviors of which they feel they are capable. In contrast, prediction of behavior from self-efficacy and PBC is typically not consistent. For example, Manstead and van Eekelen (1998) report that self-efficacy (but not PBC) was a significant predictor of grades achieved in English, whereas Terry and O'Leary (1995) report that PBC (but not self-efficacy) predicted exercise behavior. The implication is that academic achievement is relatively more dependent on skills and resources than exercise behavior, which

is more dependent on PBC. Given that behaviors differ with respect to volitional control, it is perhaps unsurprising that there should be uneven results in the prediction of behavior. It should also be noted that, although the two processes (i.e., perceiving internal vs. external control) are separable, they remain part of a multidimensional view of perceived control. As such, one might expect situations perceived as uncontrollable to reduce self-efficacy, and vice versa.

Another issue in relation to the PBC component of the TPB is the assessment of underlying control beliefs. Although there is evidence to support a distinction between self-efficacy and PBC, to date there has been no attempt to examine the underlying control beliefs. Perhaps more importantly, there is as yet no consensus about how best to measure the beliefs underlying PBC (Manstead & Parker, 1995). As a result, there has been some variation in how modal control beliefs have been operationalized. Ajzen and Madden (1986) assessed PBC in terms of the sum of frequency of occurrence of various facilitators and inhibitors. Others (e.g., Crawley & Black, 1992; Godin & Gionet, 1991; Hounsa, Godin, Alihonou, & Valois, 1993; Schaalma, Kok, & Peters, 1993) have employed a formulation closer to that used to assess self-efficacy (Schwarzer & Fuchs, 1996). These have focused on the extent to which a particular barrier will make performance of the behavior more difficult (e.g., How likely is being drunk to inhibit your use of a condom?, *likely-unlikely*).

Ajzen (1991) suggests a formulation closer to that employed to assess the other beliefs in the TPB. Control beliefs are tapped by items assessing the frequency with which a facilitator or inhibitor of the behavior occurs (e.g., I can climb in an area that has good weather, *likely-unlikely*), weighted by its perceived power to facilitate or inhibit performance of the behavior (e.g., Good weather makes mountain climbing . . . *easier-more difficult*), with both items scored as bipolar items. This format has been employed by several authors (e.g., Ajzen & Driver, 1991; Conner & Sherlock, 1994; Crawley & Koballa, 1992; Parker, Manstead, & Stradling, 1995). Across these four studies, the average frequency-weighted correlation of the sum of control belief by power products with PBC measures is .26 (range = .16 to .50;  $M r = .41$  when corrected for reliability of measures). This is somewhat lower than the correlations between belief-based and direct measures of the other components in the TPB. This may be attributable to the multidimensional structure of PBC discussed earlier.

From this body of research, there are two broad themes for future study in relation to the PBC component. First (and perhaps most urgent) is the need to assess the relationship of underlying control beliefs to global perceptions of control measures. To argue for a distinction between self-efficacy and PBC, one must show differences in their antecedent beliefs, and determine whether

current conceptualizations of control beliefs are adequate to capture the multi-dimensional PBC construct. Second, a more robust test of the proposed self-efficacy–PBC distinction would involve manipulation of actual or perceived control. If the distinction is valid, it should be possible to observe differences in the predictive utility of the perceived control constructs when actual or perceived control is manipulated. Answers to these questions should allow one to draw more definitive conclusions about the value of considering two aspects of PBC.

### *Moral Norms*

Reviews and meta-analyses of the TRA/TPB have highlighted the need for further consideration of normative influences on behavior. Godin and Kok (1996), Sheppard et al. (1988), and van den Putte (1991) have all shown subjective norm to be the weakest predictor of intention in both the TRA and the TPB. While this could merely reflect the lesser importance of normative factors as determinants of intentions in the behaviors studied, a number of alternative explanations for such weak effects are possible. These include measurement problems and failure to tap appropriate components of normative influence.

In particular, Ajzen (1991) has argued that moral norms may prove a useful addition to the TPB. *Moral norms* are regarded as an individual's perception of the moral correctness or incorrectness of performing a behavior (Ajzen, 1991; Sparks, 1994) and take account of "personal feelings of . . . responsibility to perform, or refuse to perform, a certain behavior" (Ajzen, 1991, p. 199). Moral norms should have an important influence on the performance of those behaviors with a moral or ethical dimension, and work in parallel with attitudes, subjective norms, and PBC (thus directly influencing intentions). Support for this view is provided by Manstead (in press). In his review of the moral norm concept, Manstead argues that moral norm is theoretically distinguishable from TRA constructs. It is also possible to distinguish moral norms from PBC, providing care is taken in operationalization of the constructs. However, assessment of PBC with perceived ease or difficulty items (e.g., Sparks, Guthrie, & Shepherd, 1997) risks misinterpretation on a number of levels. For example, if one were to request a response to the statement "For me, donating a kidney is (*easy–difficult*)" (cf. Ajzen & Madden, 1986), the item could be interpreted as: controllability (e.g., "Are sufficient hospital resources available?"), self-efficacy (e.g., "Do I have the ability to cope with donating a kidney?"), or moral pressure (e.g., "Am I able to make the 'right' decision?"). However, careful operationalization of each of these facets of ease or difficulty provides a strong case for treating moral norms as distinct from PBC (and PBC as distinct from self-efficacy, see the Perceived Behavioral Control/Self-Efficacy section).

Moral norms can therefore be defined as one's own socially determined and socially validated values attached to a particular behavior (Manstead, in press). As such, moral norms may reflect an additional form of normative pressure. Studies including measures of moral norms (or moral obligation) which conformed to Ajzen's (1991) definition are presented in Table 2.

Beck and Ajzen (1991) included a measure of moral norm in their analysis of dishonest actions, and found that it significantly increased the amount of variance in intention accounted for (3 to 6%) and made a significant contribution to the prediction of each intention. In a similar way, Randall and Gibson's (1991) study, which examined the use of the TPB in ethical decision making, also included a measure of moral norm. The measure improved the prediction of intention, while PBC contributed nothing, suggesting that for some behaviors at least, moral norm may be more predictive than PBC. In a study of agents' intentions to tell customers the truth about insurance deals, Kurland (1995) found that moral obligation added more to the prediction of intentions than did attitudes and forced subjective norm out of the regression equation.

Clearly these studies support the inclusion of moral norm in the TPB, but highlight the problem of determining exactly *what* is being influenced by the construct: attitude, subjective norm, or PBC (see also Manstead, in press). More limited support for the inclusion of moral norm comes from Sparks, Shepherd, and Frewer (1995), who report only a marginally significant contribution of perceived ethical obligation to the prediction of behavioral expectations. However, contrary to Ajzen's (1991) predictions, perceived ethical obligation did significantly predict attitudes. Similarly, Raats, Shepherd, and Sparks (1995) found that perceived moral obligation had an effect on intention *and* independently predicted attitudes. The evidence would therefore suggest that moral norm is closely linked to attitudes and may, at least for some behaviors, be an antecedent. Perhaps this indicates that in eliciting behavioral beliefs, there needs to be some consideration of behavioral outcomes in terms of their impact on other people. Nucifora, Gallois, and Kashima (1993) considered moral norm in terms of condom use behavior and found that it acted as another measure of intention, perhaps indicating that "the moral imperative to use a condom was easily transferred into the motivation to do so" (p. 62).

However, there are behaviors where moral norms are not particularly relevant. In these cases, it may be possible to extend the construct to encompass Cialdini, Kallgren, and Reno's (1991) conceptualization of *personal norm*. This notion of personal norm relates to an individual's own values involved with a certain behavior. In the case of some behaviors, these may be moral values; alternatively, these may be more closely related to an individual's self-identity (see the Self-Identity section). For example, in food choice, while an individual may not feel any moral obligation to consume healthy food, he or

Table 2

*Role of Moral Norm*

Relationship	<i>N</i> of tests <sup>a</sup>	Fisher's <i>Z</i>	<i>r</i> <sup>b</sup>	<i>r</i> <sup>2</sup>
Moral norm–behavioral beliefs	2	0.41	.39	.15
Moral norm–attitude	10	0.54	.49	.24
Moral norm–subjective norm	10	0.35	.34	.12
Moral norm–PBC	10	0.24	.24	.06
Moral norm–intention	11	0.55	.50	.25
% variance in intention added	10	0.19	.19	.04

<sup>a</sup>Reviewed studies marked in reference list. <sup>b</sup>Weighted by *N* of subjects.

she may regard himself or herself as a “healthy eater,” thereby having a set of values (e.g., not eating too much fried food) associated with the behavior.

The link between personal norm and self-identity is clear, but personal norm differs in that it takes account of personal, rather than societal values. As such, a number of other studies have found measures of moral/personal norms to be predictive of blood-donating behavior (Pomazal & Jaccard, 1976; Zuckerman & Reiss, 1978), as well as intentions to donate organs (Schwartz & Tessler, 1972), eat genetically produced food (Sparks, Shepherd, & Frewer, 1995), buy milk (Raats, 1992), smoke only in designated work-site areas (Boissoneault & Godin, 1990), use condoms (Godin, Maticka-Tyndale, et al., 1996; Nucifora et al., 1993), provide home care (Vermette & Godin, 1996), disclose information (Kurland, 1996), and commit driving violations (Parker et al., 1995).

Across studies reporting relevant data (see Armitage and Conner, 1998, for search strategies), the correlations between moral norm and the TPB components (Table 2) are reasonably large, and suggest that this construct may have an important role to play in the TPB. Of the 11 studies located (Beck & Ajzen, 1991; Boissoneault & Godin, 1990; Collette, Godin, Bradet, & Gionet, 1994; Godin, Savard, Kok, Fortin, & Boyer, 1996; Godin et al., 1991; Kurland, 1996; Nucifora et al., 1993; Raats et al., 1995; Randall & Gibson, 1991; Sparks, Shepherd, & Frewer, 1995; Vermette & Godin, 1996), moral norm was a significant predictor of intentions (after TPB variables were controlled for) in 9 cases. Including the non-significant case, moral norm added (on average) 4% to the prediction of intention, a change which is significant. Moreover, moral norm is closely related to attitudes, subjective norm, and behavioral beliefs.

This is congruent with previous research on the nature of moral norm, which has shown it to predict attitude (Sparks, Shepherd, & Frewer, 1995) or to force subjective norm out of the regression equation (Kurland, 1995). As such, it seems likely that the precise role of moral norms will depend on the nature of the behavior (Manstead, in press). However, these findings imply that moral norm would be a useful addition to the TPB, at least for those behaviors where moral considerations are likely to be important, because it is a construct that is likely to add to the prediction of intention. Moreover, for those behaviors where moral norms are not relevant, personal norms may also prove useful.

### *Self-Identity*

Self-identity is a concept which straddles the disciplines of sociology and social psychology. As such, there are a range of definitions. In terms of the present review, *self-identity* may be defined as the salient part of an actor's self which relates to a particular behavior. It reflects the extent to which an actor sees him- or herself as fulfilling the criteria for any societal role; for example, "someone who is concerned with green issues" (Sparks & Shepherd, 1992, p. 392). Several authors have addressed the extent to which self-identity might be a useful addition to the TRA/TPB (Biddle, Bank, & Slavings, 1987; Charng et al., 1988; Eagly & Chaiken, 1993; Sparks & Guthrie, 1998).

For a number of years, self-identity (or self-concept) has been regarded as having important influence over individual behavior (e.g., Turner, 1982). Charng et al. (1988) argue that the TRA and self-identity are very compatible. Both the TRA/TPB and identity theory regard behavior as being determined by conscious and intentional decisions, but differ in terms of focus. Charng et al. (1988) argue that identity theory captures the influence of the wider social context on individual actors, linking a particular behavior to some identifiable social characteristic or category of actor. In contrast, the TRA (or TPB) is more psychological to the extent that it is not particularly concerned with the wider societal context and deals with a more restricted normative component.

Identity theory (e.g., Stryker, 1968) and the TRA/TPB both assume that behavior is performed as the result of some rational decision-making process. As such, both theories (explicitly in the TRA/TPB, more implicitly in identity theory) assume that behaviors are performed as a result of intention formation. Charng et al. (1988) argue that intentions are likely to be based on central or salient role identities and that the extent to which repeated behavior is predicted by self-identity increases over time. In terms of the TRA, this is attributable to two main reasons: Attitudes are regarded as being prone to change over time, while normative influences are postulated to remain relatively stable. Following repeated performance of a behavior, self-identity

becomes more salient, compared to relatively transient attitudes or the perceived social pressure from others. Support for this is provided by DeBono and Snyder (1995), who have shown that individuals are motivated to seek situations where they can act in accordance with their attitudes. Another interpretation of their data is that people may be motivated by their need to maintain their self-concept; as such, it may be difficult to tease apart past behavior and self-identity. The extent to which past behavior predicts future behavior as a function of an individual's self-identity is clearly a matter for further investigation.

Sparks and Shepherd (1992) examined the role of self-identity in relation to the TPB and intentions to consume organically grown vegetables. Contrary to their expectations that self-identity would only reflect and influence attitudes, their findings indicated that self-identity independently predicted intention. Further, Sparks, Shepherd, Wieringa, and Zimmermanns (1995) reported that self-identity also had an independent predictive effect on intentions in relation to five dietary changes associated with reducing the amount of fat in the diet. In contrast, Theodorakis, Bagiatis, and Goudas (1995) examined role identity in the context of teaching individuals with disabilities, and reported that role (synonymous with self-) identity mediated the effects of subjective norm on intention. The implication is that the effects of self-identity may vary, depending on the behavior in question.

Theodorakis (1994) found that role identity was a significant contributor to the prediction of exercise behavior. Further, two measures of behavior were taken, after 1 month and again after 2 months. Over this time period, the predictive strength of role identity increased slightly, while the predictive strength of intention and PBC decreased slightly. This supports Charng et al.'s (1988) proposal that the extent to which self-identity predicts intention increases as the behavior is repeated. However, the predictive value of attitude also increased between Time 1 and Time 2, a finding which implies that the stronger one's role identity, the stronger attitudes will become over time. This is congruent with the work of DeBono and Snyder (1995), but is contrary to the prediction of Charng et al. (1988), who argued that attitudes in the TRA/TPB mold are subject to change and are relatively transient. However, it seems likely that if self-identity is sufficiently strong, then the attitude will probably not be as transient as Charng et al. (1988) suggest. In fact, it seems reasonable to assume that, when coupled with a strong self-identity, attitudes will become ever stronger due to mechanisms of attitudinal consistency (e.g., cognitive dissonance; Aronson, 1997), perhaps manifested in individuals seeking attitudinally relevant situations (e.g., DeBono & Snyder, 1995).

Table 3 presents data from studies on the role of the self-identity concept in the TPB (Dennison & Shepherd, 1995; Godin et al., 1989; Sparks & Shepherd,

Table 3

*Role of Self-Identity*

Relationship	<i>N</i> of tests <sup>a</sup>	Fisher's <i>Z</i>	<i>r</i> <sup>b</sup>	<i>r</i> <sup>2</sup>
Self identity–behavioral beliefs	3	0.25	.24	.06
Self identity–attitude	6	0.30	.29	.09
Self identity–subjective norm	6	0.14	.14	.02
Self identity–PBC	6	0.16	.16	.03
Self identity–intention	6	0.27	.27	.07
% variance in intention added	6	0.09	.09	.01

<sup>a</sup>Reviewed studies marked in reference list. <sup>b</sup>Weighted by *N* of subjects.

1992; Sparks, Shepherd, & Frewer, 1995; Thesdorakis, 1994; Thesdorakis et al., 1995; Armitage & Conner, 1998, provide details of the search strategy employed). It must be noted that none of the relationships are particularly large, which is contrary to at least some of the research in this area. Sparks and Shepherd (1992), while acknowledging their surprise at the independent effect of self-identity on intention, point out that they had at least expected a close correlation between self-identity and attitude. However, Table 3 does indicate that, on average, self-identity accounts for 1% of the variance in intention, over and above TPB variables, suggesting that it may prove to be a useful addition to the TPB. Moreover, given the range of intention–self-identity correlations ( $r_s = .06$  to  $.71$ ), it is reasonable to assume that there are certain behaviors for which self-identity will be an important determinant of intentions. This, and the question of the processes by which self-identity influences intention, requires further investigation (Sparks & Guthrie, 1998).

*Affect*

We noted earlier that the traditional method for eliciting behavioral beliefs may fail to elicit affective outcomes associated with performance of the behavior (Manstead & Parker, 1995; van der Pligt & de Vries, 1998b). Such anticipated affective reactions to the performance or nonperformance of a behavior may be important determinants of attitudes and intentions (Triandis, 1977; van der Pligt & de Vries, 1998b), especially in situations where the consequences of the behavior are unpleasant or negatively affectively laden. Recent research has focused on the influence of anticipated regret (Parker et al., 1995; Richard, de

Vries, & van der Pligt, 1998; Richard, van der Pligt, & de Vries, 1995, 1996a, 1996b). It is argued that if an individual anticipates feeling regret after performing a behavior, then he or she will be unlikely to perform the behavior. In particular, it has been argued that such reactions will drive behavior when they are salient or where they have been made salient (van der Pligt, Zeelenberg, van Dijk, de Vries, & Richard, 1998). For example, Richard et al. (1996b) reported that anticipated affective reactions were significant predictors of behavioral expectancy after taking account of attitudes, subjective norms, and PBC for eating junk foods, using soft drugs, and alcohol use, but not for studying. The effects of anticipated affective reactions have been confirmed in studies of driving (Parker, Manstead, Stradling, Reason, & Baxter, 1992; Parker et al., 1995), AIDS prevention (Richard et al., 1995, 1998), and consumer behavior (Simonson, 1992). There is therefore some evidence across behaviors to support a role for anticipated affect within the TPB. Perhaps stronger evidence for a potential role of anticipated affect within the TPB is provided by Parker, Stradling, and Manstead (1996). Parker et al. (1996) report that an intervention based on increasing the salience of anticipated affect was more effective than interventions directed at influencing attitudes, social norms, or PBC. Given that one of the major aims of models such as the TPB is to provide a theoretical base for changing behavior and that evidence to support this use is equivocal (Brubaker & Fowler, 1990; Brubaker & Wickersham, 1990), this provides impressive support for inclusion of anticipated affective reactions.

While noting the evidence supporting the inclusion of anticipated affective reactions in the TRA/TPB (at least for some behaviors), we should also draw attention to some variation in the way they are operationalized. Richard et al. (1996b) used a measure similar to that normally used to tap attitudes (e.g., My eating junk food would make me feel . . . , *pleasant-unpleasant*), while Parker et al. (1992) used a measure similar to that used to tap behavioral beliefs and evaluations (e.g., My speeding would make me feel sorry for doing it, *likely-unlikely*; Feeling sorry for speeding would be . . . *good-bad*). Manstead and Parker (1995) note that these affective beliefs show only low positive correlations with instrumental beliefs.<sup>7</sup> We would argue that it is more coherent to treat anticipated affective reactions as behavioral beliefs (as Manstead & Parker, 1995, suggest) because the former measure may lead to problems in distinguishing affective attitudes from anticipated affective reactions (but see Richard et al., 1998). In addition, employing a belief-based approach allows for examination of the extent to which affective beliefs underlie affective attitudes

<sup>7</sup>Parker et al. (1995) consider anticipated regret as an aspect of personal norms because the anticipated affective reaction is presumed to be based on an internalized personal norm.

and instrumental beliefs underlie instrumental attitudes (Breckler & Wiggins, 1989). The latter point is echoed by van der Pligt et al. (1998), who further argue that the role of more specific affective reactions (e.g., regret, guilt, envy) rather than simple positive/negative affective reactions may be more fruitful. Thus, the assessment of affective outcomes within the TPB may further our understanding of the beliefs underlying attitudes. Hence, it would seem clear that adding measures of anticipated affective reactions to the TPB will be a useful way to incorporate affective influences on behavior. However, there remains debate over whether it is better to tap such influences as beliefs underlying attitude (in parallel to other behavioral beliefs) or as a direct predictor of intentions (Richard et al., 1998). The theoretical implications of these alternatives remain to be explored.

### Future Directions for Research Employing the TPB

Having reviewed evidence concerning potential additional variables in the TPB, this section considers two avenues for expansion of the TPB.

#### *Spontaneous Impact of Attitudes on Behavior*

It has been suggested that there are two distinct processes or modes by which attitudes can influence behavior (the MODE [Motivation and Opportunity as Determinants] model; Fazio, 1990). Where the individual is highly motivated and capable of thinking in a deliberate fashion, behavior is held to be thoughtfully planned, based on one's attitudes toward the behavior (a deliberative process). The mechanism by which attitudes influence behavior is thought to be described by models such as the TPB: Implications of one's attitudes are reflected on, and, in conjunction with other information (about normative pressures and perceptions of control over the behavior), an individual forms a behavioral plan (or intention) about how to behave. It is this plan or intention which guides behavior. However, where motivation or opportunity for deliberative decisions is missing, attitudes are held to impact on behavior in a more spontaneous manner (a spontaneous process). Fazio's (1986) model of the attitude-to-behavior process describes how this might happen. For attitudes to guide behavior in this spontaneous manner, attitudes have to be automatically activated in the presence of the attitude object. Attitudes will fail to predict behavior when the behavior is enacted under conditions that do not favor deliberative processing of the attitude or its automatic activation.

Fazio (1986, 1990) uses the distinction between attitudes toward objects or targets and attitudes toward behaviors, and argues that it is the former that is important in determining behavior via spontaneous processing. According to

the spontaneous processing model, an attitude toward an object/target may be automatically activated from memory following the presentation of relevant cues at the point of behavior, with the likelihood of activation determined by the accessibility of the attitude. Attitude accessibility is, in turn, a function of the strength of the relationship between the attitude object and its evaluation in memory. Once activated, the attitude shapes the perception of the situation and produces attitude-congruent behavior. For example, if an attitude object activates a positive attitude, this will lead the individual to attend to and notice the positive qualities of the attitude object (selective perception) which will shape the individual's definition of the event, and approach behaviors will follow. In addition, it is argued that normative processes (e.g., social norms or rules) may also influence the definition of the event and thus impact on behavior in some situations.

Fazio's (1986, 1990) research has principally addressed the selective perception step of this model. Using response latency as a measure of attitude accessibility, it has been shown that quickly recalled attitudes correlate more strongly with behavior than do more slowly recalled attitudes (Fazio, Powell, & Williams, 1989; Fazio & Williams, 1986). Bassili (1995) has shown that more accessible voting intentions are better predictors of voting behavior, and a meta-analysis of attitude-behavior relationships by Kraus (1995) reported that increased accessibility was associated with greater attitude-behavior consistency. Research has also shown that variables likely to increase attitude accessibility (e.g., direct experience, repeated attitude expression) also improve attitude-behavior correspondence (Houston & Fazio, 1989; Powell & Fazio, 1984). However, the assumption that only highly accessible attitudes are automatically activated has been questioned in recent research (Bargh, Chaiken, Govender, & Pratto, 1992). In addition, Fazio's research has not examined how definition of the event or situation leads to performance of the behavior (the latter part of the model). The model assumes that behavior simply follows from the definition of the situation (Fazio, 1986).

Thus, Fazio's (1986, 1990) work on the spontaneous impact of attitudes on behavior can be seen as a useful complement to descriptions of the deliberative manner in which attitudes impact on behavior such as the TPB (Eagly & Chaiken, 1993). Rather like the dual-process models which have been proposed to account for attitude change (e.g., the elaboration likelihood model; Petty & Cacioppo, 1986), a dual-process model of attitude-behavior relationships may provide a fruitful means of understanding this relationship. Where motivation and opportunity permit, attitude toward behavior may well influence behavior via intentions as the TPB describes. When either motivation or opportunity is lacking, the attitude toward the object may impact on behavior in a more spontaneous manner (Sanbonmatsu & Fazio, 1990; Schuette & Fazio,

1995).<sup>8</sup> Fazio's (1990) MODE model may provide a useful basis for understanding the multiple processes by which attitudes influence behavior. Such a dual-process model of attitude-behavior relationships may provide the basis for a more comprehensive understanding of the processes by which attitudes influence behavior. For example, such a dual-process model may help to explain how frequently repeated behaviors gradually switch from being influenced by attitudes via a deliberative process to a more automatic process (Aarts et al., 1998).

### *Impact of Intentions on Behavior*

In the TPB, intentions are viewed as behavioral plans that, in conjunction with appropriate opportunities and resources, enable attainment of a behavioral goal (Ajzen, 1996b). However, intentions do not always lead to successful enactment of the behavior. Meta-analyses make it clear that intentions in the context of the TRA account for only 38% of the variance in behavior (van den Putte, 1991), and meta-analyses of the TPB indicate that intentions and PBC account for only 34% of behavior (Godin & Kok, 1996; see Sutton, 1998, for a review). While percentage of variance explained may well give an unduly pessimistic view of the efficacy of models such as the TPB (Sutton, 1998), it remains a concern of social psychologists to understand why not everyone behaves in accordance with their intentions. As Bagozzi (1992) argues, the variables outlined in models such as the TPB are necessary, but not sufficient determinants of behavior. Similarly, Eagly and Chaiken (1993) criticize the TPB for not clarifying the exact nature of the relation between intention and behavior. It has thus become common to distinguish making a decision (forming an intention) from implementing it (Ajzen, 1996b; Beckman & Kuhl, 1984; Kendzierski, 1990). The former is considered to be primarily a motivational process, while the latter is primarily a volitional process (Kuhl & Beckman, 1985).

Research has explored how intentions may guide the performance of behavior (Gollwitzer, 1993; Heckhausen, 1991; Kuhl, 1985). Various factors have been found to influence effort, continued commitment to a behavioral goal, and persistence in the face of obstacles. For example, individual differences in action versus state orientation can affect persistence with a course of action (Beckman & Kuhl, 1984; Kuhl, 1985). Action-oriented individuals focus on a fully developed plan of action (the intention) and are more likely to persist.

<sup>8</sup>Fazio (1990) suggests that in the deliberative mode, attitudes toward objects may influence attitudes toward behaviors via influencing which beliefs become salient. Eagly and Chaiken's (1993) composite model of attitude-behavior relationships similarly incorporates attitudes toward targets as a precursor of attitudes toward behavior.

State-oriented individuals are more likely to attend to internal or external states that are not related to the target behavior and are thus less likely to persist in following an intention.

One recent theoretical advance in understanding the processes which mediate the relationship between intention and enactment has been the concept of implementation intentions (Gollwitzer, 1993; Gollwitzer & Oettingen, in press). In the TPB, intentions are assumed to summarize the motivational factors that influence performance of a behavior (Ajzen, 1991). They are assumed to directly indicate how hard people are willing to try or how much effort they are planning to exert to perform the behavior. In contrast, Gollwitzer (1990) has argued that enacting goal intentions is a two-stage process. The first stage is a motivational one and is virtually identical to that described by Ajzen, while the second cognitive stage is a volitional or implemental stage. It is assumed that the first stage involves a consideration of the costs and benefits of pursuing a goal and culminates in the formation of a goal intention or decision about whether to perform the behavior (i.e., "I intend to achieve X"). In the second stage, plans are formed about how to ensure that one's intention is acted upon. These plans specify where and when to get started toward achieving the goal. These plans are referred to as *implementation intentions* and specify what one will do and where one will do it in order to achieve the goal intention (i.e., "I intend to initiate the goal-directed Behavior X when Situation Y is encountered"). The important point about implementation intentions is that they commit the individual to a specific course of action when certain environmental conditions are met; in so doing, they help translate goal intentions into action. Gollwitzer and Brandstatter (1997) demonstrated in an experimental study (Study 2) that participants asked to form an implementation intention were more than twice as likely to perform the behavior (writing a report) than were those who did not form an implementation intention (71% vs. 32%). Orbell, Hodgkins, and Sheeran (1997) demonstrated that among two groups of women with the same goal intention to perform breast self-examination (BSE), those who were prompted to form an implementation intention were considerably more likely to perform BSE in the following month (64% vs. 14%). In addition, everyone in the implementation condition who actually performed the behavior reported doing so in response to the environmental cue in the implementation intention and not in response to any other environmental cue.

Gollwitzer (1993), Gollwitzer and Brandstatter (1997), and Orbell et al. (1997) have also provided evidence to show why implementation intentions may be effective. Gollwitzer (1993) argues that by making implementation intentions, individuals pass control to the environment. The environment acts as a cue to action, such that when certain conditions are met, the performance of the intended behavior follows. It would appear that it is the linking of specific plans to specific

opportunities for action which accounts for the effectiveness of implementation intentions in prompting behavior. It would appear that implementation intentions help to ensure that good opportunities for initiating behavior are not missed.

This research on how individuals implement their goal intentions offers an important avenue for future research with the TPB. In applying the TPB to understanding goal achievement (e.g., weight loss), we need to further understand the processes whereby intentions and PBC determine performance of behaviors (e.g., exercise, dieting) directed toward achieving the goal. Individual differences (e.g., in state vs. trait orientation) and the formulation of implementation intentions offer promising directions for future research. However, we also need to understand other aspects of how individuals enact their goal intentions; for example, how individuals decide between alternative behaviors as ways of achieving a goal (Bagozzi, 1992; Bagozzi & Edwards, in press), how individuals remain committed to their goals, and how goal and implementation intentions relate to planning, effort, and persistence in the face of obstacles. Theory and research on cognitive self-regulation (e.g., Karoly, 1993, in press) and action control (e.g., Kuhl & Beckman, 1985) may provide a useful source of ideas about how to extend the TPB in this direction (Abraham, Sheeran, & Johnston, in press).

### Conclusions

The TRA/TPB provides parsimonious accounts of the determinants of behavior, and empirical data support the usefulness of the theories (Sutton, 1998). It is this success which undoubtedly accounts for the popularity of the TPB. We have highlighted a number of areas where current research suggests ways in which the TPB might be extended. This includes work on potential additional variables, such as belief salience, past behavior/habit, the structure of the PBC construct, moral norms, self-identity, and affective beliefs. In each case, there appears to be growing empirical evidence to support the inclusion of these additional variables in the TPB and some understanding of the processes by which these variables may be related to other TPB variables, intentions, and behavior. Incorporation of all of these variables within the TPB might create an unwieldy theory. It seems unlikely that a researcher would wish to include all of these variables in a single study. Rather, depending on the nature of the behavior and the purpose of the study, different combinations of variables might be examined.

We have also reviewed evidence supporting expansion of the TPB in two other ways. First, we believe that there is evidence to suggest that the TPB only provides an account of the determinants of behavior when both motivation and opportunity to process information are high. When one or both of these conditions

does not apply, attitudes and other cognitions may impact on behavior in a more spontaneous fashion. Thus, a dual-process model of the relationship between attitudes and behavior, with the TPB describing the deliberative process and Fazio's (1986) attitude-to-behavior model describing the automatic process, may provide a fuller account. Such a possibility offers numerous avenues for research. For example, further examination of the factors influencing which process was dominant or the impact of one process on the other might provide a useful avenue for research attempting to integrate these perspectives.

Second, the expansion of the TPB in order to further describe the relationship of intentions to behavior may provide a useful way to develop the TPB in relation to understanding how attitudes impact on the achievement of goals. The concept of implementation intentions (Gollwitzer, 1993) may be one useful way of understanding how goal intentions are translated into actions and goal achievement.

Finally, in reflecting on avenues for research with the TPB, we would echo Fishbein's (1997) comment that one good indicator of the usefulness of models such as the TPB (and TRA) is their power to help design effective interventions which produce behavior change. Such uses of the TPB are based on the assumption that the TPB describes a causal process. However, to date, relatively few studies have addressed this assumption, most relying on correlational data among self-report measures. Further research demonstrating the causal relationships among the variables in the TPB and any expansions to it is clearly required.

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