

Perceived Behavioral Control, Self-Efficacy, Locus of Control, and the Theory of Planned Behavior¹

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Conceptual and methodological ambiguities surrounding the concept of perceived behavioral control are clarified. It is shown that perceived control over performance of a behavior, though comprised of separable components that reflect beliefs about self-efficacy and about controllability, can nevertheless be considered a unitary latent variable in a hierarchical factor model. It is further argued that there is no necessary correspondence between self-efficacy and internal control factors, or between controllability and external control factors. Self-efficacy and controllability can reflect internal as well as external factors and the extent to which they reflect one or the other is an empirical question. Finally, a case is made that measures of perceived behavioral control need to incorporate self-efficacy as well as controllability items that are carefully selected to ensure high internal consistency.

The theory of planned behavior (Ajzen, 1988, 1991) has emerged as one of the most influential and popular conceptual frameworks for the study of human action (Ajzen, 2001). Briefly, according to the theory, human behavior is guided by three kinds of considerations: beliefs about the likely consequences or other attributes of the behavior (behavioral beliefs), beliefs about the normative expectations of other people (normative beliefs), and beliefs about the presence of factors that may further or hinder performance of the behavior (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*, the perceived ease or difficulty of performing the behavior. In combination, attitude toward the behavior, subjective norm, and perception of behavioral control lead to the formation of a behavioral *intention*. 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

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behavioral control in addition to intention. To the extent that people are realistic in their judgments of a behavior's difficulty, a measure of perceived behavioral control can serve as a proxy for actual control and contribute to the prediction of the behavior in question. Support for the theory in general is summarized in a meta-analysis (Armitage & Conner, 2001), a review of the literature (Sutton, 1998), and a summary of its applications to health-related behavior (Conner & Sparks, 1996). In addition, a review of recent research on the theory of planned behavior can be found in Ajzen (2001).

The Concept of Perceived Behavioral Control

Notwithstanding the theory's overall success, vexing problems remain (Armitage & Conner, 1999b; Conner & Armitage, 1998; Sheeran & Orbell, 1999a; Sutton, 1998). The present article addresses one of these problems, namely, the nature and measurement of perceived behavioral control. The theory of planned behavior was derived from the theory of reasoned action (Fishbein & Ajzen, 1975), which assumed that most human social behavior is under volitional control and, hence, can be predicted from intentions alone. The construct of perceived behavioral control was added in an attempt to deal with situations in which people may lack complete volitional control over the behavior of interest. For example, consider a college graduate who intends to secure an advertised position in a high-tech company. It is immediately apparent that carrying out this intention is not completely under the person's control. Although she may do everything in her power to obtain the position—sending in her resume with a persuasive accompanying letter, calling the company's personnel department, and establishing contacts with current employees—she will be disappointed if the employer decides to hire a different applicant who is perhaps more qualified or who has connections inside the company. The lack of control in this case resides in the fact that getting an advertised position requires action not only on the part of the applicant but is also dependent on the actions of one or more other individuals. In fact, for this reason, getting a job would usually be classified as a goal, not a behavior, whereas applying for the job might be considered a behavior performed to attain the goal.

However, a moment's reflection reveals that the "behaviors" leading up to attainment of a goal must themselves be considered intermediate goals with their own potential problems of execution. To return to the above example, applying for the advertised position is arguably under greater volitional control than is getting it, but the application may still be thwarted by a variety of factors. The prospective applicant may find it impossible to obtain required letters of reference and other documentation in time to meet the application deadline; or else, she might be stricken by a serious illness, preventing her from preparing the application. In short, even mundane everyday behaviors can be subject to unforeseen

obstacles, and volitional control over behavior is therefore best considered a matter of degree rather than kind. The concept of perceived behavioral control was introduced into the theory of planned behavior to accommodate the nonvolitional elements inherent, at least potentially, in all behaviors. Even when not particularly realistic, perceived behavioral control is likely to affect intentions. All else equal, a high level of perceived control should strengthen a person's intention to perform the behavior, and increase effort and perseverance. In this fashion, perceived behavioral control can affect behavior indirectly, by its impact on intention. And when perceived behavioral control is veridical, it provides useful information about the actual control a person can exercise in the situation and can therefore be used as an additional direct predictor of behavior.³

Perceived Self-Efficacy

The concept of perceived behavioral control is by no means new or original to the theory of planned behavior. A similar idea appears in the health belief model (Rosenstock, 1966), where it is termed barriers, and in the model of interpersonal behavior (Triandis, 1977), where it takes the form of facilitating conditions. Perceived behavioral control owes its greatest debt, however, to Bandura's work on self-efficacy (Bandura, 1977, 1989, 1997).

Perceived self-efficacy refers to "people's beliefs about their capabilities to exercise control over their own level of functioning and over events that affect their lives" (Bandura, 1991, p. 257). Defined at this general level, perceived self-efficacy differs greatly from perceived behavioral control, which is focused on the ability to perform a particular behavior. However, efficacy expectation also is defined as "the conviction that one can successfully execute the behavior required to produce (certain outcomes)" and, consistent with this definition, perceived self-efficacy is said to refer to "beliefs in one's capabilities to organize and execute the courses of action required to produce given levels of attainments" (Bandura, 1998, p. 624). In these definitions, the concern is clearly with control over the behavior itself, not with control over outcomes or events. Now a central feature of social cognitive theory (Bandura, 1986), self-efficacy was introduced to deal with coping behavior in the context of behavior modification (Bandura, 1977). Like the clinical strategy of successive approximation to the desired goal, a behavior is broken down into its successive elements, and self-efficacy is analyzed in terms of perceived ability to perform each step in the

³Logically, perceived behavioral control, rather than having a direct effect, is expected to interact with attitudes and with subjective norms in determining intentions, and with intentions in its effects on behavior (Ajzen, 1985). Empirically, however, interactions of this kind can be expected only if values of the predictor variables cover the full range of possible scores, such that the product term is fully expressed in the prediction. Research to date has revealed little evidence for the expected interactions, and the simpler additive model has been used in most applications.

sequence or under a variety of circumstances (Bandura & Cervone, 1983; Bandura & Schunk, 1981; Bandura & Wood, 1989).

It can be seen that perceived behavioral control and self-efficacy are quite similar: Both are concerned with perceived ability to perform a behavior (or sequence of behaviors). In retrospect, the decision to use the term "perceived behavioral control" to denote this component in the theory of planned behavior may have been misleading. This term has sometimes been taken to refer to the belief that performance of a behavior affords control over attainment of an outcome. This, of course, is not the intended meaning. Perceived behavioral control simply denotes subjective degree of control over performance of the behavior itself. The distinction here is the same as that between efficacy expectation (i.e., the perceived ability to perform a behavior) and outcome expectation (i.e., the perceived likelihood that performing the behavior will produce a given outcome; Bandura, 1977).⁴ To avoid misunderstandings of this kind, the term "perceived behavioral control" should be read as "perceived control over performance of a behavior."

Measuring Perceived Behavioral Control

Like attitude and subjective norm, perceived behavioral control can be measured by asking direct questions about capability to perform a behavior or indirectly on the basis of beliefs about ability to deal with specific inhibiting or facilitating factors. The great majority of studies performed to date have used the direct approach, but belief-based measures have the advantage of providing insight into the cognitive foundation underlying perceptions of behavioral control.

Belief-Based Measures

Pilot work is required to elicit salient or *accessible* control beliefs. Respondents are asked to generate a list of factors they believe could make it easier or more difficult for them to perform the behavior. The questionnaire constructed in the main part of the research then either uses the accessible factors generated by a given participant (*personal accessible beliefs*), or a standard list of the most commonly mentioned factors (*modal accessible beliefs*). To obtain theory-relevant information about these control factors, two sets of questions can be posed with

⁴Related to this issue, it has recently been suggested that perceived self-efficacy, as indexed by judgments of easy-difficult, may be indistinguishable from attitude toward the behavior (Leach, Hennessy, & Fishbein, 1999). Conceptually, however, the two constructs are quite distinct. Attitude toward a behavior is related to the subjective values of the behavior's perceived outcomes—that is, outcome expectancies, whereas self-efficacy or perceived behavioral control has to do with perceived ability to perform the behavior (i.e., self-efficacy expectations).

respect to each. Respondents can be asked to indicate (a) the perceived likelihood (or frequency) of a given control factor being present (strength of control belief), and (b) the extent to which the control factor's presence has the power to facilitate or impede performance of the behavior (power of control belief).

For example, in the pilot phase of a study on leisure behavior (Ajzen & Driver, 1991), college students identified four factors that could make mountain climbing easier or more difficult for them: good weather, not having proper equipment, living near mountains, and lacking skills and knowledge. In the main study, a new sample of respondents indicated, with respect to each of these factors, the extent to which it was true for them and the effect it would have on their ability to go mountain climbing. The following items illustrate the measurement procedure with respect to one of the control beliefs.

Control belief strength (c). I don't have the proper equipment for mountain climbing.

True : 1 : 2 : 3 : 4 : 5 : 6 : 7 : False

Control belief power (p). Not having the proper equipment makes mountain climbing

Easier for me : 1 : 2 : 3 : 4 : 5 : 6 : 7 : More difficult for me.

In accordance with an expectancy-value formulation, a belief-based measure of perceived behavioral control is obtained by multiplying belief strength and power, and summing the resulting products over all accessible control factors, as shown in the following equation.⁵

$$PBC \propto \sum c_i p_i \quad (1)$$

In a similar fashion, Armitage and Conner (1999b) elicited seven accessible control factors related to eating a low-fat diet, factors involving time, cost, willpower, inconvenience, lack of knowledge, rumination, and familiarity. With respect to each, the investigators used 7-point scales to measure belief strength and power. In other behavioral domains, different types of control beliefs are found to be relevant. Thus, in the area of academic achievement (Ajzen & Madden, 1986), pilot work identified eight factors that could make obtaining a good grade easier or more difficult: other classes with demands on time and energy, involvement in extracurricular activities, stimulating subject matter, difficult text and reading materials, difficult exams and other requirements, clear and well-organized lectures, the student's skills and background, and availability of assistance. As can be seen, some control factors are internal to the actor (e.g., skills, knowledge, background, willpower) while others are external (e.g., living near mountains; difficulty of assigned readings and exams; availability of assistance, time, and money).

⁵Optimal scaling procedures should be applied to determine unipolar or bipolar scoring of these scales (Ajzen, 1991).

Table 1

Direct Measures of Perceived Behavioral Control

Source	Behavior	Items used	Reliability
Sheeran and Orbell (1999b, Study 2)	Taking a multi-vitamin pill every day for the next 3 weeks	For me to . . . would be very easy–very difficult If I want to I will easily be able to . . . The number of external influences that may prevent me from . . . How much control do you think you have over your ability to90
Courneya, Bobick, and Schinke (1999, Study 1)	Participating in regular physical exercise	For me to . . . is extremely difficult–extremely easy How much control do you have over . . . If I wanted to I could easily81
Conner and McMillan (1999)	Using cannabis/marijuana in the next 3 months	For me . . . would be difficult–easy How much control do you think you have over . . . How much do you feel that whether . . . is beyond your control If I wanted to, I could easily90
Conner, Sheeran, Norman, and Armitage (2000)	Attending a health check–measured on two occasions	For me . . . would be difficult–easy I could easily . . . if I wanted to How much control have you over61, .74
Netemeyer, Burton, and Johnston (1991, Study 1)	Voting in the October 24th governor's election primary	For me . . . is difficult–easy If I wanted to I could easily . . . How much control do you have over whether you do or do not . . . It is mostly up to me whether76
Godin et al. (1996)	Using a condom each time I have sexual intercourse with a new partner in the next 3 months–3 samples	For me . . . would be very difficult–very easy If I wanted to I would make sure . . . I feel I would be capable of convincing my new partner to79, .63, .83

The belief-based measure of perceived behavioral control aggregates across all accessible control factors, whether internal or external.

Direct Measures

In a parallel fashion, direct measures of perceived behavioral control are designed to capture the perceived facilitating and inhibiting effects of all accessible control factors. A variety of direct questions have been used to elicit respondents' perceptions of the extent to which they are capable of performing a given behavior or attaining a behavioral goal. Table 1 displays items used in a sample of recent studies, together with the reported reliabilities (usually alpha coefficients) of the composite scores. Clearly, there is considerable commonality in the items employed, some dealing with the ease or difficulty of performing a behavior, others with the degree of control over performing it. In the set of studies shown in Table 1, the internal consistencies or reliabilities of the measures were quite high, ranging from .61 to .90. A meta-analysis of 90 studies that assessed perceived behavioral control in the context of the theory of planned behavior showed the average alpha coefficient to be about .65 (Cheung & Chan, 2000). Interestingly, the meta-analysis also revealed that, in comparison to the reliabilities of attitudes and subjective norms, the alpha coefficients of perceived behavioral control measures varied considerably across studies. The measures used in some studies had relatively low reliability while in other studies, their reliability was very high. These findings suggest that it is possible to obtain high reliabilities with direct measures of perceived behavioral control, but this is not assured and care must be taken in the formative stages of the research to formulate appropriate control items.⁶

Perceived Self-Efficacy Versus Controllability

Several investigators have questioned the unitary conception of perceived behavioral control. Items concerned with the ease or difficulty of performing a behavior, or confidence in one's ability to perform it, are often said to measure perceived self-efficacy and they are contrasted with items that address control over the behavior, or the extent to which its performance is up to the actor (Armitage & Conner, 1999b; Manstead & van Eekelen, 1998; Terry & O'Leary, 1995). The characterization of self-efficacy beliefs as confidence in one's ability

⁶Because belief-based measures of perceived behavioral control rely on accessible beliefs generated by the research population, the question of reliability is of less relevance there. According to the theory, perceived behavioral control is based on all accessible control beliefs, whatever their internal reliability. Just as it is possible for attitudes to reflect an evaluatively ambivalent set of behavioral beliefs, so too can perceived behavioral control reflect a set of control beliefs that are internally inconsistent—some implying high control, others low control.

to perform a behavior is, in fact, quite consistent with Bandura's (1997) use and operationalization of the term. In work with the self-efficacy concept, participants are typically asked to rate their confidence in their ability to perform a behavior under a variety of circumstances. For example, in a study of snake phobia, participants rated their capability of executing a series of 18 progressively more threatening interactions with a boa constrictor (Bandura, Adams, & Beyer, 1977; see also Bandura, 1977). The ratings were made on a 100-point scale ranging, in 10-unit intervals, from 1 (*great uncertainty*) to 100 (*complete certainty*). In another study using the same rating scale (Bandura & Schunk, 1981), children were shown 25 subtraction problems of varying difficulty levels and were asked to rate their certainty that they could solve each. This approach is considered to be the standard methodology for assessing efficacy beliefs (Bandura, 1997).

Empirical research provides considerable evidence for the distinction between measures of self-efficacy (ease or difficulty of performing a behavior) and measures of controllability (beliefs about the extent to which performing the behavior is up to the actor). The meta-analysis of perceived behavioral control mentioned earlier (Cheung & Chan, 2000) classified studies in terms of the type of items employed. A small number of studies used only questions related to controllability. However, most employed either self-efficacy items alone, or a mixture of self-efficacy and controllability items. Perceived self-efficacy was found to account for significant portions of variance in intentions, beyond attitudes and subjective norms, and in behavior, over and above intentions. In contrast, controllability added significantly to the prediction of behavior but not to the prediction of intentions, while the mixed sets of items significantly improved prediction of intentions but not of behavior.

The studies included in Cheung and Chan's (2000) meta-analysis did not set out to test the distinction between self-efficacy and controllability. In recent years, several investigators have explored this distinction explicitly by examining its discriminant validity and by comparing the predictive validities of self-efficacy and controllability measures in the same study. Table 2 summarizes the types of items that have been used to distinguish between the two constructs, and shows the reliabilities of the corresponding measures (except for the study by Manstead and van Eekelen, 1998, which did not report reliability coefficients).

Terry and O'Leary (1995) applied the theory of planned behavior to the prediction of regular exercise (at least 20 min three times a week for 2 weeks). Perceived controllability was assessed by means of four items, and perceived self-efficacy by means of three items. Participants reported their actual exercise behavior 2 weeks following administration of the theory of planned behavior questionnaire. Structural equation modeling confirmed the two-factor structure of perceived behavioral control: A model that contained self-efficacy and controllability as separate latent variables provided a significantly better fit to the data than did a model that combined the seven indicators of perceived behavioral

Table 2

Self-Efficacy Versus Controllability

Source	Behavior	Sample items		Reliability ^a
		Self-efficacy	Controllability	
Terry and O'Leary (1995)	Engaging in regular exercise in next two weeks	For me to . . . is very difficult–very easy	How much control do you have80
		If I wanted to, it would be easy for me to . . . I* B ⁻	I feel in complete control over . . . I ⁻ B*	.85
Manstead and van Eekelen (1998)	Attaining at least a grade 7 in History, English, and Physics class	For me . . . is very difficult–very easy	. . . is completely up to me	n/a
		I am certain that I can . . . I* B*	How much control do you have over . . . I ⁻ B ⁻	
Armitage and Conner (1999a, Time 1)	Eating a low-fat diet in next month	I believe I have the ability to . . .	How much personal control do you feel you have over83
		How confident are you that you will be able to . . . I* B*	Whether or not . . . is entirely up to me I ⁻ B ⁻	.71
Armitage and Conner (1999b, Time 1)	Eating a low-fat diet in the future	I believe I have the ability to . . .	Whether or not . . . is entirely up to me	.83
		To what extent do you see yourself as capable of . . . I* B ⁻	How much do you feel that . . . is beyond your control I ⁻ B ⁻	.70
Sparks et al. (1997, two studies)	Reducing the amount of red meat/french fries that I eat from now on	For me to . . . would be easy–difficult	It is mostly up to me whether or not I90
		How certain are you that you could . . . I*	How much control do you have over . . . I ⁻	.83

Note. I*, B* = significant effect on intention or behavior, respectively. I⁻, B⁻ = nonsignificant effect on intention or behavior, respectively.

^aThe first reliability coefficient refers to the self-efficacy scale, the second to the controllability scale.

control into a single latent variable. As can be seen in Table 2, the sets of items comprising the two constructs each had high reliability ($\alpha = .80$ and $.85$, respectively); the reliability of the combined measure was not reported. As to predictive validity, the self-efficacy measure revealed a strong and significant path to intentions but not to behavior, whereas perceived controllability had no effect on intentions but was a significant predictor of actual behavior.

A conceptually similar study was reported by Manstead and van Eekelen (1998) who asked high school students to respond to a theory of planned behavior questionnaire concerning the goal of attaining at least a 7 (out of 10) in upcoming exams in History, English, and Physics classes. The questionnaire included six items designed to assess perceived behavioral control. A principal components analysis followed by oblique rotation revealed two factors, one comprised of self-efficacy items, the other of controllability items (see Table 2 for examples). Multiple regression analyses were performed to test the predictive validity of the two control factors. Contrary to the findings reported by Terry and O'Leary (1995), self-efficacy was found to make significant contributions to the prediction of intentions as well as actual grade attainment in all three classes, whereas controllability predicted neither.

Two studies by Armitage and Conner (1999a, 1999b) looked at eating a low-fat diet in different populations. In one study (Armitage & Conner, 1999b), a theory of planned behavior questionnaire was administered at two points in time, while in the other (Armitage & Conner, 1999a) behavior was assessed 1 month after administration of the initial questionnaire. In each study, principal components analysis of the self-efficacy and controllability items, followed by orthogonal rotation, revealed that the two expected factors and alpha coefficients (ranging from $.70$ to $.87$) of the factor-based scores were satisfactory. With respect to the prediction of intentions and behavior, the two studies revealed somewhat different patterns. In the first study (Armitage & Conner, 1999b), when the two measures were entered into a regression equation together with the other variables in the theory of planned behavior, only perceived self-efficacy accounted for independent variance in intentions, and neither measure added to the prediction of behavior. In the second study (Armitage & Conner, 1999a), self-efficacy added to the prediction of intentions and behavior, while controllability had little effect.

Finally, in an investigation of reducing red meat consumption, Sparks, Guthrie, and Shepherd (1997) started with a set of 25 perceived behavioral control items culled from published research. Cronbach's alpha for the total set of items was $.93$, indicating very high internal consistency. Nevertheless, a principal components factor analysis, followed by orthogonal rotation of the first two factors, helped to create separate measures of self-efficacy and controllability. The five items loading highest on each of the two factors were selected (see Table 2 for examples). The reliabilities of these measures were $.90$ and $.83$. However,

neither of the two measures made a significant contribution to the prediction of intentions to reduce red meat consumption over and above attitudes and subjective norms. Perceived self-efficacy had a marginally significant effect, as had the overall measure of perceived behavioral control based on the 25 original items. However, in a second study that used the two 5-item scales derived in the first study, self-efficacy significantly improved prediction of intentions to eat french fries whereas perceived controllability had virtually no effect.

To summarize briefly, five studies explicitly designed to examine the factorial structure of perceived behavioral control in the context of the theory of planned behavior provided consistent support for the proposed distinction between self-efficacy and controllability. Confirmatory as well as exploratory factor analyses revealed two clearly separable factors, and there was very good agreement on the type of items that load highly on these factors. Furthermore, the scales derived for the two factors demonstrated high internal consistencies. Inspection of Table 2 also shows that the two factors differed considerably in their predictive validity. Whereas the addition of perceived self-efficacy always improved prediction of intentions and, in two instances, the prediction of behaviors, perceived controllability had no significant effects on intentions and in only one case did it account for a significant proportion of variance in behavior. These findings are to some degree compatible with the results of the meta-analysis by Cheung and Chen (2000). This analysis showed that self-efficacy measures accounted for additional variance in intentions as well as behaviors, but controllability items predicted intentions only when combined with self-efficacy items. A pure measure of perceived controllability did, however, account for additional variance in behavior.

Perceived Behavioral Control Versus Locus of Control

Many factors may facilitate or impede performance of a behavior. Some of these factors, including skills and willpower, are internal to the individual while other factors, such as task demands and the actions of another person, are located externally (Ajzen, 1985). The distinction between internal and external causes of a behavior can have important implications. For instance, responsibility for success or failure is attributed to the actor when perceived as caused by internal factors (ability or effort), but less so when perceived to be due to external factors (task difficulty or luck; Weiner, Frieze, Kukla, Reed, & Rosenbaum, 1971; Weiner & Kukla, 1970). Unfortunately, the internal versus external locus of a control factor is often confused with control or lack of control over performance of the behavior. This confusion can perhaps be traced to the concept of *perceived locus of control* (Rotter, 1966). People are said to differ in the extent to which they view rewards, punishments, or other events in their lives as caused by their own actions or by factors beyond their control. In a somewhat misleading

fashion, perceived behavioral control over outcomes is termed *internal* locus of control whereas the perception that outcomes are determined by nonbehavioral factors is termed *external* locus of control. However, closer analysis reveals that perceived control over an outcome or event is independent of the internal or external locus of the factors responsible for it. For instance, fear of flying is an internal factor but people may nevertheless feel that they have little control over it. Conversely, cooperation by another person is external, yet we may believe that we would encounter little difficulty in securing the needed cooperation. In fact, the same factor *C* for example, ability, an internal factor *C* is viewed by some people as malleable and potentially under volitional control, and by other people as immutable and hence not amenable to control (Dweck & Leggett, 1988; Hong, Chiu, Dweck, Lin, & Wan, 1999).

The mistaken equation of control over performance of a behavior with internal locus, and lack of control with external locus, is also apparent in discussions of self-efficacy versus controllability. Self-efficacy beliefs are said to reflect internal factors whereas beliefs about the controllability of the behavior are assumed to deal with external factors (e.g., Armitage & Conner, 1999b; Manstead & van Eekelen, 1998; Terry & O'Leary, 1995). To be sure, the empirical evidence leaves little doubt that perceived self-efficacy differs substantially from perceived controllability. Items that load highly on the self-efficacy factor deal with the ease or difficulty of performing a behavior, with people's confidence that they can perform it if they want to do so. On the other hand, controllability involves people's beliefs that they have control over the behavior, that performance or nonperformance of the behavior is up to them. However, the fact that self-efficacy beliefs can be reliably distinguished from perceived controllability tells us very little about the nature of these constructs. Specifically, no independent evidence has been provided for the view that self-efficacy reflects internal barriers and facilitators whereas perceived controllability reflects beliefs about the operation of external factors. The ease or difficulty of performing a behavior is *conceptually* independent of internal versus external locus. I may believe that it would be easy for me to eat a low-fat diet because I have familiarized myself with the fat contents of various foods (an internal factor) or because low-fat foods are readily available (an external factor). Similarly, I may believe that I have limited control over eating a low-fat diet because I have little will-power (an internal factor) or because the dining hall where I have most of my meals provides no information about the fat content of the food that is served (an external factor). Most likely, perceived ease or difficulty of performing a behavior reflects beliefs about the presence of internal as well as external factors that may further or impede performance of a behavior, and the same is true of perceived controllability.

Consistent with this line of reasoning, perceived behavioral control in the theory of planned behavior refers generally to people's expectations regarding the

degree to which they are capable of performing a given behavior, the extent to which they have the requisite resources and believe they can overcome whatever obstacles they may encounter. Whether these resources and obstacles are internal or external to the person is immaterial. The theory is concerned only with the extent to which they are believed to be present and are perceived to facilitate or impede performance of the behavior under consideration. When people believe that they have the required resources and opportunities (e.g., skills, time, money, cooperation by others), and that the obstacles they are likely to encounter are few and manageable, they should have confidence in their ability to perform the behavior and thus exhibit a high degree of perceived behavioral control. Conversely, when they believe that they lack requisite resources or that they are likely to encounter serious obstacles, they should judge performance of the behavior to be relatively difficult and hold a low level of perceived behavioral control. This is true, whether the resources and obstacles in question are located internally or externally.

There is also no indication in Bandura's theorizing that self-efficacy beliefs are restricted to internal factors (see Bandura, 1997, for an in-depth discussion of self-efficacy). This is confirmed by examining specific control beliefs sometimes assessed in work with the self-efficacy construct. For example, in a study dealing with the ability to find a job and housing (Epel, Bandura, & Zimbardo, 1999), homeless people were asked to rate, on a 9-point scale, the strength of their beliefs that they can construct a résumé, impress employers and rental agents, and get others to help them, all factors that could influence attainment of the behavioral goals. The ability to construct a résumé and impress others could be considered internal factors, but receiving help from others usually would be classified as an external factor.⁷

To be sure, it is possible that respondents confronted with questions about their ability to perform a behavior (self-efficacy items) consider mainly internal rather than external factors, and that beliefs about external factors are more readily accessible when respondents ponder whether performance of the behavior is completely up to them (controllability questions). However, whether this is in fact the case is an empirical question and cannot be taken for granted. Of the five studies summarized in Table 2, only one (Armitage & Conner, 1999b) examined the relation of specific beliefs to the separate measures of self-efficacy and controllability, and it demonstrated the problematic nature of the distinction between internal and external locus of causality. Seven control beliefs were identified in this study and were used to predict self-efficacy and controllability by means of multiple regressions. Some of the beliefs seemed to tap internal factors (e.g., "To

⁷Note that respondents were asked about their ability to attain control over the external factor. Thus, although receiving help from others is an external factor whose presence would facilitate performance of the behavior, the crucial issue for perceived control over the behavior is whether people believe that it is within their power to secure the needed help.

eat a low-fat diet requires willpower”), others external factors (e.g., “Eating a low-fat diet costs too much money”). Still other beliefs would be difficult to classify. For example, the belief that “eating a low-fat diet is inconvenient” may refer to an internal disinclination to prepare low-fat foods or to external lack of availability. Similarly, “I don’t always know which foods are low in fat” may reflect a failure to obtain the needed information (internal) or its lack of availability (external). As might be expected, therefore, the results of the study were rather ambiguous. In general, there was considerable overlap between control beliefs that predicted controllability and self-efficacy. Two beliefs considered to reflect internal factors (“I do not have enough time to eat a low-fat diet” and “I have always eaten a low-fat diet”) had significant regression weights in the prediction of self-efficacy as well as controllability, and examination of the zero-order correlations revealed significant associations between all seven beliefs and each of the two control indices.

A Hierarchical Model of Perceived Behavioral Control

Control over execution of a behavior depends on the presence of various internal and external factors that may serve to facilitate or interfere. The fact that it is possible to distinguish reliably between two different types of control—self-efficacy and controllability—does not invalidate the unitary nature of the construct. To take a more familiar example, few would dispute the claim that it is possible to distinguish between analytical and verbal types of intelligence. In fact, finer distinctions can and have been made. Yet, at the same time, we can usefully think of overall intelligence as a higher-order category with analytical and verbal components. By the same token, global attitudes are often conceptualized as containing discriminable components of cognition and affect (Rosenberg, 1956), and the same case has been made with respect to attitudes toward a behavior (Ajzen & Driver, 1991). In short, a *hierarchical model* may best describe the relations among perceived self-efficacy, perceived controllability, and perceived behavioral control, as shown in Figure 1. In this model, self-efficacy and controllability are two separate components each assessed by means of different indicators. Yet, together they comprise the higher-order concept of perceived behavioral control.

This hierarchical model implies that although perceived self-efficacy and perceived controllability can be reliably distinguished, they should nevertheless be correlated with each other. Unfortunately, the studies that have provided evidence for the discriminant validity of self-efficacy and controllability have failed to examine convergence. Still, the findings reviewed earlier strongly suggest that the two components are correlated. First, control beliefs that are presumed to reflect one or the other of the two factors are actually found to overlap (Armitage & Conner, 1999b). Second, the fact that an oblique factor solution can provide a

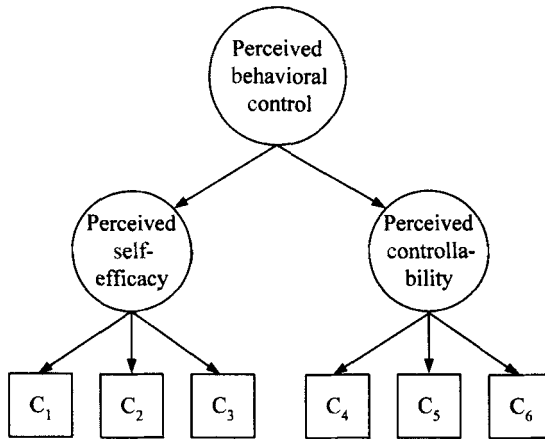


Figure 1. Hierarchical model of perceived behavioral control.

good fit to the data (Manstead & van Eekelen, 1998) suggests a substantial correlation between the components. Finally, mixed measures that contain self-efficacy as well as controllability items show considerable internal consistency (Cheung & Chan, 2000). In fact, the highest internal consistency was reported for a large set of mixed items (Sparks et al., 1997).

Often adapting items used in prior investigations, most studies reported in the literature have assessed perceived behavioral control by means of a few arbitrarily selected questions whose reliability was not established in prior research, a practice that is contrary to recommended scale construction procedures (Fishbein & Ajzen, 1975). My colleagues and I are guilty of similarly negligent practices in our own research. As a result, measures of perceived behavioral control have often lacked high internal consistency. The findings reviewed earlier indicate that this is not an inevitable property of inclusive measures. Careful selection of control items in formative research can produce measures of perceived behavioral control that reflect self-efficacy as well as controllability, yet have good psychometric properties. For some purposes, it will be sufficient to compute a single overall index of perceived behavioral control, but at other times the objectives of a research program may require separate measures of self-efficacy and controllability.

Summary and Conclusions

Perceived control over performance of a behavior can account for considerable variance in intentions and actions. However, ambiguities surrounding the concept of perceived behavioral control have tended to create uncertainties and to impede progress. The present article attempted to clarify conceptual ambiguities

and resolve issues related to the operationalization of perceived behavioral control. Recent research has demonstrated that the overarching concept of perceived behavioral control, as commonly assessed, is comprised of two components: self-efficacy (dealing largely with the ease or difficulty of performing a behavior) and controllability (the extent to which performance is up to the actor). Contrary to a widely accepted view, it was argued that self-efficacy expectations do not necessarily correspond to beliefs about internal control factors, and that controllability expectations have no necessary basis in the perceived operation of external factors. Instead, it was suggested that self-efficacy and controllability may both reflect beliefs about the presence of internal as well as external factors. Rather than making a priori assumptions about the internal or external locus of self-efficacy and controllability, this issue is best treated as an empirical question.

Also of theoretical significance, the present article tried to dispel the notion that self-efficacy and controllability are incompatible with, or independent of, each other. Although factor analyses of perceived behavioral control items provide clear and consistent evidence for the distinction, there is sufficient commonality between self-efficacy and controllability to suggest a two-level hierarchical model. In this model, perceived behavioral control is the overarching, superordinate construct that is comprised of two lower-level components: self-efficacy and controllability. This view of the control component in the theory of planned behavior implies that measures of perceived behavioral control should contain items that assess self-efficacy as well as controllability. Depending on the purpose of the investigation, a decision can be made to aggregate over all items, treating perceived behavioral control as a unitary factor, or to distinguish between self-efficacy and controllability by entering separate indices into the prediction equation.

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