

# Which Behaviors Do Attitudes Predict? Meta-Analyzing the Effects of Social Pressure and Perceived Difficulty

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A meta-analysis of 797 studies and 1,001 effect sizes tested a theoretical hypothesis that situational constraints, such as perceived social pressure and perceived difficulty, weaken the relationship between attitudes and behavior. This hypothesis was confirmed for attitudes toward performing behaviors and for attitudes toward issues and social groups. Meta-analytic estimates of attitude–behavior correlations served to quantify these moderating effects. The present results indicated that the mean attitude–behavior correlation was .41 when people experienced a mean level of social pressure to perform a behavior of mean difficulty. The mean correlation was .30 when people experienced social pressure 1 standard deviation above the mean to perform a behavior that was 1 standard deviation more difficult than the mean. The results suggest a need for increased attention to the “behavior” side of the attitude–behavior equation. Attitudes predict some behaviors better than others.

Early enthusiasm for the attitude construct was followed by pessimistic assessments of the extent to which attitudes predict behavior (Eagly & Chaiken, 1993). More recent work has established a consensus that attitudes bear some positive relationship to behavior. Most modern investigations concern themselves not with the overall size of attitude–behavior correlations, but instead with variables that influence the magnitude of such correlations (Zanna & Fazio, 1982). One line of research has focused on moderation of the attitude–behavior relationship by aspects of attitude. A second line of research has focused on moderation by compatibility between attitude and behavioral measures.

The present review and meta-analysis focused instead on moderation of the attitude–

behavior relationship by aspects of behavior. Specifically, the present meta-analysis tested a hypothesis implicit in several attitude theories: that the relationship between attitudes and behavior is moderated by the extent to which the behavior implies relatively strong situational constraints, such as social pressure or perceived difficulty. We tested this hypothesis on 1,001 attitude–behavior correlations, and thus our investigation represents the largest quantitative analysis of English-language studies to date. The largest earlier such meta-analysis considered only 138 attitude–behavior correlations (Kim & Hunter, 1993b).

## History

Early social psychologists showed enthusiasm for the study of attitudes. Some researchers even defined social psychology as the scientific study of attitudes. Allport (1935), for instance, stated that “the concept of attitude is probably the most distinctive and indispensable concept in contemporary American social psychology” (p. 798). Typically, an attitude is defined as a tendency to act or react in a favorable or unfavorable way toward an object (Eagly & Chaiken, 1993). To early researchers, attitudes provided the dynamic element in human behavior and served as reliable indicators of behavioral tendencies. According to Droba (1933),

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Documentation for the current meta-analysis is available online. For Appendix A, which contains 1,001 attitude–behavior correlations and other data, see [www.psy.tcu.edu/wp1bb.xls](http://www.psy.tcu.edu/wp1bb.xls). For Appendix B, which contains a bibliography of the studies included in the meta-analysis, see [www.psy.tcu.edu/wp1ba.pdf](http://www.psy.tcu.edu/wp1ba.pdf).

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“an attitude is the foreshadowing of what the individual will likely be doing with respect to the object in question” (p. 447). Allport claimed that by understanding attitudes, we understand a process that determines an individual’s real or possible activity. “Attitudes determine for each individual what he will see and hear, what he will think and what he will do” (Allport, 1935, p. 810). Thus, attitudes were viewed as important insofar as they corresponded with and predicted behavior.

Despite these early views, attitudes do not always predict behavior. Often, people express positive attitudes toward an activity, yet admit that they seldom engage in the activity (Ajzen & Fishbein, 1977, 1980). Difficulties in predicting behavior from attitude have been discussed in numerous reviews (e.g., Campbell, 1963; Eagly & Chaiken, 1993, 1998; Lord & Lepper, 1999; McGuire, 1985).

In an early study, LaPiere (1934) found that restaurants served a Chinese couple even when the owners stated they would not do so. Reviewing many such studies, Wicker (1969) found little evidence that attitudes can reliably predict behavior. According to Wicker (1969), “Product-moment correlation coefficients relating the two kinds of responses are rarely above .30, and often are near zero” (p. 65). McGuire (1976, p. 312) noted that “one of the many scandals of social psychology is the low correlation between attitudes and actions.” Lewin (1951) was also pessimistic about the predictability of overt behavior from knowledge of cognitive variables such as attitudes, because unforeseen events (e.g., chance meetings, accidents, or illness) may intrude into the life space and disturb what could have been a predictable relationship. According to Lewin (1951), behavior depends on an immediate situation that might impose different constraints on behavior than on verbal expressions of an attitude (McNemar, 1946).

### Modern Work

The initial optimism and subsequent pessimism were eventually resolved in a modern consensus that the relationship between attitudes and behavior is far from perfect but adequate to merit study (Kelman, 1974). Recent meta-analyses have quantified the relationship between attitudes and behavior. Typically, attitude–behavior relations correspond to a Pear-

son product–moment correlation coefficient of approximately .40 (e.g., Kim & Hunter, 1993b; Kraus, 1995; Sheppard, Hartwick, & Warshaw, 1988; Six & Eckes, 1996).

A correlation of .40 is considered moderate by psychometric standards (Cohen & Cohen, 1975), but it is quite sizable relative to other relationships in social psychology. Many well-known and widely accepted social psychological relationships are smaller. Indeed, a recent compilation of more than 33,000 studies showed that social psychological effects produced a mean correlation of .21 (Richard, Bond, & Stokes-Zoota, 2003).

Having reached consensus on the typical size of the attitude–behavior relationship, researchers now focus on identifying conditions under which this relationship is larger and smaller. Investigators have found that aspects of an attitude influence the consistency of that attitude with behavior. An attitude predicts behavior to the extent that the attitude is strongly held, cognitively accessible, and internally consistent (Fazio, 1990; Krosnick & Petty, 1995; Zanna & Fazio, 1982). Other investigators have found that attitude–behavior consistency depends on the compatibility between the attitude and the behavior. Attitudes predict behavior to the extent that the attitude and the behavior are measured at the same level of specificity (Ajzen & Fishbein, 1977), share affective versus cognitive implications (Millar & Tesser, 1992), and involve the same target (Lord, Lepper, & Mackie, 1984; Sia, Lord, Blessum, Thomas, & Lepper, 1999). Thus, previous meta-analyses focused on aspects of the attitude such as its strength or internal consistency (Kraus, 1995), the situational domain (Six & Eckes, 1996), knowledge and choices (Sheppard et al., 1988), or relevance (Kim & Hunter, 1993a, 1993b), whereas the present meta-analysis focused entirely on aspects of the behavior.

### Strong Versus Weak Behavioral Situations

Although attitude–behavior consistency is influenced by aspects of the attitude and by compatibility between the attitude and the behavior, the present article focuses on moderation of the attitude–behavior relation by another set of factors: aspects of the behavior. A cornerstone tenet of social psychology is Kurt Lewin’s famous equation  $B = f(P, E)$ . Behavior

is a function of the person and the environment. The relative importance of *P* and *E* differs in different cases because some behaviors are performed in “strong situations” (Snyder & Ickes, 1985). Strong situations “induce uniform expectancies regarding the most appropriate response pattern, provide adequate incentives for the performance of that response pattern, and require skills that everyone has to the same extent” (Mischel, 1977, p. 347). Other behaviors are performed in “weak situations” (Snyder & Ickes, 1985). These situations “do not generate uniform expectancies concerning the desired behavior, do not offer sufficient incentives for its performance, or fail to provide the learning conditions required for successful genesis of the behavior” (Mischel, 1977, p. 347). Theoretically, attitudes and other personal dispositions should predict behavior better in weak situations than in strong ones, if only because strong situations tend to restrict the range of behaviors (Snyder & Ickes, 1985).

This trade-off between personal and environmental determinants of behavior is implicit in earlier theories. According to the theory of reasoned action (TRA; Fishbein & Ajzen, 1975), behavioral intentions are a function of attitudes toward performing the behavior and subjective norms regarding its performance. Subjective norms involve “perceptions of significant others’ preferences about whether one should engage in a behavior” (Eagly & Chaiken, 1993, p. 171). Strong subjective norms create a relatively strong situation in which people are swayed more by the fact that significant others want them to perform the behavior than by their own attitudes toward doing so. When it is widely recognized that a behavior is socially desirable, normatively appropriate, and politically correct, many perform the behavior in the absence of a favorable attitude, so one would not expect attitudes to predict behavior well. Conversely, weak subjective norms create a relatively weak situation in which participants are free to “do their own thing” and attitudes have a better chance of predicting behavior.

The theory of planned behavior (TPB; Ajzen, 1985) refined the TRA by adding another predictor variable. In the TPB, behavior is a function of attitudes, subjective norms, and perceived behavioral control. Perceived behavioral control “is defined as one’s perception of how easy or difficult it is to perform the behavior” (Eagly & Chaiken, 1993, pp. 186–187). Low

perceived behavioral control creates a strong situation in which participants are swayed more by the perceived lack of resources and opportunities to perform the behavior than by their own attitudes toward doing so. When a behavior is difficult to enact, few people can overcome situational obstacles, so one would not expect attitudes to predict behavior very well. Conversely, confident perceptions of behavioral control create a relatively “easy” situation in which “anyone could do it if they wanted to” and attitudes have a better chance of predicting behavior.

Although these connections with strong and weak situations were left largely implicit in the earlier theories, the TRA and TPB deliberately depicted subjective norms and perceived behavioral control as factors separate from attitudes, because “a classic feature of social and personality psychology is a division of the determinants of social behavior into two categories—attributes of the person and attributes of the social environment” (Eagly & Chaiken, 1993, p. 171). Thus, the theories imply that when *E* is strong, *P* becomes a less important determinant of behavior. This hydraulic relationship was evident in linear regression results wherein the beta weights for attitudes were low when the beta weights for situational factors were high, and vice versa (e.g., Ajzen & Fishbein, 1970).

### The Present Meta-Analysis

The present meta-analysis followed this reasoning about the effects of strong and weak situations on attitude–behavior consistency. Individuals are likely to assume that significant others want them to perform certain socially desirable behaviors (e.g., going to a job) and are likely to perceive less social pressure to perform other behaviors (e.g., smoking cigarettes). Similarly, some behaviors (e.g., donating blood) seem sufficiently difficult to perform that even individuals with positive attitudes often do not try, whereas other behaviors (e.g., drinking soft drinks) seem relatively easy and more likely to be determined by the individual’s attitude than by external constraints. The central hypothesis of the present meta-analysis, then, was that attitudes predict behavior better when external constraints such as social pressure and perceived difficulty are relatively weak than when they are relatively strong.

This central hypothesis might be construed as implicit in the TRA and the TPB, but only if one accepts that perceived social pressure to perform a behavior corresponds roughly with positive subjective norms and only if one accepts that perceived difficulty in performing the behavior corresponds roughly with a lack of perceived behavioral control. Previous reviews and meta-analyses of the TRA and TPB have not focused on the implicit hydraulic relationship between these two external constraints (environmental factors in Lewin's theory) and attitudes (personal factors) as predictors of behavior. The present review, then, breaks new ground by providing a large-scale test of relationships that are implicit in two theories of attitude-behavior consistency that have received overwhelming empirical research support in domains too numerous to list (for comprehensive reviews, see Ajzen & Fishbein, 1980; Armitage & Conner, 2001; Beale & Manteufel, 1991; Borgida, Conner, & Manteufel, 1992; DeVellis, Blalock, & Sandler, 1990; Eagly & Chaiken, 1993; Netemeyer & Burton, 1990; Sheeran & Taylor, 1999; Sheppard et al., 1988; Van den Putte, 1991).

The present analysis also extended these principles implicit in the TRA and TPB beyond the types of behaviors that those theories were designed to address. Eagly and Chaiken (1993) drew an important distinction between what they termed "attitudes toward behaviors" and "attitudes toward targets." Attitudes toward behaviors involve performing versus not performing a specific behavior, such as wearing seat belts, using contraceptives, drinking alcohol, smoking cigarettes, and attending church. Attitudes toward targets, in contrast, involve acting in favorable or unfavorable ways toward a target such as a group (e.g., displaying a positive attitude toward minorities by agreeing to work with them), an individual (e.g., displaying a positive attitude toward a specific work supervisor by continuing to work for that person), an issue (e.g., displaying a positive attitude toward legalizing marijuana by voting for it), or even an inanimate object (e.g., displaying a positive attitude toward the environment by recycling).

As Eagly and Chaiken (1993) explained, the TRA (Ajzen & Fishbein, 1980) and TPB (Ajzen, 1985) were developed to describe the attitude-behavior relationship only in terms of attitudes toward behaviors and were never intended to describe the attitude-behavior rela-

tionship in regard to attitudes toward targets (i.e., attitudes toward entities toward which behaviors are directed). Ajzen and Fishbein (1980, p. 84) explicitly labeled attitudes toward targets "external variables" and excluded these attitudes from their central model. To the extent that the subjective norms and perceived behavioral control aspects of these theories are analogous to the present review's "social pressure" and "perceived difficulty" aspects, however, we were able to test a more general hypothesis: that the principles developed in the TRA and TPB might be extended to all studies of the attitude-behavior relationship. We thus expected to find perceived social pressure and perceived difficulty to be significant moderators of the attitude-behavior relationship not only for attitudes toward behaviors but also for attitudes toward other types of attitude objects, such as groups and issues.

## Method

### *Studies Included in the Review*

Studies conducted from 1937 through 2003 were located through the ancestry approach and computer-based information searches. The computer-based searches used the keyword "attitude" paired with "behavior," "consistency," "inconsistency," "prejudice," and "discrimination." *Psychological Abstracts*, PsycINFO, ERIC, and Dissertation Abstracts were searched. All located articles were searched for additional references.

To be included in the present meta-analysis, a study had to report (or clearly imply) the size of a quantitative relationship between individual differences in an attitude and a relevant behavior (with "behavior" being broadly defined). Only English-language studies were included. No studies involving an attitude change manipulation were included, nor were any studies included in which the behavior was an evaluation of a performance. The final sample consisted of 797 studies that reported 1,001 effect sizes.

### *Ratings of Social Pressure and Difficulty*

Procedures were used to measure the social pressure and perceived difficulty implicit in each of the behaviors in this literature. We began by coding behavioral measures from each of the 797 studies included in the meta-analysis. We expressed in a word or phrase the *action* the attitude was theorized to predict. In each case, we identified an action that would connote a favorable behavior in regard to the attitude object seeking actions rather than nonactions.



If attitudes toward "cigarettes" were measured, for instance, we coded the behavior as "smoking cigarettes" rather than not smoking.

These actions, which are shown in the "behavior" column of Appendix A (which is available on the Web at [www.psy.tcu.edu/wplbb.xls](http://www.psy.tcu.edu/wplbb.xls)), were also as context free as possible. We started with just the verb, for instance "purchase," and asked 10 undergraduates if they needed more information to rate the social pressure and difficulty of that action. We added information to each verb until the majority said they had enough information to complete the ratings. This procedure, for instance, impelled us to invite ratings of the actions "go to a hospital" and "go to a job" rather than the ambiguous "go to." Using this procedure, we found that the 1,001 effect sizes in our meta-analysis involved 287 separate actions.

Next, we asked 20 different graduate and undergraduate students to rate each of these actions as to its perceived social pressure and 20 other graduates and undergraduates to rate each of the actions as to its perceived difficulty. In the case of social pressure, raters estimated "how much people who are important to you would want you to do it, assuming that you were in a situation where you could choose to do it or not to do it," on a 9-point scale ranging from *not at all* (1) to *very much* (9). Mean ratings of social pressure, as shown in the social pressure column of Appendix A, ranged from the least approved (shoplifting) at 0.15 to the most approved (graduate high school) at 8.95. Interrater agreement was achieved (Spearman-Brown effective  $r = .99$ ). The mean social pressure rating across behaviors was 5.85 ( $SD = 1.73$ ).

The second group of raters estimated how difficult each action would be for them to perform "(because outside factors beyond your control might interfere), assuming that you were in a situation where you could choose to do it or not do it," on the same 9-point scale. The mean perceived difficulty rating across behaviors was 2.49 ( $SD = 1.35$ ). Mean perceived difficulty ratings for individual behaviors, as shown in the perceived difficulty column of Appendix A, ranged from the easiest (graduate high school) at 0.00 to the most difficult (have an abortion) at 7.40. Again, raters agreed with one another (Spearman-Brown effective  $r = .99$ ). As expected, actions that were perceived to be more difficult were rated as lower in social pressure,  $r(285) = -.68$ .

### Other Variables Coded

From each study, we also coded (a) year of publication, (b) whether the attitude was toward performing a behavior or toward various targets (an inanimate object, issue, group, or individual), (c) type of behavior (judgment, intention, or overt), (d) type of publication (dissertation, presentation, or publication), (e) study setting (naturalistic or laboratory), (f)

type of behavioral measure (self-reported or observed), (g) number of behaviors measured (single or multiple), (h) delay between attitude and behavior measures (same session or different sessions), (i) participant gender (male participants only, female participants only, both, or not specified), and (j) participant age group (child, adolescent, college, adult, or mix).

### Calculation of Effect Sizes

Statistical information from each independent sample included an attitude-behavior consistency correlation and a sample size. Many of the studies reported a single Pearson product-moment correlation for attitude-behavior consistency. When available, this overall  $r$  value was used. Sometimes it was necessary to calculate  $r$  values from other statistics.<sup>1</sup> In other cases, it was necessary to pool  $r$  values from different experimental conditions using a Fisher  $r$ -to- $Z$ -to- $r$  averaging procedure (Rosenthal, 1991). From regression and structural equation models, we coded the standardized attitude-behavior consistency coefficient. For studies using Fishbein and Ajzen's (1975) intention measures, we used correlations between attitude toward performing the behavior and intentions. For cross-lagged panel studies, we used synchronous attitude-behavior correlations.

### Characteristics of Studies

Following meta-analytic convention (Cooper & Hedges, 1994), two data sets were created, one in which each attitude-behavior correlation came from an independent sample and one in which multiple correlations from a sample were included if they reflected different levels of moderating variables. The first data set was used in overall analyses of attitude-behavior consistency, and the second was used to test for the impact of moderating variables.

The meta-analysis included 797 independent measures of attitude-behavior consistency and 1,001 measures of the attitude-behavior relationship overall. The studies in this literature involved relatively large samples of participants, with a mean sample size of 316 and a total sample of 316,085 for all independent attitude-behavior consistency measures combined. The median publication year was 1986. Appendix B (which is available on the Web at [www.psy.tcu.edu/wplba.pdf](http://www.psy.tcu.edu/wplba.pdf)) presents a list of all of the studies included in the analyses.

<sup>1</sup> For correlations derived from a  $t$ -test statistic, the following formula was used to derive a correlation coefficient (Rosenthal, 1991):  $r = \sqrt{[t^2/(t^2 + \text{North} - 2)]}$ . For correlations derived from an  $F$  statistic, the following formula was used to derive a correlation coefficient (Rosenthal, 1991):  $r = \sqrt{[F(1, df)]/[F(1, df) + df \text{ error}]}$ .

## Results and Discussion

Each attitude–behavior correlation was transformed to a Fisher  $Z$  statistic for purposes of analysis (Cooper & Hedges, 1994). A weighted least squares analysis showed that attitudes were, in fact, predictive of behavior ( $r$  corresponding to weighted mean Fisher  $Z = .41$ ;  $Z = 244.01$ ,  $p < .01$ ; 95% confidence interval for  $r = .407$  to  $.413$ ;  $r$  corresponding to unweighted mean  $Z = .43$ ). This effect size was comparable to effects reported in earlier attitude–behavior meta-analyses (e.g., Kim & Hunter, 1993b; Kraus, 1995; Sheppard et al., 1988; Six & Eckes, 1996) and not vulnerable to the possibility of unreported null effects. Indeed, 574,516 attitude–behavior correlations of zero would need to be added to the 1,001 correlations we found to reduce the overall attitude–behavior  $r$  value to nonsignificance. A test for homogeneity indicated that the attitude–behavior relationship differed significantly more from study to study than would be expected from sampling variability,  $Q(1000) = 20,494.65$ ,  $p < .01$ . When weighted estimates (Lipsey & Wilson, 2001) were used, the total variance in the 1,001 attitude–behavior Fisher  $Z$  values was  $.07$  ( $SD = .26$ ), whereas the true variance was  $.06$  ( $SD = .25$ ).

To account for unexplained variance in the attitude–behavior relationship, we examined the impact of several potential moderator variables. We focused on two such factors: social pressure to enact a behavior and the behavior's perceived difficulty. Both constituted external constraints that were predicted to dampen dispositional influences (Snyder & Ickes, 1985).

### *Effects of Social Pressure and Difficulty*

To test whether social pressure and perceived difficulty were significant moderators of the attitude–behavior relationship, we constructed a weighted least squares regression equation. The criterion in this equation was the Fisher  $Z$  statistic corresponding to an attitude–behavior correlation coefficient. The predictors were students' ratings of social pressure and perceived difficulty of behavior. Results showed that these two variables significantly predicted the attitude–behavior relationship. Controlling for social pressure, studies involving the use of behaviors that students rated as more rather than less difficult had lower attitude–behavior corre-

lations ( $\beta = -0.20$ ,  $z = 24.70$ ,  $p < .01$ ). Controlling for perceived difficulty, studies involving the use of behaviors that students rated as high rather than low in social pressure also had lower attitude–behavior correlations ( $\beta = -0.31$ ,  $z = 15.64$ ,  $p < .01$ ). We can quantify these effects by noting the predicted attitude–behavior correlation for two different behaviors. If people experience a mean level of social pressure to engage in a behavior that is of mean difficulty, our regression equation predicts an attitude–behavior correlation of  $.41$ . If people experience social pressure that is one standard deviation above the mean to engage in a behavior that is one standard deviation above the mean in difficulty, our equations predict an attitude–behavior correlation of  $.30$ . Thus, the analysis showed that attitudes were best in predicting behaviors that are relatively easy to enact and low in social desirability, such as borrowing money, drinking alcohol, and smoking cigarettes.<sup>2</sup>

Admittedly, these relationships depend on the skew of the relevant distributions and might involve some ceiling or floor effects, but any such effects are part of the conceptual analysis of social pressure and perceived difficulty as moderators of the attitude–behavior relationship. See Campbell (1963), Mischel (1977), and Snyder and Ickes (1985). To the extent that people perceive strong social pressure to act favorably toward an attitude object (e.g., to use contraceptives or to wear seat belts), most people do so, and attitudes become less of a determinant. Similarly, to the extent that people per-

<sup>2</sup> Ratings of perceived social pressure and perceived difficulty for the behaviors were obtained from undergraduate and graduate student raters because most participants in the investigations under review were students. Although other students might be "experts" in sharing participants' perspectives, they would not be "experts" in knowledge of psychological principles. Therefore, Charles Bond and Charles Lord, professionals with more than 50 years of combined teaching and research in social psychology, independently made the same ratings of the behaviors. Their ratings were significantly correlated at  $.73$  for perceived social pressure and  $.49$  for perceived difficulty. When their average ratings were used as predictors of effect size, the results were very similar to those obtained with the undergraduates' ratings. Controlling for social pressure, studies that used behaviors that these two "experts" rated as more rather than less difficult had lower attitude–behavior correlations ( $\beta = -0.08$ ,  $z = 18.59$ ,  $p < .01$ ). Controlling for perceived difficulty, studies that used behaviors that they rated as high rather than low in social pressure also had lower attitude–behavior correlations ( $\beta = -0.13$ ,  $z = 11.90$ ,  $p < .01$ ).

ceive that the situation creates strong obstacles that must be overcome to act favorably toward the attitude object, their attitude toward doing so is reduced in importance. If we accept students' ratings of social pressure and perceived difficulty as rough approximations of the subjective norms and perceived behavior control factors in the theories of reasoned action and planned behavior (Ajzen, 1985; Ajzen & Fishbein, 1977), then the current results provide additional support for ideas implicit in those theories. Social pressure and perceived difficulty may moderate the attitude-behavior relationship by introducing external constraints that detract from attitudes (a dispositional factor) as predictors of behavior.

### *Attitudes Toward Behaviors and Toward Targets*

An important goal of the present meta-analysis, though, was to extend these ideas beyond the traditional domain of the theories of reasoned action and planned behavior. As Eagly and Chaiken (1993) explained, the TRA and TPB were developed for attitudes toward behaviors and were never intended to describe the attitude-behavior relationship in regard to attitudes toward targets. Thus, we wondered whether the external constraints of social pressure and perceived difficulty would influence attitude-behavior relationships involving not only attitudes toward behavior but also attitudes toward targets.

Table 1 shows the results of linear regression analyses similar to those used to test the overall moderator effects of social pressure and perceived difficulty, but divided into separate analyses within various subsets of the attitude-behavior literature. The "attitude object" section of Table 1 separates the literature into studies that examined attitudes toward behaviors and studies that involved attitudes toward targets. As the first row of entries shows, there was significant attitude-behavior consistency in the 633 studies that examined attitudes toward behavior ( $r = .42$ ). More important, social pressure and perceived difficulty moderated the attitude-behavior relationship in such studies. Reading across the "behavior" row, it can be seen that, controlling for perceived difficulty, social pressure to perform a behavior reduced attitude-behavior consistency ( $\beta = -0.27$ ,  $z = 5.93$ ,  $p < .05$ ). Similarly, controlling for

social pressure, perceived difficulty reduced attitude-behavior consistency ( $\beta = -0.10$ ,  $z = 15.20$ ,  $p < .01$ ). In the case of studies that involved the types of attitudes and behaviors addressed by the TRA and TPB, external constraints similar to subjective norms and perceived behavior control reduced the relationship between attitudes and behavior.

Would these two moderator variables have the same impact on attitudes toward targets? The second row of entries in Table 1 displays relevant results, showing that in 368 studies of attitudes toward targets, the overall attitude-behavior correlation was .39. More important, social pressure and perceived difficulty moderated the attitude-behavior relationship in such studies in exactly the same way they did in studies of attitudes toward behaviors. When social pressure to behave favorably toward the attitude object was relatively high (controlling for perceived difficulty), attitude-behavior correlations were reduced ( $\beta = -0.35$ ,  $z = 15.12$ ,  $p < .01$ ). Similarly, when acting favorably toward the attitude object was perceived as relatively difficult (controlling for social pressure), attitude-behavior correlations were reduced ( $\beta = -0.27$ ,  $z = 19.59$ ,  $p < .01$ ). Even in studies that involved the types of attitudes and behaviors for which the TRA and TPB were not originally designed, external constraints similar to subjective norms and perceived behavior control reduced the relationship between attitudes and behavior. The first two rows of Table 1, then, suggest that the basic conceptual principles involved in the TRA and TPB apply to all studies of the attitude-behavior relationship, not merely to the types of studies that those theories were originally designed to explain.

### *Additional Analyses*

The remainder of Table 1 partitions the attitude-behavior research literature in other ways. The "type of behavior" section, for instance, divides studies into those that involved judgments (e.g., approve the use of affirmative action), behavioral intentions (e.g., intend to breast feed), or overt behaviors (e.g., wear seatbelts). The theories of reasoned action and planned behavior depict behavioral intentions as "closer" than overt behavior to the individual's attitude and thus less affected by external constraints such as subjective norms and per-

Table 1

*Predicting Attitude–Behavior Consistency Correlations From Social Pressure and Difficulty by Levels of Moderating Variables*

Variable	<i>k</i>	Unweighted <i>M</i>	Social pressure			Difficulty		
			<i>B</i>	$\beta$	<i>z</i>	<i>B</i>	$\beta$	<i>z</i>
Attitude object								
Behavior	633	.42	−.03	0.27	5.93*	−.02	−0.10	15.20**
Targets	368	.39	−.05	−0.35	15.12**	−.05	−0.27	19.59**
Type of behavior								
Judgment	91	.34	−.16	−0.64	22.32**	−.13	−0.55	25.58**
Intention	444	.48	−.02	−0.18	2.59*	−.01	−0.03	9.43**
Overt	466	.36	−.03	−0.30	3.99*	−.01	−0.09	12.88**
Publication form								
Journal article	888	.42	−.03	−0.31	10.04**	−.02	−0.13	22.88**
Presentation	18	.37	−.19	−1.28	28.10**	−.42	−1.76	20.44**
Dissertation	95	.39	−.05	−0.52	6.49*	−.05	−0.42	7.95**
Study setting								
Naturalistic	525	.40	−.03	−0.30	8.85**	−.03	−0.18	14.75**
Laboratory	474	.42	−.04	−0.33	14.13**	−.04	−0.22	20.85**
Behavioral measure								
Self-report	840	.42	−.04	−0.33	18.39**	−.04	−0.24	25.31**
Observed	161	.36	−.04	−0.26	3.99*	.03	0.18	5.66*
Number of behavior measures								
Single	273	.394	−.03	−0.28	9.28**	−.03	−0.23	11.19**
Multiple	728	.418	−.04	−0.18	10.57**	−.03	−0.16	20.79**
Delay								
Same session	584	.445	−.04	−0.23	11.71**	−.03	−0.17	22.15**
Different session	417	.366	−.02	−0.11	4.03*	−.01	−0.10	8.35*
Gender of participants								
Males only	64	.334	−.03	−0.30	4.42*	−.04	−0.30	5.01*
Females only	127	.379	−.07	−0.28	7.73**	−.05	−0.25	15.84**
Both	366	.383	−.03	−0.21	9.04**	−.03	−0.17	12.86**
Not specified	441	.445	−.03	−0.16	11.16**	−.03	−0.22	15.02**
Age of participants								
Children	15	.425	.02	0.34	3.73*	.06	0.64	1.95
Adolescents	98	.397	−.07	−0.85	15.68**	−.08	−0.61	22.07**
College students	448	.401	−.03	−0.21	8.00**	−.03	−0.17	9.60**
Adults	362	.437	−.03	−0.17	1.51	−.01	−0.03	10.33*
Not specified	78	.390	−.03	−0.26	3.48*	−.02	−0.13	7.04*

\* $p < .05$ . \*\* $p < .01$ .

ceived behavioral control. Consistent with these models, the three types of behavior differed significantly in their effect sizes,  $Q_B(2) = 198.56, p < .01$ . Attitudes were most consistent with behavioral intentions ( $r = .48$ ), less consistent with overt behavior ( $r = .36$ ), and least consistent with judgments ( $r = .34$ ). As shown in Table 1, social pressure and perceived difficulty significantly reduced the attitude–behavior relationship for all three types of behavior: intentions, overt behaviors, and judgments.

Other distinctions in Table 1 may seem more methodological than conceptual but are still of interest. As shown in the relevant section of Table 1, publication form was significantly re-

lated to attitude–behavior consistency,  $Q_B(2) = 267.92, p < .01$ . The 888 journal articles involved significantly greater consistency ( $r = .42$ ) than did dissertations ( $r = .39$ ) or presentations ( $r = .37$ ). More important for the present review, the relevant rows in Table 1 show that social pressure and perceived difficulty led to reduced attitude–behavior consistency in the case of both journal articles, where methodological rigor would be expected to be greatest, and dissertations and presentations.

Study setting was related to effect sizes, with smaller attitude–behavior correlations observed in naturalistic settings ( $r = .40$ ) than in laboratory settings ( $r = .42$ ),  $Q_B(1) = 158.82, p <$



.01. Again, social pressure and perceived difficulty had the expected moderating impact on the attitude–behavior relationship in both types of settings.

The next section of Table 1 shows that the method used in measuring behavior influenced effect sizes. The 840 studies in which participants reported their own behavior had higher effect sizes than the 161 studies in which the experimenter directly observed and recorded what participants did,  $r_s = .42$  and  $.36$ , respectively,  $Q_B(1) = 158.75$ ,  $p < .01$ . Unexpectedly, however, social pressure and perceived difficulty differentially moderated effect sizes from studies that involved the use of the two different methods of measuring behavior. When we consider what participants reported to the experimenter, social pressure to behave favorably toward the attitude object reduced attitude–behavior consistency ( $\beta = -0.33$ ,  $z = 18.39$ ,  $p < .01$ ), as did perceived difficulty of performing the behavior ( $\beta = -0.24$ ,  $z = 25.31$ ,  $p < .01$ ). When we consider what experimenters directly observed, perceived difficulty ( $\beta = 0.18$ ,  $z = 5.66$ ,  $p < .01$ ) was a significant moderator in the “wrong” direction, and social pressure ( $\beta = -0.26$ ,  $z = 3.99$ ,  $p < .05$ ) was a significant moderator in the correct direction, an anomalous result that is difficult to explain.

As shown in Table 1, attitude–behavior correlations were lower when investigators used a single behavioral measure than when they collapsed across two or more behavioral measures ( $r = .39$  vs.  $.42$ ),  $Q_B(1) = 154.65$ ,  $p < .01$ , for the difference. Presumably, this difference reflects the greater reliability of aggregated measures. For the present purposes, it is noteworthy that social pressure and perceived difficulty significantly reduced the attitude–behavior relationship, whether the study involved a single measure or multiple measures of behavior.

Attitude–behavior consistency depends on delay between the attitude and behavior measures. The majority of effect sizes ( $k = 584$ ) were based on procedures in which the attitude and the behavior were measured in the same session. Not surprisingly, these single-session studies reported significantly larger effect sizes than did studies in which the attitude was measured in one session and the behavior in a separate (usually later) session,  $r_s = .45$  and  $.37$ , respectively,  $Q_B(1) = 175.07$ ,  $p < .01$ . As Table 1 also shows, both subjective norms and perceived difficulty significantly moderated the

attitude–behavior relationship when the attitude and the behavior were measured in the same session, as well as when the attitude and the behavior were measured in different sessions.

Attitude–behavior consistency differed among studies that differed in terms of participant gender,  $Q_B(3) = 232.96$ ,  $p < .01$ . As can be seen in Table 1, the majority of studies ( $k = 441$ ) did not specify the gender of the participants; as also can be seen, this group of studies reported the largest effect sizes ( $r = .45$ ). Social pressure and perceived difficulty had the expected impact on attitude–behavior consistency in the case of each gender group.

The final section of the table reveals different degrees of attitude–behavior consistency among participants of different ages,  $Q_B(4) = 159.59$ ,  $p < .01$ . Contrary to criticisms of social psychology as applying only to college sophomores (see Snyder & Ickes, 1985), the highest levels of attitude–behavior consistency were found among children ( $r = .43$ ) and adults ( $r = .44$ ), and not among college students ( $r = .40$ ). Social pressure and perceived difficulty had the expected effects on attitude–behavior consistency among adolescent participants and college students. In the case of the studies of adults and the few studies of children and participants of unspecified ages, only one of the external constraints had a statistically significant moderating impact.

## General Discussion

The present review, the first to meta-analyze extensively the “behavior” side of the attitude–behavior relationship, replicated previous estimates of the typical level of attitude–behavior consistency. Here, in the largest English-language meta-analysis to date, attitudes proved to be reasonably effective predictors of behavior across 287 different types of behavior from 1,001 effect sizes involving 316,085 participants. The average correlation of  $.41$  was almost identical to the correlations reported in previous meta-analyses of the attitude–behavior relationship by Kraus (1995; 88 studies), Shepard et al. (1988; 87 studies), and Six and Eckes (1996 [in German]; 887 studies).

As noted in the introduction, the average attitude–behavior correlation was also larger than the average effect size ( $r$ ) of  $.21$  in 33,000 social psychological studies recently compiled. Indeed, the typical attitude–behavior correlation of  $.41$  was at the 87th percentile in size relative

to average effect sizes in 322 social psychological meta-analyses summarized by Richard et al. (2003). Certainly, attitudes do not entirely “determine for each individual what he will see and hear, what he will think, and what he will do” (Allport, 1935, p. 810), but they have also proved sufficiently predictive to be dismissed as unworthy of study. The present review contributes to knowledge of the attitude–behavior relationship not merely by confirming its overall level in a large-scale analysis but also by examining the roles of social pressure and perceived difficulty as situational constraints, exploring the impact of additional behavior-relevant factors, and providing a chronological record that might prove valuable to future researchers.

### *Social Pressure and Perceived Difficulty*

Consistent with the present study’s central hypothesis, behaviors that differed in social pressure and difficulty also differed in how readily they have been predicted from attitudes. As Snyder and Ickes (1985) suggested, studies that used behaviors relatively high in external constraints, such as social pressure and perceived difficulty, reported smaller effect sizes than did studies that used behaviors relatively low in such constraints. Strong situations decrease the utility of individual-differences measures as predictors of behavior, because they provide salient extra-attitudinal cues to guide behavior, induce uniform expectancies regarding the most appropriate response pattern, and provide incentives for performing that response pattern (Mischel, 1977).

Many previous theorists have noted the importance to attitude–behavior consistency of social pressure and perceived difficulty. Commenting on the impact of social pressure, Kutner, Wilkins, and Yarrow (1952) suggested that individuals may fear creating a public disturbance if they express attitudes that would be unpopular to an immediate audience. Thus, they do nothing. Similarly, Campbell (1963) suggested that the situational threshold for expressing negative feelings toward an ethnic group on a questionnaire might be lower than the threshold for face-to-face discrimination. One might argue instead the seemingly opposite contingent consistency hypothesis that deviant behaviors are enacted only with both a positive attitude and strong social pressure to perform the behavior, but this facilitative effect of social pressure

typically involves a relaxation of disapproval rather than strong approval and occurs only when a small reference group, often in contrast with the social consensus, enacts rather than merely favors the behavior (Grube & Morgan, 1990).

### *Relevance to the TRA and TPB*

The present results might be interpreted as strongly supporting the TRA and the TPB (Ajzen, 1985; Fishbein & Ajzen, 1975), in which attitudes are just one of several factors that influence behavioral intentions and behavior. These theories were designed to address the impact of subjective norms and perceived control on the consistency of behaviors with attitudes toward performing those behaviors (Eagly & Chaiken, 1993). They were not designed to address studies in which attitudes were reported toward a target such as a group or issue, attitudes toward targets being considered variables external to the model (Ajzen & Fishbein, 1980). Analogues to the two nonattitude variables in the TPB (subjective norms and perceived behavioral control) were shown in the present meta-analysis to be significant moderators of the attitude–behavior relationship when collapsing across all studies of this relationship, and they were shown to moderate the relationship significantly and in the same direction in studies that involved attitudes toward targets as in studies that involved attitudes toward behaviors. Because the principles of the TRA and the TPB generalized so readily to the attitude–behavior relationship for attitudes toward targets, it seems even more likely than it had previously that the TRA and TPB accurately describe cognitive processes that inform both attitude reports and behavioral choices in attitude-relevant situations. The stage is thus set for future investigation of those cognitive processes in all rather than only a subset of attitude-relevant domains.

That stated, one must admit that the constructs used in the present research may not have been perfectly analogous to the constructs described in the TRA and the TPB. We measured perceived social pressure, for instance, merely by asking raters to estimate the extent to which other people would approve of each behavior. Studies of the TRA and TPB, in contrast, typically measure subjective norms by asking participants how strongly a significant other thinks they should perform the behavior,

asking them how much they care what that significant other thinks, and then multiplying the two ratings (e.g., Sheeran, Abraham, & Orbell, 1999; Sheeran, Orbell, & Trafimow, 1999). The present procedures leave open the question of whether participants in the relevant studies were responding to their own internal moral guidelines, to the norms of their specific reference group, or to information about broader societal norms (Armitage & Conner, 2001). Consistent with the present results, in the case of negative behaviors, strong moral norms are known to decrease the relationship between attitudes and behavioral intentions (Conner & McMillan, 1999), but the types of norms that are salient might vary from one type of behavior to another (Armitage & Conner, 2001).

Although our measure of perceived difficulty was essentially equivalent to that used for perceived behavioral control in the TPB, the discrepancy between measurements of perceived social pressure and subjective norms might cast doubt on the conceptual equivalence between moderation of attitudes toward behaviors and moderation of attitudes toward targets and, thus, on the generalizability of principles from the TRA and the TPB to all studies of attitude-behavior consistency. Indeed, several studies of the TPB have revealed differences between perceptions of self-efficacy (having the internal skill or ability to enact the behavior) and perceptions of control (encountering a relatively easy task; Armitage & Conner, 1999; Terry & O'Leary, 1995). Across relevant studies, the greater a participant's perception of control, which seems more analogous to what our judges were asked to rate as "ease," the greater the attitude-intention relationship (Armitage & Conner, 2001). Thus, the present findings are informative, but not conclusive, regarding key constructs within the TRA and the TPB.

### *Additional Findings*

The present review differed from previous reviews by focusing on the behavior side of the attitude-behavior relationship. Several behavioral variables produced interesting results that might not have been apparent in a smaller sample of studies. Some of these additional findings confirmed commonsense predictions. Journal articles reported larger attitude-behavior correlations than dissertations or presentations. Laboratory settings produced larger correlations

than naturalistic settings. Self-reports yielded larger correlations than behavioral observations. Correlations were attenuated by the introduction of delays between the attitude and behavior measures. Although these phenomena have been widely discussed, they have never been previously tested on such a large attitude-behavior database.

Other findings would have been harder to anticipate. One intriguing and unexpected finding from the present meta-analysis was that social pressure significantly moderated the attitude-behavior relationship in regard to both self-reported and directly observed behaviors, but perceived difficulty did not. When the behavioral measure was self-reported, attitudes were better predictors of behaviors low than high in social pressure, the same relationship observed for studies overall. When the experimenter directly observed the behavior, in contrast, perceived difficulty was a significant moderator, but in the opposite direction. One possible explanation might be that perceptions of task difficulty differ from actual task difficulty in immediate experimental situations but not in retrospective memories (Ross, 1989).

In addition, the present review supported the generality of social pressure and perceived difficulty as moderators of attitude-behavior consistency by revealing that they were significant moderators in both studies with a single behavioral measure and studies with multiple behavioral measures. Furthermore, they were significant moderators in studies with and without a delay between attitude and behavioral measures, in naturalistic and laboratory settings, and in studies that involved most age groups. Contrary to a common stereotype of social psychological research, effect sizes were not largest among college student samples. Instead, the relationship between attitudes and behavior proved stronger for children and adults than it did for college students. From the logic that guided the present review and meta-analysis, however, this finding might have been anticipated. In commenting on the relative merits of strong and weak situations, Snyder and Ickes (1985) noted that most laboratory experiments are conducted with college students, who tend to be less variable in terms of their personal, intellectual, social, and demographic characteristics than are members of the population at large. In such studies, experimenters "minimize the extent to which social behavior will be a

reflection of the personal attributes (e.g., attitudes, traits, disposition, self-conceptions) of the individual participants" (Snyder & Ickes, 1985, p. 915).

### *A Chronological Record*

We believe that the present review and meta-analysis contributes to the literature on attitude-behavior consistency by providing an English-language archive (see Appendix A) of relevant studies conducted during the first 60 years of investigation on a topic of central importance to social psychology: the attitude-behavior relationship. Through the chronological record afforded by Appendix A, it is possible to detect, as the present meta-analysis did, an underlying stability of effect sizes despite changes in the selection of behaviors that researchers have attempted to predict.

Fishbein and Ajzen (1975) provided criteria for selecting attitudes and behaviors that will produce maximal correlation coefficients. The present review's archive of 287 behaviors and their effect sizes might also prove useful to future investigators. If a researcher's primary interest is in a moderator variable, for instance, the list in Appendix A might prove valuable in selecting a behavioral measure that has been used in several previous studies and found to have a relatively large overall effect size, because it would be difficult to detect moderation if the overall attitude-behavior correlation for the chosen behavior were poor. Similarly, the present review might serve as a warning, if one wants to examine moderator variables, against using behaviors that are high in social desirability or perceived difficulty, or both. We hope that the present review will both encourage new research on attitude-behavior consistency and provide some useful guidelines for designing behavioral measures.

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