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From Willingness to Intention: Experience Moderates the Shift From Reactive to Reasoned Behavior

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Abstract

Three studies compared the predictive validity of three proximal antecedents to risk behavior: behavioral intention (BI), behavioral expectation (BE), and behavioral willingness (BW). In Study 1, BW was the only significant predictor of change in substance use in early adolescence (age 13), whereas only BI was significant in middle adolescence (age 16). In Study 2, BW was a better predictor of change in smoking among young adolescents than was BE, but BE became predominant by middle adolescence. By late adolescence, previous behavior surpassed both BE and BW. When only smoking initiation was examined, BW was a better predictor than was BE. In Study 3, BI, BW, and BE independently predicted class skipping. However, BI was a better predictor for students more experienced with the behavior, whereas BW was superior for less experienced students. The findings provide evidence of a developmental shift from more reactive to more reasoned processing, as experience with the behavior increases.

Keywords

reasoned vs. reactive processing; behavioral intention; behavioral willingness; behavioral expectations

Most models of social behavior assume that the decision to engage in a particular behavior is the result of a deliberative, goal-oriented process that follows a logical sequence (Ajzen, 1985; Rogers, 1983). In this sequence, behavioral options are considered, the consequences of each option are evaluated, and a decision to act or not act—a behavioral intention—is made. Prime examples of this type of expectancy-value perspective are the theory of reasoned action (Fishbein & Ajzen, 1975) and its update, the theory of planned behavior (Ajzen, 1991). These models have proved to be very effective at predicting a number of

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more rational and/or reasoned behaviors (e.g., voting, donating blood; for reviews see Ajzen & Fishbein, 2005; Armitage & Conner, 2001).

Intention → Behavior

Intentions are assumed to reflect the motivational factors that underlie actions; in other words, how much effort an individual is planning to exert to perform a specific behavior (Ajzen, 1991). Behavioral intention (BI) plays a central role in the theories of reasoned action and planned behavior, as it is the *only* proximal antecedent to behavior in these theories. It has done well in this regard: Meta-analyses have consistently found high correlations between intentions and behavior (e.g., $r_+ = .47$; Armitage & Conner, 2001). Recent evidence, however, has suggested that intentions may not play as large a role in predicting behavior as previously thought. In a meta-analysis of experiments (interventions) that attempted to *change* intentions *and* measured changes in behavior, Webb and Sheeran (2006) found medium to large effects for predicting changes in intentions ($d = .66$) but only small to medium effects for change in intentions predicting changes in behavior ($d = .36$). In addition, the effect of intervention on behavior was not fully mediated by changes in intention, suggesting that additional factors need to be taken into account. In particular, Webb and Sheeran suggested future behavioral change research should investigate *nonreasoned* processes, as outlined in the prototype/willingness model (PWM; described later).

One suggestion for improving the predictive strength of BI has been to use measures of behavioral expectation as a supplement to, or substitute for, BI (see Table 1). Behavioral expectation (BE) is defined as an “individual’s estimation of the likelihood that he or she will perform some specified future behavior” (Warshaw & Davis, 1985, p. 215). BI and BE are similar cognitively in that they both reflect some premeditation about the behavior and its consequences. And, in fact, they are often used interchangeably (see Armitage & Conner, 2001). What distinguishes the two is that BE involves an additional appraisal of the personal and situational factors that may be influential. For certain behaviors, then, BE may be a better predictor than BI (Gibbons & Gerrard, 1997; Parker, Manstead, Stradling, & Reason, 1992). In particular, a person may recognize that a behavior is inappropriate (e.g., drunk driving) and have no plans to engage in the behavior but nonetheless realize that it is likely that he or she will do it some time in the future. This is especially true among individuals with some previous experience with the behavior.

The PWM

Not all behaviors are planned or goal based, however. Gibbons and Gerrard developed the PWM to help understand and predict the occurrence of behaviors that could be considered neither reasoned nor rational (Gerrard et al., 2002; Gibbons, Gerrard, & Lane, 2003; Gibbons, Gerrard, Reimer, & Pomery, 2006). In particular, the model was designed to examine risky behavior (e.g., drug use, unprotected sex) among adolescents and young adults. It is based on three related assumptions that emphasize the social nature of these behaviors: (a) Although many risk behaviors are volitional, they are neither reasoned nor intentional; instead, they are reactions to circumstances that are risk conducive. (b) For young people, most health risk behaviors are social events (Nadler & Fisher, 1992) that have identifiable social images associated with them. (c) When an opportunity to engage in a risky behavior is available, this social image is influential in the adolescents’ decision.

Risk Prototypes

The first focal construct of the PWM is prototypes or images. Numerous studies have demonstrated that people—especially young people—have distinct images of the type of

person who engages in risk behaviors (Burton, Sussman, Hansen, Johnson, & Flay, 1989; Chassin, Tetzloff, & Hershey, 1985). According to the PWM, people realize that if they perform a behavior publicly, they are likely to be identified as members of the group that the image represents (e.g., the “typical smoker”). In this sense, the images are social consequences of the behavior—engage in the behavior and acquire the image. Thus, the less acceptable the image is perceived to be, the less willing the individual is to engage in the behavior.

Willingness

The second focal construct in the PWM is behavioral willingness (BW). Briefly, BW reflects an individual’s openness to opportunity, that is, his or her willingness to perform a certain behavior in situations that are conducive to that behavior. Relative to BI and BE, BW involves little precontemplation of the behavior or its consequences (Gerrard et al., 2002; Gerrard et al., 2009; Gibbons, Gerrard, Ouellette, & Burzette, 1998). Nonetheless, it is assumed that even young people have an idea of how they *might* react in risky situations, even though they have no intention or even expectation of being in those situations (Gibbons et al., 2006). Some researchers consider BW and BE to be alternate forms of BI (Ajzen & Fishbein, 2005; Fishbein, 2008). In fact, the three constructs are clearly similar (see Table 1) and tend to be highly correlated; however, evidence is accumulating that they are independent predictors of behavior. Specifically, BW adds to the predictive validity of BI or BE for certain kinds of behavior (risky sex, drinking and driving), especially among adolescents (Gerrard et al., 2006; Gibbons et al., 2004; Spijkerman, van den Eijnden, & Engels, 2005; Thornton, Gibbons, & Gerrard, 2002; van Empelen & Kok, 2006).

Age and Experience as Moderators

The decision-making process is different for adults—who are likely to have much more experience with risk behavior and risk-conducive situations than are adolescents. In fact, there is some indirect support in the expected utility literature for the idea that age influences the relation between BI and behavior (e.g., Kashima, Gallois, & McCamish, 1993). In their meta-analysis of the intention–condom use relation, Sheeran and Orbell (1998) found that the effect size for adolescents was significantly smaller than that for older samples ($r_s = .25$ vs. $.50$). They suggested this is a reflection of differences in experience with situations in which condom use decisions are made rather than age per se. Beck and Ajzen (1991) reported similar reasoning in their discussion of why the theory of planned behavior was less effective in explaining performance of dishonest activities (e.g., shoplifting, lying). They concluded that “lack of experience and lack of insight into one’s own motivations and capabilities may result in reports or beliefs, attitudes, and intentions that are not sufficiently reflective of a person’s true dispositions to permit accurate prediction of later behavior” (p. 299).

Those with less experience are less likely to anticipate potential problems. This is one reason their behavior is likely to be more reactive than planned. As people gain experience with a behavior or behavioral situation, however, they become increasingly aware of the circumstances that typically precede the behavior. With this experience comes an increased awareness of what is likely to happen in the future (BE), as well as increased contemplation of the behavior and its consequences—characteristics of BI. Although BW does not decline in magnitude as experience increases, its predictive power—relative to BI and BE—should decrease.

Increasing evidence from brain and behavioral sciences suggests that age, which of course is usually correlated with experience, also plays a role in risky decision making (Sternberg, 2007). Specifically, adolescents are posited to engage in more risky behavior because of the

way in which brain networks mature. Whereas the system that is involved in planning, thinking, and self-regulation (the cognitive-control network) tends to mature gradually over the course of adolescence (e.g., Anderson, Anderson, Northam, Jacobs, & Catroppa, 2001), the system that relates to processing of rewards and is sensitive to social and emotional stimuli (the socioemotional network) is influenced by hormonal changes during puberty (e.g., Galvan et al., 2006). Thus, younger adolescents are more likely to rely on the socioemotional network in certain situations (e.g., in the presence of peers). These lines of research also suggest that BW will be more effective than BI at predicting risky behaviors during early adolescence.

Current Studies

The current studies examined the hypothesis that age and experience distinguish reactive responding from reasoned responding (cf. Gibbons & Gerrard, 1997). More specifically, young people, who have had little experience with a risk behavior or behavioral opportunity, are not likely to plan (intend), or even expect to engage in that behavior. However, they may have an idea about how they might respond if the (risk) opportunity presented itself. Their willingness to perform the behavior, therefore, should be a better predictor of future behavior than either their BI (examined in Study 1) or BE (Study 2). With age and experience, the behavior no longer reflects just a reaction to opportunity (BW). Instead, individuals become more likely to create or anticipate situations rather than simply respond to them and so behavior becomes more deliberate (premeditated). Thus, BI and BE will eventually surpass BW in predictive validity. This developmental hypothesis is at the core of the PWM; it has yet to be tested empirically, however. Finally, Study 3 directly examined the hypothesis that experience moderates the relations between behavior and all three proximal antecedents.

STUDY 1

Using data from a longitudinal study of African American families, adolescents' substance use behavior was regressed on their previous behavior, BI, and BW. It was expected that BW would be a superior predictor of behavior change when the adolescents were younger (ages 12–13), whereas BI would be a stronger predictor when the adolescents were older (ages 15–16).

Method

Participants and Procedure—Participants were members of the Family and Community Health Study (FACHS). FACHS is a prospective study of psychosocial factors affecting the physical and mental health of African American families living in nonurban areas—rural farm communities, suburbs, and small metropolitan areas—in Iowa and Georgia. A total of 897 families with a 10- to 12-year-old target child were recruited for participation in FACHS at the first wave (T1). T2 occurred 2 years after T1, and T3 occurred 3 years after T2. Details on recruitment and retention are available elsewhere (Cutrona, Russell, Hessling, Brown, & Murry, 2000; Simons et al., 2002). Data were collected by African American interviewers who resided in the participants' communities and had extensive training in the administration of the instruments. Each session included a computer-assisted personal interview (CAPI). Sample sizes were 707 for the T2/T3 analyses and 639 for the T3/T4 analyses; mean ages were T2 = 12.3, T3 = 15.5, and T4 = 18.7. The current analyses are based on data from T2 to T4 because there was very little use (or BW or BE) at T1.

Measures

Behavior: Substance use at each wave was computed by summing responses from seven items: three for alcohol use (drink and drink a lot in the last year, and lifetime use) and two each for marijuana and cigarette use (past year and lifetime use), each coded 0 = *no use* and 1 = *use*; thus, indices ranged from 0 to 7 (as for each wave > .81).

BI: BI indices at T2 and T3 were created by averaging responses to three items: “Do you plan to smoke cigarettes in the next year?” (1 = *do not plan to*, 2 = *probably won’t*, 3 = *probably will*, 4 = *do plan to*), “How much alcohol do you plan to drink in the next year?” (1 = *none*, 2 = *a little*, 3 = *3 or more drinks at one time*), and “Do you plan to use drugs in the next year?” (1 = *do not plan to*, 2 = *probably won’t*, 3 = *don’t know*, 4 = *probably will*, 5 = *do plan to*). All scales were recoded to 3 points (1 = *none*, 3 = *high*; α s = .60 for T2 and .55 for T3).

BW: Research based on the PWM has typically measured BW by asking participants to imagine themselves in different hypothetical situations that are risk conducive and then indicate what they would be willing to do under those circumstances. The BW index at each wave was created by averaging responses to six questions based on three different scenarios (drinking, smoking, and marijuana use; α s = .82 for both T2 and T3). For example, the smoking scenario was:

Suppose you were with a group of friends and some of them were smoking. There are some extra cigarettes there that you could have if you wanted. How willing would you be to take one and smoke it ... smoke more than one cigarette?

Each item was measured using 3-point scales (1 = *not at all willing*, 2 = *kind of willing*, 3 = *very willing*).

Results

Descriptive Statistics—At T3, 45% of the sample reported any substance use ($M = 1.26$, $SD = 1.82$); by T4, 64% reported some use. On average, adolescents (who were using) reported having used two of the seven substances. At T2, intention and willingness to use were both low (M s = 1.08 and 1.08; SD s = 0.23 and 0.21); as expected, both had increased by T3 (BI: $M = 1.18$, $SD = 0.34$; BW: $M = 1.19$, $SD = 0.34$). Females reported higher willingness and intentions at T2 (p s < .03), but there were no other significant gender differences.¹

Regression Analyses

T3: Each predictor was significantly correlated with T3 substance use (r s > .18, p s < .001), and T2 BI and BW were strongly correlated ($r = .65$, $p < .001$). When T3 use was regressed on age, T2 use, BI, and BW (see Table 2), past behavior and age were both strong predictors of future behavior (β s = .22 and .13, t s = 5.05 and 3.53, p s < .001). As expected, BW predicted use at T3 ($\beta = .16$, $t = 3.08$, $p < .002$), but intentions to use did not ($\beta = -.03$, $t = -0.72$, ns).

T4: Once again, all (T3) predictors were significantly correlated with (T4) use (r s > .29, p s < .001); T3 BI and BW were again correlated ($r = .72$, $p < .001$). When T4 use was regressed on T3 age, use, BI, and BW, past behavior was a stronger predictor of use ($\beta = .34$, $t = 6.31$, $p < .001$; see Table 2). However, as expected, a different pattern emerged with

¹For each study, gender differences were examined and either no gender differences were found, or there was no consistent pattern. Therefore, for simplification, gender was not included in any of the analyses.

respect to BI and BW: BW was not significantly related to future use ($\beta = -.03$, $t = -0.53$, ns), whereas BI was ($\beta = .11$, $t = 2.06$, $p = .04$). Age was no longer significant.

Discussion

Study 1 demonstrated a change in predictive validity of BW relative to BI across three waves: BW predicted change in use from ages 12.3 (T1) to 15.5 (T2), and then BI predicted from age 15.5 (T2) to 18.7 (T3). Although only suggestive, these findings are consistent with the hypothesis that substance use was more reactive (to situational contexts) in early adolescence and became more planful as participants aged. Substance use becomes more normative the older adolescents get, so the shift (from BW to BI) is not unexpected, as their intentions are increasingly based on past behavior—even vicarious behavior (observing others' actions). Using a longitudinal study with more frequent waves of data collection, Study 2 examined smoking behavior over time.

STUDY 2a: SMOKING ESCALATION

Study 2 examined the relations among BE, BW, and subsequent behavior using a similar longitudinal design. BE measures were included instead of BI. Smoking behavior and cognitions were measured annually over 6 years in a panel of Caucasian adolescents. The first prediction was the same as in Study 1: In early adolescence (approximately ages 13–14), BW would be a more powerful predictor of behavior than BE. Over time, as adolescents become more self-aware and more capable of predicting their behavior (ages 16–17), the predictive power of BW will give way to BE. Second, it was expected that the predictive utility of BE over time would be curvilinear. When smoking habits are developing in middle adolescence, BE will predict behavior. In late adolescence (approximately ages 18–19), however, when these habits are more developed (Wills, Sandy, & Shinar, 1999), BE should become largely a reflection of past experience and behavior. Thus, it should not predict future behavior *net* past behavior.

Method

Participants and Procedure—At T1, the sample comprised 245 male and 255 female adolescents from rural areas in Iowa who had been recruited for a study on psychosocial factors related to health behaviors. The mean age was 14.4 ($SD = 1.1$ yrs.). From that group, 476 completed all of the measures at T2, 456 at T3, 411 at T4, 377 at T5, and 347 at T6.² Most participants were interviewed in their homes; those not living with their parents received questionnaires in the mail (for a full description of the sample and procedures, see Gerrard, Gibbons, Benthin, & Hessling, 1996). Families received \$55 for participating. The interval between waves was approximately 1 year. Because our interest was in examining the development of smoking cognitions, adolescents who reported smoking everyday at T1 ($n = 6$) were excluded from the analyses. Sample sizes for each analysis are reported in Table 3.

Measures

Behavior: Smoking was assessed at each wave by asking, “How often do you smoke now?” followed by a 4-point scale (1 = *not at all*, 4 = *every day*).

BE: BE was measured at T1–T3 by asking, “Do you think that you will smoke cigarettes in the future?” followed by a 7-point scale (1 = *I definitely will not*, 7 = *I definitely will*). At T4,

²Adolescents who were in both the first (T1/T2) and last (T5/T6) regressions ($n = 318$) were compared with those who were only in the first regression ($n = 123$) on T1 measures. There were no significant differences for any of the measures; thus, there was no evidence (in our data) of differential attrition.

a similar item was used (“Do you think that you will smoke cigarettes in the next year?”). At T5, the BE item was, “How likely is it that you will smoke in the next 12 months?” followed by a 7-point scale (1 = *not at all likely*, 7 = *very likely*). Wording of the items is similar to other BE measures (Warshaw & Davis, 1985); that is, as participants aged and smoking became more likely, the BE measure became more specific timewise (cf. Ajzen & Fishbein, 2005).

BW: BW used the following scenario: “Suppose you were with some friends and one of them offered you a cigarette. How willing [likely] would you be to take it and try it?” This was followed by a 7-point scale (1 = *not at all willing [likely]*, 7 = *very willing [likely]*). From T1 to T4, the BW item used the word *likely*; at T5, *willing* was used³ (α across the five waves = .84).

Results

Descriptive Statistics—Means, standard deviations, and correlations are presented in Table 4. Smoking behavior increased over time (Miller, 2005), as did BE and BW, with BW being consistently higher than BE ($ps < .001$). As in previous studies, the correlations between BW and BE were strong. Likewise, correlations between behavior, both future and current, and BE and BW increased over time. The correlations between future behavior and BE and BW both remained significant when the other construct was partialled out (see Table 4).

Regression Analyses

BW: A series of five hierarchical regression analyses were conducted. In each case, behavior was regressed on age, previous behavior, BE, and BW (see Table 3 and Figure 1). As expected, BW was a significant predictor of change in behavior in early adolescence (T1–T3; all $\beta s > .13$, $ts > 2.20$, $ps < .03$), and it was a stronger predictor than BE for the first two regressions. As the adolescents aged, however, the predictive power of BW declined, giving way first to BE and past behavior and then just past behavior.

BE: As expected, the predictive utility of BE was curvilinear. At T1, most adolescents had very little past smoking experience, and smoking expectations did not predict change in their behavior ($\beta = .07$, $t = 1.41$, ns). However, the level of BE *and* its predictive power both increased up to T4/T5 (T2/T3: $\beta = .11$, $t = 1.82$, $p = .07$; T3/T4: $\beta = .21$, $t = 3.84$, $p < .001$; T4/T5: $\beta = .20$, $t = 2.78$, $p < .01$). At the final wave (ages 18 or 19), smoking patterns appeared to be fairly well established and the behavior appeared to be largely controlled by routines or habit; by then, BE added nothing above past behavior (cf. Ouellette & Wood, 1998).

Logistic regressions: When smoking was coded as dichotomous (yes–no), logistic regressions produced a slightly different pattern of results. BE was significant at the three middle waves (T2/T3 to T4/T5; Wald statistics > 5.04 , $ps < .03$). Unlike the linear regressions, however, BW was a significant (independent) predictor at every wave (Wald statistics > 4.67 , $ps < .03$) primarily because previous behavior had less predictive power (i.e., it predicted *amount* of smoking better than whether adolescents had smoked). Thus, even in late adolescence, there appears to be a reactive element to smoking for some individuals.

³The current version of the prototype/willingness model was being developed during T1–T4 of this study. The behavioral willingness (BW) item was reworded slightly to better fit conceptualization of the BW construct.

Discussion

As with Study 1, these findings offer support for the hypothesis that over time, the primary proximal antecedent of behavior shifts from BW to BI/BE. As predicted, in the early waves, BW was a significant predictor of future smoking behavior, reflecting the fact that smoking is a social reaction for many young adolescents; then, as in Study 1, it gave way to BE.⁴ The curvilinear predictive pattern anticipated for BE was also apparent, as it peaked around age 16 or 17. At that age, behavior is still partly reactive, but adolescents have more self-awareness, and so BE does predict their actions. Finally, past behavior became a better predictor over time (Stanton, Barnett, & Silva, 2005). Thus, the predictive power of BE and BW vis-à-vis past behavior decreased over time even though absolute levels of both continued to increase.

STUDY 2b: SMOKING INITIATION

Because the regressions in Study 2a included previous behavior, they provided a conservative test of the predictive power of both proximal antecedents, BW and BE (Weinstein, 2007). Moreover, because BE is partly a reflection of previous behavior (Gordon, 1990), it may have had an “advantage” over BW in that for some participants—those who had already started smoking—there was a clear basis for their prediction of the likelihood of future smoking. Consequently, additional analyses were conducted predicting smoking *initiation* at each wave, by including only participants who reported at the first of each pair of waves that they had smoked two or fewer times in their lives. The prediction was that the predictive “superiority” of BW over BE would extend into later waves. By age 18 or 19, however, adolescents were expected to be relatively accurate in their predictions of how likely it was that they would start smoking in the next year; thus, BE should predict behavior.

Methods

The methods used in Study 2a are identical to those used in Study 2b.

Results

Descriptive Statistics—The number of adolescents who initiated smoking ranged from 11 to 17 per wave (hazard rates of 4%–6%). Descriptive statistics and correlations for the measures are presented in Table 5. BW and BE were correlated at each wave ($r_s = .43$ – $.52$, $p_s < .001$) but not as strongly as they were in Study 2a. BW was significantly correlated with future behavior ($r_s > .18$, $p_s < .001$); when BE was partialled out, four of the five BW–behavior correlations remained significant. BE was not significantly correlated with future behavior at T1, but it was from then on ($r_s > .10$, $p_s < .05$). However, partialing out BW resulted in the BE–behavior correlations at T2/T3 and T3/T4 becoming nonsignificant.

Regression Analyses—As can be seen in Table 3, BW was a significant predictor of behavior at the next wave for four of the five regressions, with β s ranging from .14 to .29 ($t_s > 2.37$, $p_s < .02$; the one exception being the T4/T5 regression: $\beta = .09$, $t = 1.21$, ns). BE was a nonsignificant predictor in the first three regressions but became significant at T4/T5 ($\beta = .39$, $t = 5.37$, $p < .001$) and remained significant at T5/T6 ($\beta = .17$, $t = 2.15$, $p = .03$). Once again, logistic regressions revealed a similar pattern of results, with BW being a better predictor than BE of a dichotomous smoking variable in four of the five regressions.

⁴An interesting exception to this pattern can be seen in a study by Fishbein, Cappella, Lerman, and Hennessey (2005), who used the same BW measure as that in Study 2a and found that it predicted smoking *cessation* net behavioral expectation (BE) among *adult* smokers. This suggests that adults who are trying to quit a behavior may maintain intentions to do so while acknowledging some BW to continue the behavior. This has important implications for substance interventions that are worthy of future research.

Discussion—For those who had not previously engaged in the behavior, BW was a significant predictor of smoking 1 year later in all but one regression. This finding suggests that BW is an antecedent to risk behaviors for adolescents who are inexperienced with the behavior—regardless of age. Moreover, these studies offer further evidence that BI/BE is not the sole proximal antecedent to behavior for certain populations. As adolescents age, they become more capable of predicting how they will act in certain situations—even if they have not yet engaged in the behavior. Thus, reasoned (proximal) antecedents, BI and BE, become more effective in predicting behavior. Both Studies 2a and 2b, therefore, *suggest* that experience with the behavior is a critical factor in distinguishing the reactive antecedent (BW) from the more reasoned antecedent (BE). That hypothesis was tested directly in Study 3.

STUDY 3

Study 3 examined the extent to which experience moderates the predictive validity of the three proximal antecedents. This time, the behavior was skipping class in college. Although not related to health, skipping class is clearly a type of risk behavior. Theoretically, then, the process should be similar to that involved with health risk; that is, it is a risky behavior that is volitional, and it is a behavior for which college students are likely to maintain a prototype or social image—the type of person who skips class regularly. That image should, in turn, influence the behavior. Thus, consistent with the PWM, we hypothesized that: (a) BW would be more predictive of skipping than BI for those with less experience with the behavior. (b) For this (less experienced) group, BW would mediate the relation between image and behavior. (c) As experience with the behavior increases, BW should lose predictive power to BI, and the social image should become less of a factor. (d) Finally, because BE is similar to BI (in that it taps into a more reasoned processing style), it was hypothesized that BE would also interact with experience: It should be a stronger predictor for high-experience students than for low-experience students. This is the first study to examine the relations among BI, BE, and BW and compare their predictive validity, and it is the first to apply the prototype model to a risk behavior that is not health related.

Method

Participants and Procedure—Participants were 99 male and 155 female undergraduates in an introductory social psychology class who completed a survey on the first day of class and again on the last day. Everyone present on the 1st day ($N = 343$) completed the survey. Of that group, 261 (76%) also completed the survey on the last class day; seven of them were discarded because of missing data. The sample comprised 35% freshmen, 32% sophomores, 18% juniors, and 15% seniors. The research was described as a study of factors that predict class attendance; students received extra credit for participation.

Measures

Behavior: Students were asked, “How many times did you miss a quiz day for whatever reason when you were not sick?”⁵

Experience: Past experience was measured by asking students how many prior semesters they had completed at [university]. The assumption that students have more experience

⁵Students were also asked how many quizzes they had missed in the semester. These reports were compared to instructors' records and yielded a 98% agreement rate. Because BW, behavioral intention (BI), BE, and prototype referred to missing class *not due to* illness, however, neither instructor-reported quiz attendance nor self-reported quiz attendance (without the illness qualifier) could be used in the analyses.

skipping class the longer they have been in school was tested and supported with a separate sample.⁶

BI, BE, and BW: Sixteen unannounced quizzes were given over the course of the semester. Because we believed students would be more likely to remember how many quizzes they had missed rather than how many classes they had missed (there were 16 quizzes vs. 41 classes), quiz attendance was the primary dependent variable and was specifically mentioned in the BI, BE, and BW questions. Again, the wording of the items was consistent with that used in earlier studies. BI included the word *plan* (Ajzen, 2002a), “Do you *plan* to miss class (for whatever reason when you are *not* sick) on a day that you think there might be a quiz?” followed by a 7-point scale (1 = *definitely no*, 7 = *definitely yes*). Consistent with Warshaw and Davis (1985), BE was assessed by asking, “What is the likelihood that you will miss class on a day you think there might be a quiz for whatever reason when you are *not* sick?” followed by a 7-point scale (1 = *not at all likely*, 7 = *very likely*). Finally, as in previous PWM studies, BW was measured by having participants think about a particular situation:

Suppose something came up immediately prior to class that you wanted or needed to do. If you chose to do this activity you would not be able to go to class. You think there might be a quiz in class today. How willing would you be to do whatever it is you want or need to do and miss class?

This was followed by a 7-point scale (1 = *not at all willing*, 7 = *very willing*).

Prototype: Participants were presented with a description of a prototype (Gibbons & Gerrard, 1995) and then asked to indicate their impression of the “type of person who regularly misses class (not due to illness)” using 12 adjectives (e.g., *smart*, *confused*, *popular*; reversed when necessary; $\alpha = .65$).⁷ The 12 items were divided into three random parcels and used as indicators in a structural equation model (SEM).

Results

Descriptive Statistics—Means, standard deviations, ranges, and correlations for the primary measures are presented in Table 6. The mean value of BE was higher than that for BI (cf. Warshaw & Davis, 1985), and as in Study 2, reports of BW were higher than reports of either BE or BI (all $ps < .05$). Examination of the overall matrix indicates that all three antecedents were correlated with the dependent variable, missed quizzes; however, BE and BI constructs were more closely related to one another ($r = .60$, $p < .001$) than they were to BW (BE/BW $r = .43$; BI/BW $r = .33$, $ps < .001$), $ts(251) > 3.06$, $ps < .003$, whereas BW was more strongly related to BE than it was to BI, difference: $t(251) = 5.03$, $p < .001$. Prototype was more highly correlated with BW ($r = .32$, $p < .001$) than either BI ($r = .20$, $p = .002$) or BE ($r = .16$, $p = .01$). All of these relations are consistent with the PWM. Experience was significantly correlated with BI ($r = .18$, $p = .004$) and marginally associated with BW ($r = .11$, $p = .07$); it was not significantly correlated with BE, prototype, or number of classes missed ($rs < .06$).

⁶Questionnaires were given to a sample of 194 students asking how long they had been in college and the total number of college classes they had missed when they were not ill. The longer they had been in school, the more classes they reported missing ($r = .36$, $p < .001$).

⁷These adjectives have been used in previous prototype research. The modest alpha reflects the fact that the adjectives were intended for other types of risky behaviors (e.g., smoking, risky sex). Reliability for the index did not vary as a function of experience.

Regression Analyses

Experience: A hierarchical multiple regression analysis was conducted to examine the hypothesis that experience moderates the relations between behavior and BI, BE, and BW. The measure of experience was continuous, and all measures were standardized. Experience was entered in Step 1, followed by BW, BE, and BI in Step 2; the three predicted moderation interactions including experience and the antecedents were then entered in Step 3. These analyses (see Table 7) indicated that all three antecedents were significant, independent predictors of subsequent behavior in Step 2. As might be expected, given the nature of the behavior, BE was the strongest predictor, followed by BW (both β s > .20, t s > 3.39, p s < .001); BI was the weakest ($\beta = .14$, $t = 2.16$, $p = .03$). Results of Step 3 indicated that two of the three hypothesized interactions were significant: BW $\times$ Experience and BI $\times$ Experience, and their patterns were as predicted (see Figure 2). BW demonstrated a stronger relation with behavior for participants with less college experience ($\beta = .32$, $t = 3.90$, $p < .001$) than for those with more experience ($\beta = .11$, $t = 1.52$, ns). Conversely, the pattern of the BI $\times$ Experience interaction indicates a strong positive relation between behavior and BI for students with more experience ($\beta = .26$, $t = 3.15$, $p = .002$) and no relation for students with less experience ($\beta = -.07$, $t = -0.66$, ns). The BE $\times$ Experience interaction was not significant ($\beta = -.06$, $t = -0.82$, ns ; see later).⁸

Mediation: Because BW was a significant predictor only for those with less experience, analyses examining the hypothesis that BW would mediate the prototype–behavior relation were conducted only on the less experienced participants (defined as having completed zero or one semester at the university; $N = 114$). SEM was used to examine this predicted indirect effect. Prototype was specified as a latent construct; all indicators had loadings > .61. BW and missed quizzes were specified as manifest variables. The model (using LISREL 8.50; Jöreskog & Sörbom, 2001) fit the data very well, $\chi^2(5, N = 113) = 3.66$, $p = .60$, root mean square error of approximation (RMSEA) = .00, goodness-of-fit index (GFI) = .99, comparative fit index (CFI) = 1.00; it explained 22% of the variance in missed quizzes. As shown in Figure 3, the path from prototype to BW was significant ($\beta = .24$, $t = 2.26$, $p = .03$), as was the path from BW to the number of quizzes missed ($\beta = .47$, $t = 5.59$, $p < .001$). The indirect effect of prototype on missed quizzes, through BW, was tested using bias-corrected bootstrapping methods (Mallinckrodt, Abraham, Wei, & Russell, 2006) in Mplus 4.0 (Muthén & Muthén, 1998–2006); the effect was significant ($b = .34$, $z = 2.11$, $p = .03$). Thus, as hypothesized, BW fully mediated the path from prototype to behavior for individuals who were relatively new to college. When the models were repeated, replacing BW with BI and BE, respectively, there was no significant path from prototype to either cognition (β s < .11, t s < 1.06, ns), and the indirect effects of prototype on behavior, via each cognition, were nonsignificant (z s < 0.70).

Discussion—The hypothesized interactions between experience and BI and BW emerged; however, the anticipated BE $\times$ Experience interaction was not found. Because the majority of the students in the sample (98%) had completed at least one semester of college, it is not surprising, in retrospect, that BE was a significant predictor of class skipping for all students. Even with minimal experience, students were capable of making a reasonable prediction of their class attendance. In addition, both high- and low-experience students had equivalent mean values of BE. Nonetheless, results from the correlations and regressions provided evidence for the shift from a reactive behavior, reflecting BW, to a more reasoned, premeditated behavior that was based more on BI. Moreover, for the least experienced

⁸In additional analyses (not reported), separate regressions were conducted on high- and low-experience students. BE was a significant predictor for both high and low experience students (β s > .32, p s < .003), which explains why the hypothesized interaction with experience was not found.

students, the social image of the typical class “skipper” was a strong predictor of subsequent attendance, and that relation was mediated by BW, as the PWM would predict. Conversely, for students with more experience, deliberative plans (BI) predicted attendance, but BW did not (net BI and BE). Thus, the current results are consistent with the hypothesis that experience moderates the relations between behavior and BW and BI. Finally, although previous studies have shown that BW mediates the relation between prototype and behavior (Gerrard, Gibbons, Stock, Vande Lune, & Cleveland, 2005); this is the first study to do so with a nonhealth behavior. It is also the first study to show the three cognitions (BI, BE, BW) predicting behavior independent of each other. In short, these findings demonstrate that for certain behaviors, it makes sense to look at each of these proximal antecedents separately (Gibbons, 2006).

GENERAL DISCUSSION

The results of these three studies present a picture of shifting antecedents of behavior as young people mature and accumulate experience. Early on, many adolescents report no intentions to engage in risky behavior—they have not done it in the past and they have no specific plans to do it in the future (Brooks-Gunn & Furstenberg, 1989). Likewise, their expectations are likely to be low. In this sense, both BI and BE involve some forethought and deliberation. When asked to consider what they *might* do if given the opportunity, however, many of those who have not thought about it seriously, or avoided thinking about it, will acknowledge at least a possibility of engaging in the behavior (Gibbons et al., 2006)—and that possibility predicts subsequent behavior.

Theoretical Implications: The PWM

The current findings provide additional support for the first assumption of the PWM, which is that adolescents’ behavior is often unplanned. The results are also consistent with Webb and Sheeran’s (2006) meta-analysis, which found that change in intentions was related to change in behavior more weakly for behaviors—such as smoking and condom use—that have a clear social component and social image (i.e., prototype) associated with them. These behaviors do not appear to be fully planned or intended. Instead, as suggested by the PWM, these behaviors are often a reaction to the social environment (Norman & Conner, 2005; Reyna & Farley, 2006).

For those inexperienced with a behavior, willingness to engage is obviously not based on personal experience. Instead, it is a function of their attitudes, perceived norms, and prototype images. The more favorable their image, the more willing, and eventually the more likely, they are to engage in the behavior. These images maintain over time and tend to become more vivid and elaborate (and usually more favorable), as experience with the behavior, and others who engage in it, increases (Andrews & Peterson, 2006; Gerrard et al., 2002). The ability of prototypes to predict future behavior—net other predictors—actually becomes weaker, however. With experience and maturity comes a growing awareness of what one can and will do, increasing the predictive power of BE and BI relative to BW and prototypes. With BE, more so than BI, these predictions are based increasingly on prior behavior (Gordon, 1990). Consequently, although the relation between BE and behavior strengthens over time, BE eventually cannot predict future behavior *net* previous behavior.

Age Versus Experience—Although age is definitely related to this shift from reactive to reasoned responding (see Sternberg, 2007), we believe experience often plays a primary role. For example, although it is true that juniors and seniors are, on average, older than freshman, this difference is small compared to the number of college credits that each group has earned (15 vs. 85 for this sample). The fact that experience increases rapidly and in a more or less consistent manner was a primary reason for choosing class skipping as a way to

test our hypotheses. The findings of Study 2b also demonstrate the importance of experience, in that for those less experienced with a behavior (e.g., nonsmokers), BW may be a stronger predictor of behavior than BE, even when they are no longer young adolescents. Nonetheless, experience and age are highly related. The specific age at which the BW → BI/BE shift occurs is likely to be affected by many factors (including the type of behavior). Future research should attempt to tease apart age versus experience because it is likely to have important implications for interventions.

BI, BE, and BW—Relatively few recent studies have compared intention and expectation measures (for an exception, see Rhodes & Matheson, 2005). Some have claimed that BI, BE, and BW are all tapping into the same intention construct (Ajzen & Fishbein, 2005; Fishbein, 2008) and that, in fact, BI and BE are often used interchangeably in research (Armitage & Conner, 2001). The current study provides evidence that for certain behaviors and populations, the three measures are not identical—all three can independently predict behavior net the other two. This suggests that they may involve different underlying decision-making processes (e.g., planning vs. reacting; Gibbons, 2006). There are also behaviors that are socially undesirable (e.g., lying) for which it is conceivable that one may intend or plan, *and* expect, *and* be willing to do, under certain circumstances. For these behaviors, all three cognitions/antecedents should predict independently and together. These behaviors likely do not represent true “goal states” typical of intentions (Ajzen, 1996)—people realize the behavior is inappropriate or undesirable yet still intend and/or plan on doing it.

The Role of Previous Behavior—Researchers have consistently found that past behavior is associated with future behavior independent of social cognitive variables (e.g., attitudes; Norman & Conner, 2005; for experimental evidence, see Albarracín & Wyer, 2000). Past behavior has *informational* value, which can influence one’s attitudes, intentions, and expectations (which then predict behavior; Ouellette & Wood, 1998). Also, when behavior has become habitual, experience may influence future behavior independent of BI and related cognitions (as was the case with the last wave of Study 2). Behaviors that have been engaged in over time, and in stable contexts, such as having a cigarette after class, come to be routinized and elicited by the context rather than more reasoned factors (Verplanken & Aarts, 1999). Thus, as is the case with smoking, these behaviors will show strong associations between past and future behavior (cf. Ouellette & Wood, 1998). For example, a study of Dutch adults (de Bruijn et al., 2007) found that intention was a significant predictor of later fruit consumption for those with low- or medium-strength habits, but it was not significant for those in the high-habit group. However, others have criticized this habit-based explanation, noting problems of shared method variance (Ajzen & Fishbein, 2005) and circular reasoning (Ajzen, 2002b). Regardless of the debate over whether to include past behavior in social cognitive theories of behavior and the exact mechanism behind this behavioral inertia, past behavior is strongly related to future behavior, especially when those behaviors involve health risk. Thus, the predictive validity of BW and BE is especially noteworthy, as past behavior was controlled in these analyses. Including past behavior in prospective studies investigating the influence of cognitions on behavior tends to *underestimate* the predictive strength of these cognitions (Weinstein, 2007).

Intervention Implications

When the target group has little experience with a risk behavior, attempts to prevent or change that behavior should include modifying social images and limiting intentions. Programs that raise awareness that risk behaviors are often neither intentional nor expected should promote adolescents’ consideration of what they are willing to do, *as well as* what

they intend (or expect) to do, before entering risk-conducive situations (Donaldson et al., 1996). Such deliberation is likely to facilitate the shift from behavior based on situational reactions to behavior based more on reasoned thought (i.e., from the social reaction path in the PWM to the reasoned path; Gibbons et al., 2003). As experience increases, the emphasis of interventions should shift to more reasoned routes of processing and issues concerning responsibility and ownership of behavior. Thus, the focus of interventions should change from the social situation to the individual. In fact, the dual-path assumption of the PWM has been tested in an intervention for adolescent drinking (Strong African American Families Program; Brody et al., 2004). The intervention successfully increased parental monitoring and clear communication of expectations about alcohol use, and these changes inhibited intentions to drink alcohol (Gerrard et al., 2006). The intervention also altered adolescents' images of drinkers, and these changes decreased their willingness to drink. Furthermore, these two mediation paths were independently associated with changes in alcohol consumption at a 29-month follow-up.

Limitations

Several limitations need to be addressed. One is that the wording of the BE and BW items in Study 2 changed slightly across the multiple waves of measurement. The change in BE (increased specificity) reflected maturation of the sample, and the changes in BW paralleled the development of the construct in the PWM. Also, some of the constructs were assessed with single items, which raises issues of reliability. Although these limitations must be considered, two factors mitigate concerns about them. First, is the fact that the *pattern* of results was consistent with the theoretically derived predictions across the three studies and across multiple waves. Second, there is evidence of reliability in the studies: For the adolescent sample in Studies 2a and 2b, it was the high reliability over time (five waves) for each of the primary constructs (e.g., $\alpha = .81$ for BE and $.84$ for BW). In Study 3, it was the high correlations between BE and BI ($r = .60$) and between self-reports of quizzes missed (not due to illness) and the instructor's records of missed quizzes ($r = .90$). Moreover, it is unlikely that the general pattern of results in those studies is attributable to low validity or reliability. Either of these problems would lower all correlations and would not "favor" BW early and then BI/BE later. Nonetheless, future studies of the developmental shift should include more diverse measures of all constructs and investigate different types of behavior.

Another potential criticism of the studies is that the measures of cognitions and behavior did not always correspond well. According to the principle of correspondence (Ajzen & Fishbein, 1977), attitudes will best predict behavior when the measures of each are matched in levels of specificity. The current studies used more general measures of BI, BE, and behavior (e.g., smoked over past year), whereas the BW measures referred to specific hypothetical situations. However, it is not likely that adolescents found themselves in the *specific* situations described in the BW scenarios, nor do we try to predict behavior in specific risk-conducive situations. Instead, the goal is to use the BW items to tap into participants' general level of willingness and, in turn, predict their (general) behavior in the future. More important, the BW items did *not* correspond as well with the behavior measures as did the BI and BE measures, and yet they predicted behavior better for younger and less experienced participants. Thus, in spite of the difference in the level of specificity of the measures, the hypothesized interactions with experience were found.

Conclusions

These studies provide the first demonstration of the relative influence of experience on BW, BE, and BI, and provide initial evidence of the independent predictive validity of the three cognitions. The PWM, specifically, the antecedents of prototypes and willingness, proved useful in predicting the behavior of individuals with relatively little experience. As

experience increased, however, the two antecedents that are based more on deliberation and reasoning—BE and BI—became more influential. In general, the shift from reactive to reasoned processing that occurs with experience provides additional evidence for the dual-processing contention of the PWM, specifically, the coexistence of a reasoned and a social reaction mode of processing. Thus, the current studies demonstrate the utility of including behavioral willingness, in addition to behavioral intentions and expectations, as cognitive antecedents of certain behaviors, especially among young people with relatively little experience with the behavior in question.

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Figure 1.
Plot of standardized regression coefficients for Study 2a. NOTE: BE = behavioral expectation; BW = behavioral willingness.

Figure 2.

Top = Plot of BI $\times$ Experience and BW $\times$ Experience interactions for low-experience students (1 *SD* below the mean). Bottom = Plot of BI $\times$ Experience and BW $\times$ Experience interactions for high-experience students (1 *SD* above the mean).

NOTE: BI = behavioral intention; BW = behavioral willingness.

Figure 3.

Structural equation model of indirect effect of prototype on behavior through behavioral willingness.

NOTE: BW = behavioral willingness; # Missed = the number of quizzes the students reported missing during the semester that were not due to illness.

* $p < .05$. *** $p < .001$.

TABLE 1

Description of Intentions, Expectations, and Willingness Constructs

Construct	Definition	Typical Measure
Behavioral intentions (BI)	Plans or intentions of engaging in a behavior; considered a goal state	In (time frame), do you intend to do (behavior)? Do you plan to engage in (behavior) over the next (time frame)?
Behavioral expectations (BE)	Prediction of one's future behavior	Do you expect to engage in (behavior) during the next (time frame)? During the next (time frame), how likely is it that you will engage in (behavior)?
Behavioral willingness (BW)	Willingness to engage in a risky behavior given a risk-conducive environment	Suppose (risk-conducive situation presented). How willing would you be to do each of the following? (Present with options varying in amount of risk.)

TABLE 2

Regressing Substance Use on Age, Previous Behavior, BI, and BW (Study 1)

<i>Waves</i>	<i>Predictors</i>	β	<i>t</i>	<i>N</i>
T2–T3				707
(Ages 12.3–15.5)	Age	.13***	3.53	
	Previous			
	behavior	.22***	5.05	
	BI	−.03	−0.72	
	BW	.16**	3.08	
T3–T4				639
(Ages 15.5–18.7)	Age	.03	0.75	
	Previous			
	behavior	.34***	6.31	
	BI	.11*	2.06	
	BW	−.03	−0.53	

NOTE: BI = behavioral intention; BW = behavioral willingness.

*
 $p < .05$.**
 $p < .01$.***
 $p < .001$.

TABLE 3
 Regressing Smoking Behavior on Previous Behavior, BE, and BW (Studies 2a and 2b)

Waves	Predictors	Study 2a			Study 2b		
		β	t	N	β	t	N
T1-T2 (Ages 14-15)	Age	.09*	2.21	441	.09 [†]	1.87	387
	Previous behavior	.38***	8.03				
	BE	.07	1.41		-.08	-1.36	
	BW	.18***	3.40		.24***	4.28	
T2-T3 (Ages 15-16)	Age	.05	1.18	434	.04	0.70	345
	Previous behavior	.31***	6.18				
	BE	.11 ⁺	1.82		.09	1.51	
	BW	.24***	4.18		.14*	2.37	
T3-T4 (Ages 16-17)	Age	.04	0.90	380	.13*	2.16	269
	Previous behavior	.39***	7.26				
	BE	.21***	3.84		.04	0.64	
	BW	.13*	2.20		.17**	2.62	
T4-T5 (Ages 17-18)	Age	-.05	-1.26	365	.02	0.35	216
	Previous behavior	.45***	8.08				
	BE	.20**	2.78		.39***	5.37	
	BW	.13 [†]	1.93		.09	1.21	
T5-T6 (Ages 18-19)	Age	-.07 [†]	-1.83	344	-.10	-1.48	184
	Previous behavior	.62***	11.91				
	BE	.08	1.05		.17*	2.15	

Waves	Predictors	Study 2a			Study 2b		
		β	t	N	β	t	N
	BW	.10	1.38		.29***	3.67	

NOTE: Study 2a includes all adolescents; Study 2b includes only those who were not smoking at the first wave of each regression. Age = Age at T1; BE = behavioral expectation; BW = behavioral willingness.

[†] $p < .10$
* $p < .05$
** $p < .01$
*** $p < .001$.

TABLE 4
Means, Standard Deviations, and Correlations of Primary Measures for Study 2a

Measures	Beh (T)	BE	BW	Ms	SDs	% smoked		
T1 Beh				1.05	0.25			
T1 BE	.49			1.54	1.08			
T1 BW	.51	.63		1.87	1.50			
T2 Beh	.53	.38	(.16)	.43	(.26)	1.14	0.54	7.9
T2 BE				1.12	0.51			
T2 BW	.54			1.80	1.35			
T3 Beh	.52	.69		2.28	1.92			
T3 BE	.49	.44	(.17)	.47	(.26)	1.26	0.74	13.1
T3 BW				1.22	0.68			
T4 Beh	.54			1.78	1.42			
T4 BE	.65	.67		2.40	2.03			
T4 BW	.59	.51	(.25)	.53	(.29)	1.36	0.88	16.8
T5 Beh				1.35	0.86			
T5 BE	.74			2.38	1.99			
T5 BW	.68	.82		2.68	2.24			
T6 Beh	.68	.64	(.31)	.60	(.18)	1.47	0.98	22.5
T6 BE				1.45	1.05			
T6 BW	.71			2.56	2.17			
T7 Beh	.71	.85		2.87	2.26			
T7 BE								
T7 BW	.75	.60	(.20)	.61	(.23)	1.53	1.05	23.6

NOTE: Ns range from 344 (T5/T6) to 441 (T1/T2). Numbers in parentheses refer to partial correlations, with either BW or BE being partialled out of the correlation between Beh (T + 1) and BE or BW. All *r*s are significant at $p < .001$. A full correlation matrix, including age, can be obtained from the first author. Beh (T) = smoking at the first wave of each pair; BE = behavioral expectation; BW = behavioral willingness; % Smoked = percentage smoked in past year.

TABLE 5
Means, Standard Deviations, and Correlations of Primary Measures for Study 2b

<i>Measure</i>	<i>BE</i>	<i>BW</i>	<i>Ms</i>	<i>SDs</i>	<i>% Initiated</i>
T1 BE			1.35	0.85	
T1 BW	.43		1.54	1.03	
T2 Beh	.02 (-.07)	.20 (.21)	1.06	0.34	4.1
T2 BE			1.41	0.84	
T2 BW	.45		1.71	1.34	
T3 Beh	.15*** (.08)	.18 (.13*)	1.09	0.45	4.9
T3 BE			1.29	0.82	
T3 BW	.43		1.57	1.14	
T4 Beh	.10* (.03)	.18 (.15**)	1.09	0.41	5.2
T4 BE			1.34	0.82	
T4 BW	.51		1.55	1.18	
T5 Beh	.43 (.35)	.28 (.08)	1.07	0.34	5.6
T5 BE			1.15	0.51	
T5 BW	.52		1.41	0.94	
T6 Beh	.33 (.16*)	.38 (.26)	1.09	0.41	6.0

NOTE: *N*s range from 186 (T5/T6) to 387 (T1/T2). Numbers in parentheses refer to partial correlations, with either BW or BE being partialled out of the correlation between Beh (T + 1) and BE or BW. All *r*s > .18 are significant at *p* < .001. A full correlation matrix, including age, can be obtained from the first author. Beh (T) = smoking at the first wave of each pair; BE = behavioral expectation; BW = behavioral willingness; % Initiated = percentage who began smoking in the past year.

* *p* < .05.

** *p* < .01.

TABLE 6

Descriptive Statistics for Measures in Study 3

Measure	1	2	3	4	5	6
1. BI	—					
2. BE	.60***	—				
3. BW	.33***	.43***	—			
4. Prototype	.20**	.16**	.32***	—		
5. Quizzes missed	.41***	.52***	.39***	.15*	—	
6. Experience ^b	.18**	.06	.11	.04	.02	—
<i>M</i>	1.58	2.13	3.57	3.52	1.94	2.99
<i>SD</i>	1.06	1.44	1.47	0.69	2.44	2.48
Range	1–7	1–7	1–7	1.75–5.75	0–16 ^a	0–12

NOTE: *N* = 254. BI = behavioral intention; BE = behavioral expectation; BW = behavioral willingness.

^aThe largest number of quizzes missed was 14.

^bExperience was measured by the number of semesters at the university.

*
p < .05.

**
p < .01.

p < .001.

TABLE 7

Regression Analyses Predicting Missed Quizzes

<i>Variable</i>	β	<i>t</i>	R^2
Step 1			.001
Experience	.02	0.38	
Step 2			.32
Experience	-.04	-0.82	
BW	.20***	3.39	
BE	.35***	5.08	
BI	.14*	2.16	
Step 3			.34
Experience	-.06	-1.03	
BW	.22***	3.75	
BE	.35***	5.06	
BI	.10	1.34	
BW $\times$ Experience	-.12*	-2.01	
BE $\times$ Experience	-.06	-0.82	
BI $\times$ Experience	.18**	2.47	

NOTE: $N = 254$. BW = behavioral willingness; BE = behavioral expectation; BI = behavioral intention.

* $p < .05$.

** $p < .01$.

*** $p < .001$.