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The Importance of Attitudes in the Prediction of College Students' Intentions to Drink

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Fishbein's (1967, 1980) theory of reasoned action was used to test the relative importance of attitudes and subjective norms in predicting undergraduate students' intentions to perform 3 different types of social drinking actions: avoiding drinking, drinking enough to get a slight buzz, and drinking enough to get drunk. A multiple regression paradigm was used to determine the relative effectiveness of attitudes and subjective norms in predicting intentions to perform each of the 3 drinking behaviors. Although attitudes were consistently found to be better predictors of intentions than were subjective norms, the strength of the attitude-intention relation varied widely across the 3 actions. In particular, the attitude-intention correlation was strongest for "drinking enough to get drunk." Findings also suggest that subjective norms, previous behavior, and perceived behavioral control are not important variables for predicting this behavior.

Fishbein's (1967, 1980; Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) theory of reasoned action has often been shown to be useful in predicting people's intentions to engage in social drinking (Budd & Spencer, 1984; Kilty, 1978). However, the degree of usefulness seems to depend largely on the sample of concern. For example, Kilty obtained good support for the theory when the sample comprised community men, community women, or prison inmates, but not when the sample comprised male or female graduate students in the social work area. Kilty's findings of the differential effectiveness of the theory of reasoned action depending on the subject sample imply the possibility that other variables might exist that also set limits on the applicability of the theory to drinking behavior. One such possibility, the type of drinking behavior, is explored in this article.

A Brief Description of the Theory of Reasoned Action

In its most parsimonious form, the theory of reasoned action states that behaviors are determined by behavioral intentions which, in turn, are determined

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by attitudes and subjective norms. Attitudes are generally measured by using evaluative semantic differential scales, and subjective norms are generally measured by asking subjects the degree to which "most others who are important to you" think you should or should not perform the behavior of concern (Ajzen & Fishbein, 1980). Attitudes and subjective norms are determined by beliefs about the consequences of performing a behavior and beliefs about the opinions of important others about performing the behavior, respectively. The prediction of behavioral intentions from attitudes and subjective norms will be the main concern in the present article.

Finding out whether behavioral intentions are better predicted from attitudes or subjective norms often has implications for the relative effectiveness of interventions designed to change the behavior (Trafimow, 1994; Trafimow & Fishbein, 1994a, 1994b). For example, if attitudes predict intentions to drink and subjective norms do not, then one would expect interventions designed to affect attitudes to have a better chance of changing intentions than those designed to affect subjective norms. On the other hand, if intentions are predicted well by subjective norms, but not by attitudes, the reverse is implied.

Several researchers have proposed that variables other than attitudes and subjective norms should be added to the prediction of behavioral intentions. Some of these are perceived behavioral control (Ajzen, 1988; Schlegel, D’Avernas, Zanna, & DeCourville, 1992), self-efficacy (Bandura, 1977), previous behavior (Bentler & Speckart, 1981), ideal behavioral intentions (Budd & Spencer, 1984), and personal normative beliefs (Kilty, 1978). Depending on the study, all of these variables have been shown to increase the prediction of behavioral intentions above and beyond what could be achieved by attitudes and subjective norms alone. Clearly, as more variables are added to the theory, prediction of intentions increases (e.g., Beck & Ajzen, 1991), but only at the cost of decreasing the parsimony of the theory. Consequently, a common strategy is for researchers to restrict their focus to attitudes and subjective norms in the initial stages of an investigation, and to consider other variables as more becomes known about the phenomenon of interest.

Varying the Action

As mentioned above, Kilty (1978) showed that the prediction of intentions from attitudes and subjective norms is better for some samples of subjects than for others. Further, other researchers (see reviews by Crawford, 1987, and Sutton, 1987) have obtained correlations between attitudes and intentions to perform drinking behavior (or drinking habits) ranging from .30 to .72. More
generally, the wide variety of correlations between attitudes/subjective norms and intentions/habits that have been reported in the literature suggests that several factors may influence the degree of the relationship. One candidate is the actual type of drinking that is of concern. For example, it is easy to argue that not drinking is different from drinking a little which, in turn, is different from drinking enough to get drunk. Might the theory of reasoned action work better for one of these actions than for another? At first blush, it might seem that the answer would have to be “no.” After all, if one has a positive attitude toward drinking, then this implies a negative attitude toward not drinking. Similarly, if one intends to drink, then this implies that one does not intend to avoid drinking. Thus, attitudes and behavioral intentions should be approximately equally correlated, regardless of the action. A similar argument could be made regarding subjective norms.

On the other hand, there are examples in the literature indicating that slight changes in the action can have important effects on the relationships between attitudes, subjective norms, and behavioral intentions (Ajzen & Fishbein, 1980; Davidson & Jaccard, 1975; Fishbein, Loken, Chung, & Roberts, 1978). Because the theory of reasoned action does not allow one to state, on an a priori basis, what kinds of relationships will hold among these three variables for different actions, an empirical test is necessary.

In the study to be reported, subjects were asked about three types of drinking behaviors. These were avoiding drinking, drinking enough to get a slight buzz, and drinking enough to get drunk. Two hypotheses were tested. In order to set up the first hypothesis, one must consider the possibility that attitudes towards extreme behaviors (e.g., getting drunk) may be more accessible than attitudes towards less extreme behaviors (e.g., getting a slight buzz), or “nonbehaviors” (e.g., not drinking). In addition, some work by Fazio (1990) indicates that as attitude accessibility increases, so does attitude-behavior consistency. All of this suggests that the correlation between intentions and attitudes may be greater for “drinking enough to get drunk” than for the other behaviors. More generally, the main hypothesis is that the prediction of intentions from attitudes and subjective norms should vary across the three types of drinking behaviors.

An additional hypothesis is suggested by two recent findings. First, Budd and Spencer (1984) found that attitudes predicted intentions better than did subjective norms for the type of drinking behavior that was investigated in their study. Second, Traffimow and Finlay (1996) found that attitudes were a stronger predictor of intentions than were subjective norms across 29 of the 30 behaviors they tested. These findings suggest that attitudes might be a better predictor of intentions than subjective norms across all three drinking behaviors.
Study 1

Method

Subjects

Eighty-nine undergraduate psychology students at Virginia Tech participated in the study. Participation partially fulfilled a class requirement. Approximately one third of the subjects were randomly assigned to each of three conditions described below.

Design

There were three between-subjects conditions. Subjects were randomly assigned to indicate their attitudes, subjective norms, and intentions toward (a) avoiding drinking, (b) drinking enough to get a slight buzz, or (c) drinking enough to get drunk. This allowed one-way ANOVAs to be performed on attitudes, subjective norms, and intentions between the three conditions. It also allowed for multiple regression analyses to be performed within each condition and for the multiple correlations obtained by these analyses to be compared across the three conditions. All analyses are described in detail in the Results section.

Procedure

Each subject received a piece of paper containing measures of intentions, attitudes, and subjective norms toward performing one of three behaviors of concern. All measures were adapted from descriptions contained in the appendix to Ajzen and Fishbein’s (1980) book. The first measure each subject completed was an intention measure. Subjects in the avoid-drinking condition were asked “How likely do you think you would be to avoid drinking at a party?” Subjects in the slight-buzz condition were asked “How likely do you think you would be to drink enough at a party to get a slight buzz?” Finally, subjects in the get-drunk condition were asked “How likely do you think you would be to drink enough at a party to get drunk?” Subjects responded on a 7-point scale ranging from -3 (extremely unlikely) to 3 (extremely likely).

Attitudes were measured using four evaluative semantic differential scales (these were 7-point scales ranging from -3 to 3). These contained the dimensions good/bad, harmful/beneficial, rewarding/punishing, and pleasant/unpleasant. Subjects in the avoid-drinking condition were instructed, “Rate avoiding drinking at a party, on the following scales.” Subjects in the slight-buzz condition
were instructed, “Rate drinking enough at a party to get a slight buzz, on the following scales.” Finally, subjects in the get-drunk condition were instructed, “Rate drinking enough at a party to get drunk, on the following scales.”

After completing the semantic differential scales, subjects’ subjective norms were measured. Subjects filled out a 7-point scale (-3 to 3) indicating the degree to which “most people who are important to you think you (subjects marked a scale ranging from should not to should) avoid drinking at a party/drink enough at a party to get a slight buzz/drink enough at a party to get drunk.”

**Results**

There were three general categories of results. First, a factor analysis was performed on the attitude scales in order to construct a single attitude measure. (Factor analysis is routinely performed when there are multiple attitude measures in order to ensure that they are all tapping into the same underlying dimension.) Second, one-way ANOVAs were performed on intentions, attitudes, and subjective norms in order to test for differences among the three conditions. Finally, correlational analyses (e.g., correlations and multiple regression analyses) were performed in order to test the main and secondary hypotheses.

**Attitude Measure**

After appropriate reverse scoring (good, beneficial, rewarding, and pleasant were scored as positive), the attitude scales were factor analyzed using the principal-components method and, as expected, one factor was elicited (the factor loadings are presented in Table 1). Scores on these scales were averaged, and these averages correlated .998 with the factor scores. Therefore, mean

<table>
<thead>
<tr>
<th>Scale</th>
<th>Loading</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good/bad</td>
<td>.84</td>
</tr>
<tr>
<td>Beneficial/harmful</td>
<td>.57</td>
</tr>
<tr>
<td>Rewarding/punishing</td>
<td>.83</td>
</tr>
<tr>
<td>Pleasant/unpleasant</td>
<td>.75</td>
</tr>
</tbody>
</table>
Table 2

Means and Standard Deviations of Attitudes, Subjective Norms, and Intentions as a Function of the Three Conditions

<table>
<thead>
<tr>
<th></th>
<th>Avoid drinking</th>
<th>Slight buzz</th>
<th>Get drunk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Means</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td>0.30&lt;sub&gt;ab&lt;/sub&gt;</td>
<td>0.69&lt;sub&gt;b&lt;/sub&gt;</td>
<td>-0.08&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>-0.23&lt;sub&gt;a&lt;/sub&gt;</td>
<td>0.48&lt;sub&gt;a&lt;/sub&gt;</td>
<td>-0.23&lt;sub&gt;a&lt;/sub&gt;</td>
</tr>
<tr>
<td>Intention</td>
<td>-0.80&lt;sub&gt;a&lt;/sub&gt;</td>
<td>1.72&lt;sub&gt;c&lt;/sub&gt;</td>
<td>0.30&lt;sub&gt;b&lt;/sub&gt;</td>
</tr>
<tr>
<td><strong>Standard deviations</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td>1.07</td>
<td>0.73</td>
<td>0.93</td>
</tr>
<tr>
<td>Subjective norm</td>
<td>1.47</td>
<td>1.19</td>
<td>1.18</td>
</tr>
<tr>
<td>Intentions</td>
<td>2.17</td>
<td>1.77</td>
<td>1.67</td>
</tr>
</tbody>
</table>

Note. Means in the same row with different subscripts are different from each other at the .05 level. Tests were not conducted on differences in standard deviations.

scale scores served as a single attitude measure for each subject for all subsequent analyses.

**ANOVA**

Three 1-way ANOVAs were performed in order to assess the effects of the action manipulation on attitudes, subjective norms, and behavioral intentions. These means, along with appropriate standard deviations, are presented in Table 2. The action manipulation significantly affected attitudes, F(2, 86) = 4.06, p < .03, and intentions, F(2, 86) = 12.64, p < .01, but its effect on subjective norms was only marginal, F(2, 86) = 2.40, p < .10. Table 2 demonstrates that scores on all three dependent variables were more positive (i.e., supported performing the behavior) in the slight-buzz condition than in the other two conditions. A series of condition by condition comparisons using the LSD procedure reveals that this pattern was especially clear for intentions, where subjects indicated significantly greater intentions to drink enough to get a slight buzz (M = 1.72) than to drink enough to get drunk (M = 0.30) which, in turn, was rated as significantly more likely than avoiding drinking (M = -0.80).

It is possible that the differences in intentions that were obtained across the three conditions were due to an intervening effect of differences in attitudes, subjective norms, or a combination of the two. One argument against this
可能性是，LSD检验（表2）表明，每种条件单独评估，其它条件均不同，只适用于意图。如果态度或主观规范是介于影响因素，那么一个期望是差异的模式应通过镜像由相似的模式来确定态度或主观规范。然而，这种可能性通过进一步测试由一系列的分析协方差来确定，这些分析排除了先前获得的差异在意图中可以被消除的变量，无论是通过使用态度、主观规范，还是两者作为协变量。与这个假设相反，先前获得的差异在不考虑变量的情况下持续存在，说明可能的或者组合的变量被包含为协变量（p < .01在所有分析中）。因此，先前获得的差异在意图中似乎并不由媒介作用来解释态度或主观规范。这些发现表明态度和主观规范与意图在更复杂的方式上相关，而这些方式在本文中已经过考虑。一些相关分析在下面部分进行，以便解开谜团。

相关分析

多元回归一般是在试图确定一个行为是否在态度或规范控制下时的选择统计方法。因此，三种多元回归分析被进行。首先，在避免饮酒条件下，预测意图从态度和主观规范中只能是边缘的（R = .42, p < .10）。此外，只有态度对这个预测有贡献（态度β权重 = .38，主观规范β权重 = -.13）。其次，在轻微的喝醉条件下，预测意图从态度和主观规范中是中等的和显著的（R = .60, p < .01）。然而，与之前的案例相似，只有态度显著对这个预测有贡献（态度β权重 = .56，主观规范β权重 = .25）。最后，在喝醉时，预测意图从态度和主观规范中是明显的（R = .83, p < .01），有趣的是，在其它两种条件下，只有态度对这个预测有贡献（态度β权重 = .75，主观规范β权重 = .10）。总而言之，结果表明，更多消耗酒精，多个相关性用于预测意图增加。然而，β权重表明，只有态度对这些预测有贡献。

以上报道的结果表明，对零阶相关在三种条件之间的态度和意图的相互关系进行一个检查可能是有信息的。这些相关性，以及主观规范那些涉及主观规范的，报告在表3。注意，态度-意图相关性在三个条件下平行，即相关性比之前报告的要多。具体来说，态度和意图在避免饮酒条件下是仅
Table 3

Correlations Between Dependent Variables

<table>
<thead>
<tr>
<th>Condition</th>
<th>Dependent variable</th>
<th>Attitude</th>
<th>Norm</th>
<th>Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Avoid drinking</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td>1.00</td>
</tr>
<tr>
<td>Norm</td>
<td></td>
<td>-.15</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td></td>
<td>.40*</td>
<td>-.19</td>
<td>1.00</td>
</tr>
<tr>
<td>Slight buzz</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Norm</td>
<td></td>
<td>-.07</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td></td>
<td>.55**</td>
<td>-.21</td>
<td>1.00</td>
</tr>
<tr>
<td>Get drunk</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attitude</td>
<td></td>
<td>1.00</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Norm</td>
<td></td>
<td>.74**</td>
<td>1.00</td>
<td></td>
</tr>
<tr>
<td>Intention</td>
<td></td>
<td>.83**</td>
<td>.66**</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*p < .05. **p < .01.

mildly correlated \( r = .40, \ p < .05 \), the two variables are moderately correlated in the slight-buzz condition \( r = .55, \ p < .01 \), and they are highly correlated in the get-drunk condition \( r = .83, \ p < .01 \). Fisher’s \( r \) to \( z \) transformations indicate that this last correlation is significantly greater than the previous two correlations \( p < .05 \) in both cases.

Discussion

The results of this study clearly show that prediction of intentions to “get drunk” is superior to the prediction of intentions in the other conditions. However, there are some issues that need to be addressed in a second study. For example, because ability to predict intentions in some populations might not generalize to other populations, it is important to test another population. Also, regression to the mean can cause large correlations obtained in one sample to shrink when another sample is used.

Another issue concerns the control that people believe they have over the behavior. An argument is often made that people don’t have (or don’t think
they have) control over their drinking. Consequently, it would be desirable to measure the extent to which people believe they have control over the behavior (perceived behavioral control) and to correlate this variable with intentions to "get drunk." Ajzen (1988) has argued that perceived behavioral control can often predict intentions independently of attitudes and subjective norms, and this will be tested in the second study with regard to getting drunk.

A third issue, if attitudes continue to predict intentions in the second study, is to uncover the beliefs that determine attitudes. Obviously, a prerequisite for interventions designed to change such beliefs is knowing what they are in the first place. All three of these issues were investigated in Study 2.

Study 2

Method

Subjects

Seventy-six undergraduate students at New Mexico State University volunteered to participate in this study.

Procedure

The procedure was similar to that for the get-drunk condition of Study 1, with the following additions. First, the subject sample was taken from undergraduate students at New Mexico State University (rather than Virginia Tech), of which approximately 30% of the students are Hispanic. There was a possibility that people from a more collectivist culture would be more likely to be driven by subjective norms than by attitudes (Triandis, 1994). Second, a question about perceived behavioral control was added. Subjects rated, on a 7-point scale ranging from no control to extreme control "the extent to which you feel you have control over whether you drink enough at a party to get drunk." Third, subjects were asked to list up to five beliefs that they had about the "possible consequences (these can be positive or negative) of drinking enough at a party to get drunk." Finally, subjects rated each belief on a 7-point likelihood scale (ranging from extremely unlikely to extremely

\[2\text{In fact, in a different study, Hispanics and Whites at New Mexico State University were tested to see which group would endorse more "interdependent" values, and no differences were obtained. Despite this evidence that the Hispanics were not more "collectivist" than were the other subjects, it is possible that the null finding was due to an invalid test. Consequently, just to be sure, this variable was included in some analyses.}\]
likely) and a 7-point evaluative scale (ranging from extremely bad to extremely good).

Results

Comparing the Virginia Tech and New Mexico State University Groups

Before conducting the correlational analyses of main interest, a series of t tests was performed comparing the Virginia Tech and New Mexico State University undergraduates on intentions, attitudes, and subjective norms. Although the two groups did not differ significantly on attitudes ($M = -0.08$ and $M = -0.70$, $p < .10$), they differed marginally on intentions ($M = 0.30$ and $M = -0.45$, $p < .10$), and they differed significantly on subjective norms ($M = -0.23$ and $M = -1.71$, $p < .01$). Thus, the two populations do seem to be different with regard to perceptions of normative pressure; the New Mexico State University subjects perceived significantly more normative pressure against drinking enough to get drunk. However, contrary to the hypothesis that collectivists would be different from individualists with regard to the relative power of attitudes and subjective norms to affect intentions, all of the analyses conducted below resulted in similar findings for Virginia Tech versus New Mexico State University students, and for Hispanics versus Whites (and direct tests between Hispanics vs. Whites on intentions, attitudes, and subjective norms resulted in no significant differences).

Attitudes, Subjective Norms, Perceived Behavioral Control, and Intentions

In order to see if the results obtained in the get-drunk condition of Study 1 would be replicated with a different sample of students and to see if the attitude-intention correlation would shrink, some correlational analyses were performed. First, a multiple regression analysis was performed where attitudes and subjective norms were used to predict intentions. The multiple correlation was .89 ($p < .01$), the attitude beta weight was .89 ($p < .01$), and the subjective norm beta weight was -.01.

In order to see whether perceived behavioral control would contribute to the prediction of intentions, a second multiple regression analysis was performed where attitudes, subjective norms, and perceived behavioral control were used to predict intentions. The multiple correlation was again .89 ($p < .01$), the attitude beta weight was .89 ($p < .01$), the subjective norm beta weight was -.01, and the perceived behavioral control beta weight was .00. More generally, attitudes seemed to be the only variable contributing to the prediction of intentions.
Beliefs and Attitudes

Subjects listed several beliefs. These are listed in Table 4 in order of decreasing frequency. A belief index for each subject was determined by calculating the product of each likelihood-evaluation pair for each belief and summing the products (Ajzen & Fishbein, 1980). Consistent with the theory of reasoned action, this index ($\sum_{i=1}^{n} b_{ij}$) was significantly correlated with attitudes ($r = .52$, $p < .01$).

In order to make absolutely sure, however, a set of zero-order correlations was calculated where attitudes, subjective norms, and perceived behavioral control were used to predict intentions independently of each other. These correlations were .89 ($p < .01$), .33 ($p < .01$), and .03, respectively. So the zero-order correlations are consistent with the multiple regression findings.
Path Analyses

According to the theory of reasoned action and the theory of planned behavior, $\Sigma b_{i}e_{i}$ determines attitude, which, in turn, determines intention. It is alternatively plausible, however, that people modify their beliefs in order to make them consistent with their intentions (see Cialdini, 1993, for a review). These modified beliefs then cause attitude change. Thus, path analyses were conducted in order to test the following two alternative path structures against each other: (a) $\Sigma b_{i}e_{i}$ to Attitude to Intention, and (b) Intention to $\Sigma b_{i}e_{i}$ to Attitude.

Path Structure 1. Three standardized path coefficients were obtained. The effect of $\Sigma b_{i}e_{i}$ on Attitude was .52, the effect of Attitude on Intention was .92, and the effect of $\Sigma b_{i}e_{i}$ on Intention not mediated by Attitude was not significant (standardized path coefficient = -.07).

Path Structure 2. As in the first path analysis, three standardized path coefficients were obtained. The effect of Intention on $\Sigma b_{i}e_{i}$ was .41, the effect of $\Sigma b_{i}e_{i}$ on Attitude was .19, and the effect of Intention on Attitude not mediated by $\Sigma b_{i}e_{i}$ was .81.

Comparing the path structures. There are three reasons why Path Structure 1 provides a better account of the data than Path Structure 2. First, the path through the mediating variable accounts for all of the effect of the first variable on the last variable in Path Structure 1, but not in Path Structure 2 (leftover effect = .81!). Second, the effect of the first variable on the last variable, through the mediating variable, was much greater for Path Structure 1 than for Path Structure 2 (effect was .52 x .92 = .48 vs. .41 x .19 = .08). Finally, the effect of the first variable on the last variable through the mediating variable was much less than the direct effect of the first variable on the last variable (.08 vs. .81) for Path Structure 2, while the opposite was true for Path Structure 1 (.48 vs. -.07). In sum, Path Structure 1, which is consistent with the theory of reasoned action and the theory of planned behavior, seemed to provide the best fit to the data.

Discussion

The results of Study 2 can be summarized as follows. First, the excellent prediction of intentions to "get drunk" from attitudes that was demonstrated in Study 1 replicated in Study 2 with a different group of subjects. Second, and

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3Actually, there are six possible path structures involving these three variables. However, of the four that were not tested, two of them are contradicted by previous data (Bowman & Fishbein, 1978; Fishbein & Ajzen, 1981), and the other two are "straw person" structures that nobody I am aware of would endorse.
contrary to Ajzen's (1988) theory of planned behavior, people's perceptions of control over getting drunk were unrelated to their intentions to do so. Third, beliefs (Σβ) about the consequences of drinking enough to get drunk are associated with attitudes toward doing so. Further, a list of these salient beliefs and the frequencies with which they are mentioned is now available. Finally, the path analyses indicate that a path structure consistent with the theory of reasoned action (from Σβ to Attitude to Intention) provides a better account of the data than a competing path structure.

It is interesting to consider the failure of perceived behavioral control to predict intentions. One possible reason for this lack of prediction is that practically everybody thought they had control over whether they drink enough to get drunk. In fact, 67% of the subjects marked the most extreme end of the scale (they felt that they were "extremely" in control), and only two of the subjects marked blanks below the neutral blank on the scale.

Study 3

Although Studies 1 and 2 provided us with some valuable information about the relationships between attitudes, subjective norms, perceived behavioral control, and intentions, there are some limitations that need to be addressed in Study 3. First, more evidence is needed that attitudes affect intentions to get drunk. It is alternatively possible that previous drinking behavior affects both attitudes and intentions. Consequently, Study 3 includes a measure of previous drinking behavior. Second, although much evidence (Sheppard, Hartwick, & Warshaw, 1988) indicates that intentions are correlated with future behavior (also see research by King, 1975; Manstead, Proffitt, & Smart, 1983; Smetana & Adler, 1980; Trafimow & Miller, 1996), it is desirable to make sure of this, so a measure of future drinking behavior was included.

Method

Subjects

Eighty-five undergraduate students at New Mexico State University volunteered to participate in this study. Twenty-six (31%) identified themselves as Hispanics.

Procedure

The procedure was similar to that in Study 2 with five exceptions. First, the attitude measure was a single item (like/dislike; Trafimow & Finlay, 1996),
rather than a set of items. Second, a measure of previous drinking behavior was included that was similar to the Cahalan, Cisin, and Crossley (1969) quantity-frequency-variability index. Respondents were asked to indicate how often they drink, the number of drinks per drinking occasion, and how often they drink enough to get drunk. Third, subjects indicated their expectations of the likelihood of each of the consequences elicited from Study 2 (Table 4) and their evaluations (goodness/badness) of these consequences so an index ($\Sigma b_{xj}$) could be calculated. Finally, actual drinking behavior was measured 5 days later. Because the actual behavior measured was “drinking at the next party” subjects attended, the attitude, subjective norm, intention, $\Sigma b_{xj}$, and perceived behavioral control questions were modified to correspond with this behavior (see Fishbein, 1980, for a discussion of the importance of having measurement of variables correspond with regard to action, target, time, and context).

Results

Comparing Collectivists With Individualists

Consistent with the results of Study 2, there were no differences between subjects who we thought might be collectivists (Hispanics) and individualistic ones. Further, none of the analyses conducted below resulted in substantially different patterns of findings for the two groups. Thus, there is no support for the hypothesis (e.g., Triandis, 1994) that subjective norms would be a more important determinant of intentions for collectivists than for individualists (but see Trafimow & Finlay, 1996, for such support). Of course, it is possible that the Hispanics were not collectivists (possibly because they have internalized the values of American culture; see Footnote 2).

Intentions and Behavior

According to the theory of reasoned action and the theory of planned behavior, intention is the immediate determinant of behavior. Consistent with these theories, there was a significant correlation between intention and future drinking behavior ($r = .62, p < .01$).

Determinants of Intentions

Theoretically, attitude, subjective norm, or perceived behavioral control can directly affect intention (which, in turn, determines actual behavior). Not surprisingly, the multiple correlation obtained by predicting intention from attitude, subjective norm, and perceived behavioral control was .86 ($p < .01$).
However, only attitude had a significant beta weight (attitude $\beta = .85$, subjective norm $\beta = -.00$, and perceived behavioral control $\beta = -.04$). Further, this multiple correlation equals the zero-order correlation between attitude and intention ($r = .86$), so all of the explainable variance in intention seems to be accounted for by attitude.

Given that attitude is an excellent predictor of intention, does $\Sigma b_{i1}e_i$ predict attitude? Consistent with the results of Study 2, the correlation between $\Sigma b_{i1}e_i$ and attitude is significant ($r = .50, p < .01$).

**Previous Drinking Behavior**

In contrast to the theory of reasoned action and the theory of planned behavior, it is possible to argue that previous drinking behavior directly determines both attitude and future behavior. In fact, there is some evidence of this. For example, previous drunkenness was significantly correlated with both attitude ($r = .28, p < .02$) and intention to drink in the future ($r = .61, p < .01$). It was also correlated with future drinking behavior ($r = .41, p < .02$).

There is also evidence against the alternative hypothesis. If the reason for the strong attitude-intention correlation is that previous behavior directly causes both attitude and intention, then we would expect the correlation between previous behavior and intention to exceed the correlation between attitude and intention. In fact, the opposite was true; the attitude-intention correlation is greater than the previous behavior-intention correlation ($r = .86$ and $r = .61$). In addition, the results of a multiple regression analysis further contradict the hypothesis of a direct effect of previous behavior on intention (and attitude). If the hypothesis were true, we would expect previous behavior to account for much variance in intention above and beyond that which can be accounted for by attitude alone. In opposition to this prediction, however, attitude accounts for 74% of the variance in intention, and the addition of previous behavior to attitude (to predict intention) only accounted for an additional 3%, for a total of 77%.

The results of the previous analysis become even more obvious when contrasted with a similar multiple regression analysis where attitude is included after previous behavior to predict intention (the reverse of the previous analysis). Previous behavior accounts for 37% of the variance in intention, and entering attitude as the second predictor accounts for an additional 40%! In sum, entering previous behavior after attitude accounts for an additional 3% of the variance in intention, but entering attitude after previous behavior accounts for an additional 40%. More generally, the zero-order correlations and multiple regression analyses contradict the hypothesis that previous behavior directly affects both attitude and intention.
Intention, Previous Behavior, and Future Behavior

Several researchers have argued that previous behavior can affect future behavior, independent of intention. If this were true, we would expect that predicting future behavior from a combination of previous behavior and intention should account for more variance than if future behavior is predicted only from intention. In opposition to this prediction, however, future behavior was predicted equally well from intention \( r = .62, r^2 = .38 \) and a combination of intention and previous behavior \( R = .62, R^2 = .38 \).

Path Analyses

As in Study 2, the hypothesized path model that \( \Sigma b_{ij} \) determines attitude which, in turn, determines intention (Path Structure 1) was tested against an alternative model that intention determines \( \Sigma b_{ij} \) which, in turn, determines attitude (Path Structure 2). The results were very similar to those obtained in Study 2.

Path Structure 1. Three standardized path coefficients were obtained. The effect of \( \Sigma b_{ij} \) on Attitude was .50, the effect of Attitude on Intention was .83, and the effect of \( \Sigma b_{ij} \) on Intention not mediated by Attitude was not significant (standardized path coefficient = .03).

Path Structure 2. As in the first path analysis, three standardized path coefficients were obtained. The effect of Intention on \( \Sigma b_{ij} \) was .45, the effect of \( \Sigma b_{ij} \) on Attitude was .15, and the effect of Intention on Attitude not mediated by \( \Sigma b_{ij} \) was .78.

Comparing the path structures. There are three reasons why Path Structure 1 provides a better account of the data than Path Structure 2. First, the path through the mediating variable accounts for all of the effect of the first variable on the last variable in Path Structure 1, but not in Path Structure 2 (leftover effect = .78!). Second, the effect of the first variable on the last variable, through the mediating variable, was much greater for Path Structure 1 than for Path Structure 2 (effect was .50 \( \times \) .83 = .42 vs. .45 \( \times \) .15 = .07). Finally, the effect of the first variable on the last variable through the mediating variable was much less than the direct effect of the first variable on the last variable (.07 vs. .78) for Path Structure 2, while the opposite was true for Path Structure 1 (.42 vs. .03). In sum, Path Structure 1, which is consistent with the theory of reasoned action and the theory of planned behavior, seemed to provide the best fit to the data.

Descriptive Data

One possible limitation of Study 3 is that only a small proportion of the subjects may have drunk significant amounts of alcohol, thereby limiting the
generalizability of the findings to populations of light drinkers.\textsuperscript{4} In fact, 45.8% of the subjects who went to a party during the 5-day interval reported that they drank enough to get drunk, and 75% reported drinking enough to at least be “under the influence.” Thus, although a smaller proportion of subjects in the present study drank than may be true in some heavy drinking populations, the obtained proportion was large enough to guarantee reasonable variance in drinking behavior and thereby to avoid a restriction of range problem.

Discussion

The results obtained in Study 2 were replicated in Study 3. First, intentions to drink enough to get drunk were well predicted from attitudes, but not from subjective norms or perceived behavioral control. Second, the beliefs obtained in Study 2 predicted attitudes, even with the independent sample used in Study 3. Thus, these findings seem robust. Finally, the path analyses conducted in Study 2 indicating that Path Structure 1 (consistent with the theory of reasoned action) was a better fit to the data than was Path Structure 2 (inconsistent with the theory of reasoned action) were replicated in Study 3.

There were also some new findings. Most important, the data indicate that previous behavior does not directly affect both attitudes and intentions (although there is likely to be an indirect effect). This is, to my knowledge, the only study in the “drinking” area that has tested this hypothesis. In addition, the findings also contradict the argument (e.g., Bentler & Speckart, 1981) that previous behavior has an independent affect on future behavior that is independent of intention.

General Discussion

The data in Study 1 indicate that the relation between attitudes and intentions changes (Table 3) depending on the particular type of social drinking action. This is interesting because it suggests that researchers who are interested in “drinking” might be wise to pay close attention to the specific type of drinking they mention in their questionnaires. Further, researchers often attempt to investigate the general class of drinking behaviors and to come to conclusions about correlated variables. Because the present research suggests that these correlations may change with different types of drinking actions, more research might profitably be performed on how to conceptualize and classify drinking (possibly making use of already existing scales that measure expectancies about drinking such as those by Brown, Goldman, Inn,

\textsuperscript{4}I thank an anonymous reviewer for suggesting this analysis.


