

Applying to Graduate School: A Test of the Theory of Planned Behavior

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Many students graduate from college each year and must decide to either apply for a job or apply to graduate school. Ajzen's theory of planned behavior was used to predict students' intentions and application behaviors from their attitudes, subjective norms, and perceived behavioral control. Sixty upper division students reported intentions to apply to graduate school. The data supported Ajzen's theory. The single best predictor of intentions was the students' attitudes about graduate school and how graduate school would be helpful for their future careers. Perceived behavioral control was also a significant predictor of actual application behaviors.

Throughout the college career, students make significant decisions and plans regarding their futures. For many students, the most important decisions pertain to their future employability. While some graduates take steps to enter the work force upon graduation, others place their attention on preparing for graduate school. In this study, motivational components related to applying for graduate school are examined using the theory of reasoned action developed by Fishbein and Ajzen (1975) with its extension, the theory of planned behavior Ajzen (1985).

Both models include attitudes, subjective norms, intentions, and target behavior. The authors state that a person first forms an intention to engage in a certain behavior. Intentions are assumed to capture the motivational factors that influence behaviors and they indicate a willingness to try hard and a plan to exert effort in order to perform the behavior

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(Fishbein & Ajzen, 1975; Ajzen, 1985). According to theory, a person's intentions to perform are the immediate antecedent of a behavior. Intentions are a function of salient information about the likelihood that performing a specific behavior will lead to a desired outcome. In this study, intention relates specifically to three items that ask about an individual's intention to apply, to get into, and to complete graduate school.

Individual attitudes drive these intentions and reflect the degree to which a person has a positive or negative evaluation of the behavior. Attitudes about a behavior are determined by the individual's salient beliefs about whether or not that behavior leads to some valued outcome (Fishbein & Ajzen, 1975; Ajzen, 1985). For example, "I believe that going to graduate school is more important to my future success than getting a job." A second factor, subjective norms, is linked to the perception of social pressure to perform a behavior. Subjective norms involve beliefs that other individuals or groups think he or she should perform the behavior (Fishbein & Ajzen, 1975; Ajzen, 1985). These beliefs are also thought to influence intentions and behavior.

Ajzen (1985) extended the original model by adding perceived behavioral control. This addition targets conditions where personal control may be variable. Perceived behavioral control is a non-motivational factor and represents the degree to which a person believes that the required opportunities and/or resources are accessible for performing the behavior (Ajzen, 1988). According to Madden, Ellen and Ajzen (1992) the more resources and opportunities people think they possess, the greater should be their perceived control over the target behavior. For example, "I have confidence that my level of persistence will eventually cause me to get into graduate school." The theory of planned behavior by Ajzen (1985) is seen in Figure 1 and can be summarized as follows: one's intention to perform a behavior is a function of three determinants: the individual's attitude toward the behavior, subjective norms about the behavior, and perceived behavioral control over the behavior.

The theory of planned behavior has been used to predict leisure choice, weight loss, as well as health-related behaviors. In a clear-cut application of the theory, Ajzen and Driver (1992) successfully used it to predict leisure choice in college students. Attitudes, subjective norms, and perceived behavioral control predicted intentions; and both intentions and perceived behavioral control predicted leisure behavior. Schifter and Ajzen (1985) also looked at weight loss intentions and behaviors in college-aged women. Again, attitudes, subjective norms, and perceived behavioral control predicted intention, and intention and perceived be-

havioral control predicted actual weight loss, but not as strongly as attitudes, subjective norms, and perceived behavioral control predicted intentions. Actual weight loss did increase when the women were given strategies to increase their control over the behavior. These strategies probably served to increase their perceived behavioral control.

A variety of studies have successfully applied the theory of reasoned action/planned behavior to predict safe sex behavior, such as the use of condoms (e.g., Boyd & Wandersman, 1991; Godin, Maticka-Tyndale, Adrien, Manson-Singer, Willms, & Cappon, 1996; Jemmott & Jemmott, 1991; Morrison, Gillmore and Baker, 1995; Norris & Ford, 1995; Reinecke, Schmidt, & Ajzen, 1996; White, Terry & Hogg, 1994; Wulfert & Wan, 1995). Reinecke, Schmidt, and Ajzen (1996) for example, questioned German teenagers during a one-year interval on their intentions to use condoms with new partners. Their findings were consistent with the theory that attitudes, subjective norms, and perceived behavioral control accurately predicted intentions to practice safe-sex.

In another study, Caska (1998) looked at graduating seniors' intentions to apply for a job and their job-seeking behavior. Results indicated that intentions predicted behavior and intentions were explained by attitudes, subjective norms, and perceived behavioral control.

In the current study, the theory of planned behavior was used to predict college students' intentions and behaviors related to graduate school admissions from their attitudes, subjective norms and perceived behavioral control. In other words, their attitudes toward graduate school, the perceived beliefs held by people around them regarding graduate school and their level of control over behaviors and characteristics related to graduate school should predict the strength of their intentions and behaviors related to admission. It was hypothesized that behavior could be predicted from perceived behavioral control and intentions, and that intentions would correlate with attitudes, subjective norms, and perceived behavioral control. Additionally, these variables would intercorrelate with one another and intentions would correlate with behavior. In other words, a person with a positive attitude toward graduate school, who feels social support for going to graduate school and who has perceived behavioral control would be more likely to intend to go to graduate school and actually apply to graduate school.

METHOD

Participants/Setting

Study participants were college students at a local university in Eastern North Carolina who were enrolled in upper division psychology

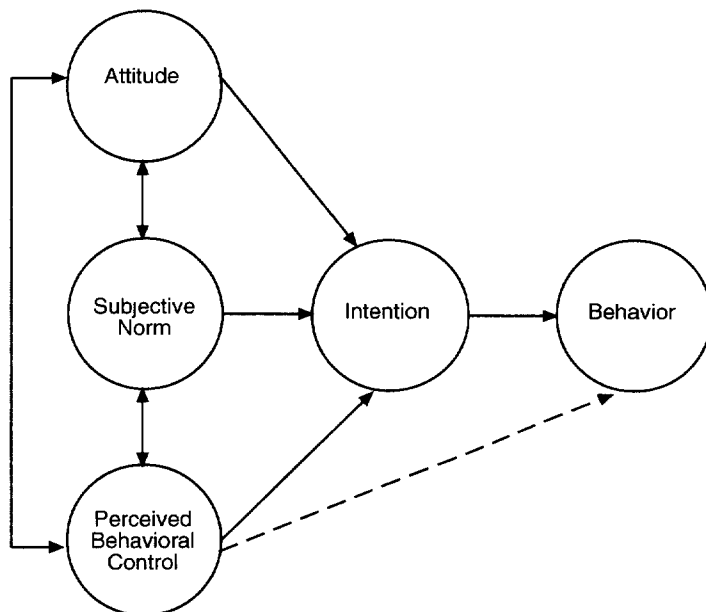


FIGURE 1 Ajzen's Theory of Planned Behavior

classes. These voluntary participants were asked to read and sign an informed consent form and to complete a questionnaire. The final sample consisted of 27 (45%) seniors, 26 (43.3%) juniors, 4 (6.7%) sophomores, and 3 (5%) non-degreed students. By gender there were 37 (62%) females and 23 (38%) males. Participants' ages ranged from 20 to 24 years of age except for one participant who was over 24 years.

Questionnaire/Materials

A total of 131 surveys were completed. The survey was divided into two parts. The first part was meant for those intending to apply to graduate school (39 survey items) and the second part was for those intending to look for a job upon graduation (31 survey items). The survey also included six demographic questions for a total of 76 items. Only those surveys where the graduate school portion was filled out ($N = 60$) were used for this study.

Of the 39 questions related to applying to graduate school, 6 items assessed attitudes toward going to graduate school (e.g., "I believe I can be successful in graduate school at this point in my life"). Subjective

norms measured by 11 items include, "My parents think it is important for me to go to graduate school", and perceived behavioral control with 8 items include, "If I try hard, I will get into graduate school." Intentions were measured by 3 items (e.g., "I intend to apply to graduate school for admission within the next two years following graduation"), and actual behavior was measured by 11 items (e.g., "I have sent quite a few applications to graduate schools"). The focus for all items was on the application process rather than on actually completing a graduate program. All of the components of the theory of planned behavior were measured on a 7-point Likert-type scale.

Procedure

Participants were asked to fill out an informed consent stating that they were volunteers and could end the experiment at any time. The consent form also had the experimenter's name and phone number in case there were any future questions. All participants were given brief verbal instructions by the experimenter that reiterated the directions printed on the survey. Items comprising each of the five variables (attitudes, subjective norms, perceived behavioral control, intention, and behavior) were summed into a combined score for each variable.

Statistical Analysis

As shown in Figure 1, Ajzen's model proposes a particular causal flow from a set of exogenous variables (attitude, subjective norms, and perceived behavioral control) through an intervening variable (intention) to an outcome variable (behavior). We tested Ajzen's model with a path analysis, which is an appropriate and often employed technique for testing the fit between such a model and the observed set of correlations between variables in the model.

We acknowledge that the sample size ($N = 60$) employed in this study is not large, and, accordingly, the error bands around the reported coefficients are wider than they would be with a larger sample size. Nevertheless, the sample size was sufficiently large for all of the zero-order and multiple correlations to be statistically significant beyond the .01 level, as the reader will soon see. Of course, some of the smaller and nonsignificant partial effects may well have been significant were sample size larger, but that is always the case. If the partial effects predicted by Ajzen's model to be small are, in fact, notably smaller than those predicted to be large, then we shall consider the model to have been supported regardless of whether these partial effects are statistically significant or not.

TABLE 1 Simple Correlations Among the Scales

<i>Scale</i>	<i>Attitude</i>	<i>Subjective Norm</i>	<i>Perceived behavioral control</i>	<i>Intention</i>
Subjective Norm	.47			
Perceived behavioral control	.66	.50		
Intention	.77	.41	.46	
Behavior	.52	.38	.50	.50

TABLE 2 Effect Coefficients for the Path Model

<i>Variable</i>	<i>Direct</i>	<i>Indirect</i>	<i>Total</i>
Attitudes	—	.28	.28
Subjective Norm	—	.03	.03
Perceived Behavioral Control	.34	-.04	.30
Intention	.35	—	.35

RESULTS

Inter item reliability of the specific elements or scales, using Cronbach's alpha, was .79 for the attitude scale, .77 for the subjective norm scale, .66 for the perceived behavioral control scale, .68 for the intention scale, and .88 for the behavior scale. Before employing a path analysis, the elements of the model were checked to determine whether they related significantly to each other. Table 1 presents the correlations among the scales. As shown in the table, all correlations are significant beyond the .01 level.

A path analysis was conducted to test the fit between the data and Ajzen's model. The model and the resulting path coefficients are shown in Figure 2. Intention was significantly correlated with the three exogenous variables (attitude, subjective norm, and perceived behavioral control), $R^2 = .60$, $F(3, 56) = 27.98$, $p < .001$, but the partial effects of subjective norm and perceived behavioral control fell short of statistical significance ($p > .05$). Behavior was significantly correlated with intention and perceived behavioral control, $R^2 = .34$, $F(2, 57) = 14.85$, $p < .001$, with both partial effects being significant beyond the .01 level. The effect coefficients for this model are shown in Table 2.

Ajzen's model does not include direct paths to behavior from attitude or from subjective norm. As a test of this model, we compared

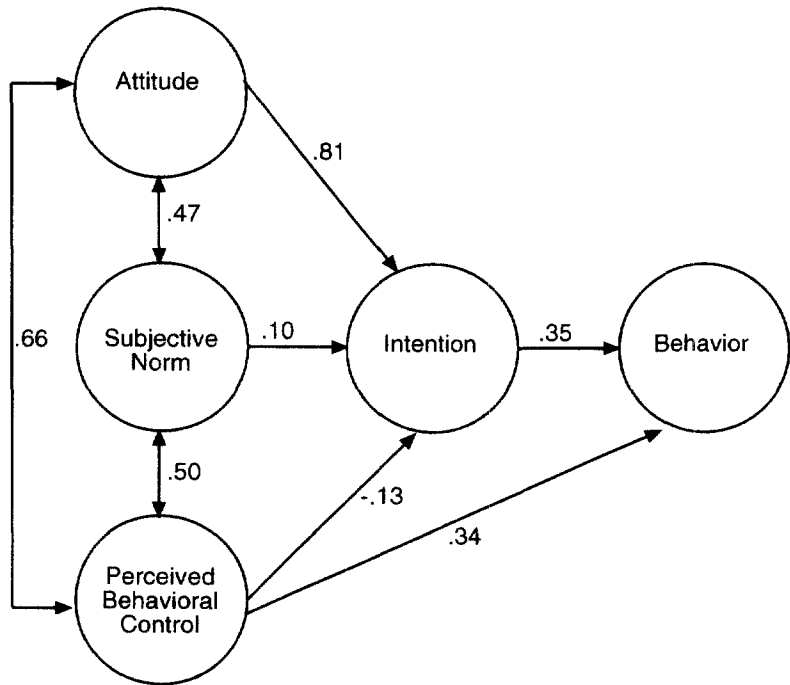


FIGURE 2 Path Analysis of Ajzen's Theory of Planned Behavior

the overidentified model (that which does not include those two direct paths) with a just-identified model (that which does include those two direct paths). For the just-identified model, behavior was significantly related to the remaining four variables. $R^2 = .35$, $F(4, 55) = 7.47$, $p < .001$. Given the great redundancy among the predictor variables, none of the partial effects was significant. The beta weights for intention (.27) and perceived behavioral control (.26) were markedly higher than those for the two paths absent in Ajzen's model, attitude (.11) and subjective norm (.09). Dropping attitude and subjective norm from the regression model for predicting behavior did not significantly reduce the R^2 , $F(2, 55) = .40$, $p = .67$. A test of the difference between the two path models (Ajzen's overidentified model and the just-identified model) indicated that Ajzen's model did not fit the data significantly less well than did the just-identified model, $W(2) = 2.85$, $p = .24$. In other words, deletion of

the direct paths to behavior from attitude and subjective norm did not significantly reduce the fit between the model and the data.

DISCUSSION

Results of the present study show how the theory of planned behavior can increase understanding of the factors that influence and determine students' application behaviors. First, the three components of intentions; attitude, subjective norms, and perceived behavioral control were correlated with each other as the theory predicts. Second, these three variables each contributed to the prediction of intentions to apply to graduate school. Of these, attitude had the highest correlation with intentions. It is evident in the present sample that students' beliefs about the benefits of graduate school related to their intentions to apply. People who have a positive attitude toward graduate school are more likely to intend to go graduate school. The same is true for people whose significant others, including families and friends, have a positive attitude toward graduate school and also for those who feel that they have some behavioral control over getting into graduate school.

When all three variables were examined simultaneously with regards to intention, only one had a significant partial effect. Only the partial effects of attitudes significantly predicted intentions and behavior in each case, making attitudes an important variable when looking at students' intentions and subsequent behavior. Ajzen (1991) analyzed the effects of these variables on intention from several studies. He noted that attitudes were especially important when predicting intentions as compared to subjective norms. One explanation as to why subjective norms are not a strong predictor of intentions in the present study can be that most of the students' parents did not go to graduate school themselves. In fact, 41 out of 55 (75%) participants who responded to this question had parents that did not go to graduate school.

Self-determination theory (Deci & Ryan, 1985; Deci & Flaste, 1995) has received widespread support and also might account for the greater effect of attitudes compared to subjective norms. According to this theory, people are more persistent in goals when they have selected them themselves. To the degree that the encouragement of others is felt as pressure or control, people feel less motivated and persistent.

All four variables: attitude, subjective norms, perceived behavioral control, and intentions, when looked at simultaneously, predicted behavior. Each was significantly correlated with behavior. This may be the case because they are all significantly correlated with each other, making them redundant. Individually, each of these significantly influences

behavior. When perceived behavioral control and intentions were examined without subjective norms and attitude, behavior was still predictable. Thus Ajzen's model significantly predicted behavior from both intentions and perceived behavioral control. In other words, individuals who rated high intentions to apply to graduate school were actually engaging in pre-application behaviors. Also, individuals who believe that they can successfully accomplish behavior, were more likely to attempt the behavior. According to Ajzen (1991), both of these variables contribute to the prediction of behavior.

Limitations of this study included a small size and a restricted sample. Although 131 surveys were collected, only 60 were used for this study due to the respondent's interest in graduate school versus applying for a job following graduation. The sample consisted of students in psychology classes from at least eight different majors, including psychology (40%), industrial technology (17%), education (5%), business (5%), social work (2%), rehabilitation sciences (6%), nursing (2%), and other (23%). Future studies (employing larger sample sizes) are needed across different graduate areas. It would also be desirable to increase the number of items in the scales used to measure perceived behavioral control and intention, which had relatively low reliability coefficients (.66 and .68, respectively). Nunnally (1978, p. 245) recommended that instruments used in basic research (rather than in applied settings, where important decisions may be affected by individual scores) have a reliability of .70 or higher, and added that it would be a waste of effort to attempt to increase reliabilities beyond .80. It is well known that reliability coefficients are greatly influenced by the number of items on a test. Using methods presented in Nunnally (1978, p. 244), we estimated that increasing the number of items on the perceived behavioral control instrument from 8 to 12 and on the intention instrument from 3 to 4 would raise their reliability to approximately .75.

The present study did not examine predictive differences between majors due to sample restrictions. Yet, majors such as psychology may be more diverse with at least two distinct orientations: the humanistic and the experimental. Other graduate programs, say engineering, might be more homogeneous and predict quite differently.

Another factor would be to do a follow up to compare those who actually entered and completed graduate school versus those who did not. However, the time consuming nature of the follow up poses certain methodological constraints.

In addition to examining other types of students, it would be interesting to compare other models such as the self-determination model

(Deci & Ryan, 1985; Deci & Flaste, 1995) to the theory of planned behavior. Self-determination theory more specifically examines causality underlying motivations and might also add to our understanding of what predicts future graduate education. While intrinsic motivation is consistently optimal, the opposite extreme is amotivation which is lacking in purpose or reward. Deci and Ryan (1985) extend extrinsic motivation into types ranging from operating perfunctorily with the use of external regulation (due to constraints or rewards) versus identified motivation, a position which is importantly tied to goals or values. Identified motivation appears to be a transitional, entry phase of involvement that can lead to intrinsic motivation. It is possible that identified regulation would typify students applying to graduate school. Bandura's (1977) self-efficacy model might also prove useful in future research based on its emphasis on motivation and an individual's perceived ability to get things done.

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