Predicting Academic Misconduct Intentions and Behavior

Using the Theory of Planned Behavior and Personality

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Abstract

The efficacy of Azjen's (1985; 1991) Theory of Planned Behavior (TPB) for the prediction of cheating intentions and behaviors was examined in a sample of 241 business undergraduates. Mediated structural equation models of the TPB, with personality constructs, adjustment and prudence, as antecedents were examined. The TPB model explained 21% of the variance in cheating intentions and 36% of cheating behavior. Results support both the TPB model and a partially mediated model in which prudence, but not adjustment, is significantly related to model components, attitudes, norms, control and behavior but not intention to cheat. These results suggest the TPB model may parsimoniously integrate and advance academic misconduct research. Further TPB research and practical implications are discussed.

Keywords:

ethical issues, management education, academic misconduct, theory of planned behavior

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Cheating, plagiarism, and other forms of academic misconduct are a significant problem in high schools (Josephson Institute of Ethics, 2006) and colleges and universities (Davis, Grover, Becker, & McGregor, 1992; McCabe & Treviño, 1993, 1997). In 2005, McCabe showed that, based on data collected from over 18,000 students in 61 colleges in the U.S. and Canada, cheating and plagiarism are widespread, with rates as high as 71 and 70%, respectively. These data also indicated that cheating is especially prevalent in business programs, students are engaging in cheating earlier in their academic careers, and cheating is becoming a habit for a growing number of students. This trend is disconcerting in light of empirical evidence of associations between academic misconduct and both endorsement and engagement in unethical workplace behaviors (McCabe, Treviño, & Butterfield, 1996; Nonis & Swift, 2001; Sims, 1993; Treviño, Weaver, & Reynolds, 2006; Weber & Gillespie, 1998).

A great deal of research on academic misconduct including cheating and plagiarism offenses has been conducted (e.g., Crown & Spiller, 1998; Kisamore, Stone, & Jawahar, 2007; McCabe, Butterfield, & Treviño, 2006; McCabe, Treviño, & Butterfield, 1999, 2001, 2002). Few studies, however, have been based on accepted theoretical models of behavior. Most academic integrity research to date has relied on demographic, situational and personality variables to predict and explain violations of academic integrity.

In their 1994 review, Ford and Richardson (1994) noted that "The paucity of empirical research grounded on theory has substantially impeded the development of the field" (p. 205). Later, Chang (1998, p. 1825) noted that the Theory of Planned Behavior and its predecessor, the Theory of Reasoned Action provide ample foundation "to investigate unethical behavior" but that "Heretofore, the theories have rarely been applied to this behavioral domain." While both of these statements were made over 10 years ago, use of

theoretical models as a foundation for empirical research on academic misconduct remains an uncommon practice.

Research on academic misconduct, however, may finally be moving toward development and use of theoretical model foundations. Several recent studies (Beck & Ajzen, 1991; Harding, Mayhew, Finelli, & Carpenter, 2007; Passow, Mayhew, Finelli, Harding, & Carpenter, 2006; Stone, Kisamore, & Jawahar, 2007) have begun to examine the efficacy of Ajzen's (1985, 1991) Theory of Planned Behavior for explaining why students engage in academic misconduct. We believe that research, guided by a theoretical model, is necessary to develop an understanding of the rationale underlying academic misconduct and to determine the most effective means of curbing such behaviors. Ajzen's (1991) Theory of Planned Behavior shows promise as a parsimonious model of academic misconduct.

With the exception of one study (Beck & Ajzen, 1991), previous research on academic misconduct that utilized the Theory of Planned Behavior has relied on post hoc categorization of model components (e.g., Passow et al., 2006; Stone et al., 2007) and/or tested not the original but instead modified versions of the model (e.g., Harding et al., 2007; Passow et al., 2006). Thus, the primary goal of this study is to conduct an a priori test of the original Theory of Planned Behavior model. A second goal of this study is to examine if personality, specifically, prudence and adjustment, serves as antecedents to Theory of Planned Behavior components in the prediction of academic misconduct.

<center>The Theory of Planned Behavior</center>

The Theory of Planned Behavior (TPB) (Ajzen, 1985; 1991) is an extension of the Theory of Reasoned Action (TRA) (Fishbein & Ajzen, 1975), a model developed to identify antecedents to engagement in a given behavior. The TPB stipulates three components predict intention to engage in a specific behavior and intention predicts subsequent engagement in that behavior. Intention to engage in a behavior is affected by: (a) attitudes toward the

behavior, i.e., beliefs about a specific behavior and its consequences; (b) subjective norms, i.e., normative expectations of other people who are important to the actor regarding the behavior, and (c) perceived behavioral control, i.e., the perceived difficulty or ease of performing the behavior. Addition of perceived behavioral control distinguishes the TPB from its predecessor, the TRA (Fishbein & Ajzen, 1975).

Ajzen added perceived behavioral control to enhance prediction where behavior is not completely under a person's volitional control such as in situations where behavior may be constrained, violates norms or rules, or both. Thus, addition of the perceived behavioral control component takes into account whether a person has access to necessary resources and has the opportunity to engage in the behavior (Azjen & Madden, 1986). Cheating, plagiarism and other forms of academic misconduct are obvious examples of such behaviors in that they not only violate academic integrity policies but are also usually constrained by other factors, such as monitoring by test proctors and/or availability of another student's test from which to cheat. For instance, a student may have a favorable attitude toward cheating and may have friends who also engage in cheating, but the level of examination monitoring in a specific class may make cheating very difficult or impossible. Research supports the superiority of the TPB over the TRA in predicting a range of intentions and behaviors, including ethical and unethical activities (see Chang, 1998; Kurland, 1995; Madden, Ellen, & Ajzen, 1992).

Previous Support of the TPB

Ajzen's webpage includes a bibliography of articles that have used the TPB; the bibliography lists 56 theory and review papers and 690 empirical papers (Ajzen, 2009). While many empirical studies have used the TPB to predict health and safety-related intentions (see Ajzen, 2009) such as use of alcohol and cannabis (Armitage, Conner, Loach, & Willets, 1999) as well as condom usage, binge drinking and drunk driving (Armitage, Norman, & Conner, 2002) a meta-analytic review by Armitage and Conner (2001) supports

use of the TPB as a robust theory for predicting an array of intentions and behaviors. Results of their synthesis of 185 independent studies published through 1997, indicated that, across a variety of disciplines, the TPB accounted for 27% and 39% of the variance in behavior and intentions, respectively.

TPB and Academic Misconduct

Despite its ability to predict a range of behaviors, use of the TPB (Ajzen, 1991) in academic misconduct research has been limited. Research utilizing the TPB varies greatly in how it treats the model ranging from using it as an ex post facto explanatory tool to using it as the foundation of an a priori test of a theoretical model. Whitley's review (1998) examined the efficacy of the model by categorizing variables from existing research according to the TPB and then using the TPB as the basis for a model of academic misconduct. Passow et al. (2006) and Stone et al. (2007) used ex post facto categorization of items into TPB model components and examined the relationship between the TPB model and measures of academic misconduct. The TPB has also been used a priori in studies of academic misconduct by Beck and Ajzen (1991) and Harding et al. (2007). Below we briefly review these studies to describe the present state of TPB-based academic integrity research.

The most direct test of the efficacy of the TPB for predicting academic dishonesty thus far is also the oldest study. Beck and Ajzen (1991) utilized the TPB to predict shoplifting, cheating on an exam, and lying to get out of an exam or assignment in a sample of 146 psychology students. They conducted two tests, one for the original model and the second for a modified model that included moral obligation, a variable they believed might enhance prediction of misconduct behaviors. Their results showed that, of the three TPB components, perceived behavioral control explained the most variance in both cheating and lying. Ajzen (1991; 2002) argued that when resources and opportunities are not under volitional control, behavioral control may better predict behavior than attitudes and norms.

Results of the second test found moral obligation added "only modest utility" (1991; p. 296), accounting for only 3% of unique variance. Whitley's (1998) review, classifying 16 studies using TPB model components, found the TPB accounted for 27.8% of variance in cheating.

Recent work by Passow et al. (2006), Harding et al. (2007) and Stone et al. (2007) examined modified versions of the TPB model that included moral obligation that was correctly labeled as separate from the TPB. Passow et al. provided weak support for the TPB, but the study did not examine cheating intentions. Harding et al.'s (2007) a priori study of a modified TPB model also found moral obligation affected intent to cheat. They also found demographic variables (e.g., gender, discipline, fraternity membership) and previous cheating behavior moderated the relationship between intent and self-reported cheating behavior. The Harding et al. (2007) model accounted for 39% of the variance in cheating on tests and 27% on homework, indicating stronger support for their modified model than in Passow et al. (2006). Harding et al. (2007) noted that in their study and the Passow et al. study, perceived behavioral control was not a significant predictor. Stone et al. (2007), like Passow et al. (2006), used ex post facto categorization of survey items. Stone et al.'s mediated regression analysis indicated that, based on a sample of 217 undergraduate business students, the TPB model accounted for 15% of the variance in intentions and that the model fully mediated effects of two personality measures, prudence and adjustment.

This review reveals that few studies have examined the efficacy of the TPB model for predicting cheating, plagiarism and related violations of academic integrity. Only Beck and Ajzen (1991) examined academic cheating using an a priori, unmodified TPB model. The current study is the first to examine a priori, the efficacy of the unmodified TPB model for predicting academic misconduct intentions and behavior using structural equation modeling. We expect the TPB model will be a good fit to the data.

Hypothesis 1: The Theory of Planned Behavior components of attitudes, social norms

and perceived behavioral control will be related to intentions. Perceived behavioral

control and intentions to cheat will be related to actual cheating behaviors.

Expanding the Theory of Planned Behavior

Based on their Theory of Reasoned Action, Fishbein and Ajzen (Ajzen & Fishbein, 1980; Fishbein & Ajzen, 1975) contended that "external variables" variables such as personality characteristics may influence behavior but that their influence is mediated by attitudes toward the behavior and subjective norms. Using the TPB, perceived behavioral control would also be included as a mediator of these relationships.

Relatively few studies have examined the effects of personality on academic integrity. In their review of over two decades of academic integrity literature, Crown and Spiller (1998) found only one personality variable, locus of control (Rotter, 1966), demonstrated consistency in the prediction of academic misconduct (Forsyth, Pope, & McMillan, 1985; Houston, 1986; Karabenick & Srull, 1978; Leming, 1980) with "externals" more likely to cheat than "internals." Bolin (2004) and Kisamore et al. (2007) investigated the relationship between personality traits, integrity culture and academic dishonesty. Bolin examined academic dishonesty using a model that included the disposition self-control, attitude toward academic dishonesty and perceived opportunity for cheating. The self-control measure contained items from six dimensions: impulsivity, risk taking, preference for physical activity, self-centered, temper and preference for simple tasks (Gottfredson & Hirschi, 1990). Students low in self-control had more favorable attitudes toward academic dishonesty and attitudes accounted for 40% of the variance in academic dishonesty (Bolin, 2004).

Self-control is closely related to adjustment, one of seven factors measured by the Hogan Personality Inventory (HPI) (Hogan & Hogan, 1995). The HPI was designed to improve upon measures of the Five Factor Model (FFM) of personality, because "the FFM

concerns the structure of *observer* [emphasis added] ratings; the structure of self ratings is necessarily more complex" (Hogan & Hogan, 1995, p. 3). Adjustment is comparable to emotional stability and is the opposite of neuroticism. Persons low in adjustment are characterized as tense, temperamental, unhappy and easily stressed while those scoring high are described as self-confident, able to handle pressure, upbeat and calm (Hogan & Hogan, 1995). High prudence scores are associated with people who are reliable, detail-oriented and follow organizational procedures while low prudence scores are associated with behaving impulsively, irresponsibly, and carelessly (Hogan & Hogan, 1995). Kisamore et al. (2007) found that low prudence and adjustment scores predicted cheating in a sample of business students better than demographic variables or academic integrity culture.

We expect the TPB component, attitude toward cheating, will mediate the relationships between adjustment and both intention to cheat and cheating behavior. Because students low in adjustment tend to be unhappy, temperamental and easily stressed, they are more likely than high adjustment students to hold favorable attitudes toward cheating. Low adjustment students may see cheating as a coping mechanism and a way to handle school pressures. Students who score low in adjustment may be likely to associate with similar students leading to a perception that cheating is a normative and acceptable behavior. As Armitage and Conner (2001) found for neuroticism, we expect adjustment will be negatively related to perceived behavioral control and therefore the relationship will be partially mediated.

A high level of prudence is likely to be associated with favorable attitudes toward honesty and academic integrity. High prudence students will be more likely to resist the influence of norms and pressures to cheat. Therefore, we expect the effect of adjustment and prudence on intention to cheat and cheating behavior will be mediated by TPB components.

In this study, we examine the influence of adjustment and prudence on academic misconduct. A long-standing criticism of much of the research linking personality to behavior is the failure to specify the mechanism by which personality traits are linked to behavior (e.g., Tett & Burnett, 2003). We propose that the personality traits of adjustment and prudence will, in part, shape attitudes, perceived social norms and behavioral control, which in turn, will influence intentions to engage in academic misconduct and academic misconduct behaviors.

Hypothesis 2: The effect of personality characteristics, adjustment and prudence, on intentions to cheat and actual cheating behaviors will be mediated by the TPB components of attitudes, subjective norms, and perceived behavioral control.

Method

Sample

A total of 438 undergraduate business students in 8 marketing and management classes at a large, mid-western public university in the U. S. were recruited. Extra credit was offered as an incentive for participation and an alternative assignment was offered to students who did not choose to participate. The study was conducted near the end of the term and some students had already earned the maximum extra credit allowed for the course. A total of 281 students participated in the study for a response rate of 64.2%. Of the 281 participants, 16 cases were eliminated as respondents had only completed the Hogan Personality Inventory, leaving the entire or substantial portions of the academic integrity survey blank. Another 24 cases were eliminated due to careless responding on the Hogan Personality Inventory as identified by scores lower than 10 on the inventory's validity scale. The effective sample for the current study was 241, 55% of the original number recruited.

Twenty-three percent of participants were between the ages of 18 and 20, 52% between 21 and 23, and the rest were 24 years or older. Men comprised 49% of the sample. Almost 89% of participants were full-time students. Fifty-six percent of the participants had

earned 90 or more hours of college credit, 25% between 60 and 90 hours of college credit and the rest had earned less than 60 hours of college credit toward their degrees.

Measures

Items used to measure the constructs are included in the Appendix. All items were measured on 5-point Likert-type scales. Internal consistency reliability coefficients as well as correlations between study variables are provided in Table 1.

Attitude toward misconduct. The attitude toward academic misconduct scale consisted of 7 items ($\alpha = .81$) that assessed participants' beliefs regarding cheating, willingness to report cheating by other students and assist others in cheating. High scores indicate an accepting attitude of academic misconduct behavior.

Subjective norms. Subjective norms were measured with 7 items ($\alpha = .85$) assessing participants' perceptions and suspicions regarding the frequency of various forms of academic misconduct. High scores indicate a belief that academic misconduct is the norm.

Perceived behavioral control. As recommended by Ajzen (2002) and others (Armitage & Conner, 2001), we measured perceived behavioral control with 4 items ($\alpha = .80$) designed to assess the self-efficacy, the "ease or difficulty," of cheating.

Intention. Intention to engage in academic misconduct was assessed using 8 items ($\alpha = .90$) that asked respondents how likely they would be to consider various types of academic integrity violations. Thus, high scores indicate intent to cheat and/or plagiarize.

Behavior. Academic misconduct was measured using 10 items ($\alpha = .89$) asking how often respondents engaged in behaviors such as cheating on a test, helping others cheat, collaborating without permission, and plagiarizing a paper. These questions were identical to those used by McCabe and colleagues in previous work (see McCabe, 2005; McCabe & Treviño, 1993, 1997). High scores indicate greater engagement in academic misconduct.

Hogan Personality Inventory (HPI). The HPI is a self-report measure of normal personality, based on the socio-analytic theory of personality (Hogan & Hogan, 1995). Considerable data are available to support the reliability and validity of HPI scores (Hogan & Hogan, 1995). The HPI consists of seven personality scales: adjustment, ambition, likeability, school success, intellectance [sic], prudence, and sociability, as well as a validity scale that detects careless responding. For the current study, the HPI was used to measure adjustment ($\alpha = .89$), prudence ($\alpha = .78$), and validity of responses. High scores on adjustment reflect stability, even temperament and the ability to perform under pressure while high scores on prudence indicate a person who is conscientious, reliable, detail-oriented and who follows organizational procedures (Hogan & Hogan, 1995).

Procedure

Participants completed the integrity and personality inventories online, outside of regular class time. Participants were given a logon code and an individual password and assurance of confidentiality of their responses.

Results

Confirmatory Factor Analysis (CFA)

The integrity inventory was used to measure the TPB model components of attitudes, subjective norms, behavioral control, intentions and cheating behaviors. Anderson and Gerbing (1988) recommend specifying and testing the measurement model prior to introducing the structural model. To examine the factor structure, a CFA was conducted using LISREL 8.5 (Joreskog & Sorbom, 1993). Sample covariances served as input for all LISREL estimates (Joreskog & Wold, 1982).

Factor structures of four different models were compared. Root mean square error of approximation (RMSEA), comparative fit index (CFI) and standardized root mean square residual (SRMR) were used to evaluate model fit. Model 1 contained one factor comprised

of all items used to measure the five TPB components; Model 2 included items used to

measure the three TPB predictor components as one factor, and intentions and behavior as a

second factor; Model 3 was identical to Model 2, but intentions and behavior were separate

factors. RMSEA, CFI and SRMR values indicated that Models 1, 2 and 3 did not fit the data.

The fourth model (Model 4) was the full TPB model in which items used to measure the five

components were specified to load on their respective constructs. This model was supported

as fit statistics indicated acceptable fit for the model, χ^2 (549, $N = 241$) = 1905.63, RMSEA =

.092, RMSEA 90% confidence interval (.09, .10), CFI = .91, and SRMR = .10.

Evidence of convergent validity is ascertained by examining if individual indicators

load significantly on hypothesized dimensions (Anderson & Gerbing, 1988, p. 416). All paths

from the latent constructs to individual indicators were statistically significant ($p < .05$) and

completely standardized factor loadings ranged in values from .30 to .88 (see Appendix).

The chi-square difference test and the confidence interval test were used to ascertain

evidence of discriminant validity (Anderson & Gerbing, 1988). Results of chi-square

difference tests between Models 1, 2 and 3 and the TPB model were all significant indicating

retaining the hypothesized measurement model. The 90% confidence interval of the RMSEA

values of Model 1 (.16, .17), or Model 2 (.15, .16) or Model 3 (.12, .13) did not overlap with

that of the hypothesized model (.09, .10). A model with more factors is considered to be

significantly better than a model with fewer factors if the confidence interval of RMSEA

value of the two models do not overlap. Results of chi-square tests and the non-overlapping

confidence interval tests (Anderson & Gerbing, 1988) provide evidence of discriminant

validity. Means, standard deviations, and correlations between latent variables from the PHI

matrix are reported in Table 1.

Insert Table 1 about here

Structural Model

Before we examine whether adjustment and prudence serve as antecedents to the TPB model, it is important to first examine support for the TPB model. The first structural model we tested was the full TPB model. According to Beck and Ajzen (1991), attitudes, norms and behavioral control influence intentions. They suggest that to predict behavior it may sometimes be sufficient to consider only intentions; in instances involving undesirable behaviors, such as cheating, however, both intentions and perceptions of behavioral control may be needed. This structural model had the same indicator structure as the measurement model but included direct paths from attitudes, norms and behavioral control to intentions, and direct paths from perceived behavioral control and intentions to behavior (see Figure 1).

Insert Figure 1 about here

The TPB structural model provided an acceptable fit to the data, χ^2 (552, $N = 241$) = 1962.45, RMSEA = .10, RMSEA 90% confidence interval (.10, .11), CFI = .91, and SRMR = .10. Attitudes ($\beta = .22$, $p < .01$), subjective norms ($\beta = .14$, $p < .05$), and perceptions of behavioral control ($\beta = .24$, $p < .01$) were significantly related to intentions, and collectively explained 21% of the variance in intentions. Intentions ($\beta = .44$, $p < .01$) and perceived behavioral control ($\beta = .27$, $p < .01$) were significantly related to cheating behavior and explained 36% of the variance. Therefore, Hypothesis 1 is supported.

In the second structural model, we examined if adjustment and prudence served as antecedents to TPB model components of attitudes, norms and behavioral control. To examine this model, we added direct paths from both adjustment and prudence to attitude, norms, and behavioral control of the TPB structural model. This full mediation model (see Figure 2) in which TPB model components mediated the influence of adjustment and prudence on intentions to cheat and on behavior also fit the data, χ^2 (619, $N = 241$) = 2136.03,

RMSEA = .10, RMSEA 90% confidence interval (.096, .11), CFI = .90, and SRMR = .14. Attitudes (β = .23, p < .01), subjective norms (β = .19, p < .05), and perceptions of behavioral control (β = .24, p < .01) were significantly related to intentions, and intentions (β = .46, p < .01) and perceived behavioral control (β = .22, p < .01) were significantly related to cheating behavior. The paths from adjustment to attitudes, norms, and to control were not significant. Collectively, the antecedents explained 7% of the variance in attitudes, 8% in norms, and 8% in behavioral control. The paths from prudence to attitudes (β = -.27, p < .01), norms (β = -.26, p < .01) and control (β = -.29, p < .01) were significant.

Insert Figure 2 about here

Next, we examined a partial mediation model (see Figure 3) by modifying the prior model to also include direct paths from adjustment and from prudence to intentions and to behavior. This partial mediation also fit the data, χ^2 (615, N = 241) = 2125.27, RMSEA = .10, RMSEA 90% confidence interval (.096, .11), CFI = .90, and SRMR = .14. None of the paths from adjustment were statistically significant. Prudence continued to significantly relate to attitudes (β = -.28, p < .01), norms (β = -.27, p < .01) and control (β = -.28, p < .01). The path from prudence to intention was not significant, but prudence was significantly related to behavior (β = -.16, p < .05). Attitudes (β = .21, p < .05) and perceptions of behavioral control (β = .24, p < .05) were significantly related to intentions but subjective norms were not (β = .17, ns). Intentions (β = .44, p < .01) and perceived behavioral control (β = .17, p < .05) were significantly related to cheating behavior. The obtained chi-square difference of 10.76 for 4 degrees of freedom was greater than the critical chi-square value of 9.49 indicating that the more restrictive full mediation model should be rejected and the partial mediation model retained. Hypothesis 2 received mixed support as TPB model components partially mediated prudence, but with adjustment, there was nothing to mediate.

Insert Figure 3 about here

Discussion

Findings of this study are consistent with those of Beck and Ajzen (1991), Harding et al. (2007) and Stone et al. (2007) who found strong support for use of the TPB model to predict academic misconduct. The pattern of results in this study is generally consistent with Armitage and Conner's (2001) meta-analysis of TPB research and compare favorably with those of other academic misconduct studies. Specifically, our model explained 21% of the variance in intentions and 36% in behaviors compared to Armitage and Conner's findings of 39% and 27%, respectively. Beck and Ajzen's (1991) data, on the other hand, accounted for significantly more variance in cheating intentions and behaviors, 67% and 54% respectively. Our data explained more variance than Passow et al.'s (2006) modified TPB model, but less than Harding et al.'s (2007) modified model containing moral obligation, past cheating behavior and demographics.

Results of the current study compare favorably with previous research by McCabe and colleagues. For example, in McCabe and Treviño's (1997) research, demographic, situational and perceptual variables accounted for 27% of the variance in self-reported cheating. We argue, however, that McCabe and Treviño's perceptual variables such as perception of peer's cheating behavior, disapproval of cheating and severity of penalties represent the TPB components of norms and perceived behavioral control. Our results provide strong support for Ajzen's TPB model (1985, 1991) as a parsimonious basis for explaining intentions to engage and actual engagement in academic misconduct.

A unique contribution of this study is the structural equation modeling of the full TPB model predicting both intention to cheat and cheating behavior. Results of the confirmatory factor analysis show the TPB model is a good fit to these data accounting for 21% of the variance in intentions and 36% of the variance in cheating behaviors. As expected, attitudes

favorable toward cheating, norms supportive of cheating and low perceived behavior control were positively associated with both intentions to cheat and cheating behaviors.

A notable finding of the current study was support for perceived behavioral control. Consistent with Beck and Ajzen (1991) and Stone et al. (2007), but unlike Passow et al. (2006) and Harding et al. (2007), perceived behavioral control predicted both cheating intentions and behaviors better than either attitudes toward cheating or norms. This finding supports the postulate in TPB theory (Ajzen, 1985, 1991) that argues when there are barriers and/or prohibitions to behaviors, perceived behavioral control is likely a better predictor of behavior than is either attitudes or norms.

This study extends the TPB model in the prediction of misconduct intentions by including examination of two personality variables. Specifically, this study is the first to examine prudence and adjustment as antecedents of the TPB components predicting both intent to cheat and cheating behavior using structural equation modeling. Data from the current study's partially mediated structural equation model are consistent with Stone et al.'s (2007) finding that TPB components fully mediated both prudence and adjustment for intent to cheat. Our data indicate, however, that prudence directly affects cheating behavior, but not intent to cheat and that, contrary to Stone et al. (2007), adjustment was not associated with any components of the TPB model.

Prudence was significantly related to all TPB components except intention. While the zero order correlation (see Table 1) indicated a negative relationship between prudence and intention, results of the partial mediation structural equation model (see Figure 3) suggest that prudence influences intention only through attitudes and perceived behavioral control. Thus, less prudent students hold favorable attitudes toward cheating and perceive a higher level of behavioral control to cheat and consequently, an intention to cheat. The path between subjective norms and intentions was barely significant at the .05 level in the full-mediation

model and when additional paths were added in the partial mediation model (i.e., the paths from adjustment and prudence to intentions and to behavior), the path between subjective norms and intentions failed to reach significance at the .05 level (the exact p value = .067).

Results of the full mediation structural model (see Figure 2) show that students high in prudence tend to hold negative attitudes toward cheating, do not accept cheating norms and view cheating as more difficult than those low on prudence. Conceptually, this suggests that prudence is a useful predictor of TPB components including actual cheating behavior. Therefore, the prudence scale and other HPI scales that have been shown to predict a range of academic, work and other behaviors (Hogan & Hogan, 1995) may have many practical applications.

An unusual finding for the current study was that more variance in self-reported cheating behavior was explained than in intention to cheat. There are several potential explanations for this finding. First, both Beck and Ajzen's (1991) and Harding et al.'s (2007) intention items were very direct and explicit asking, for example, if the respondent intended to cheat on an exam during the next term while our items asked how likely the student was to consider cheating. Items on our intent measure were somewhat vague regarding the time of the intent but were designed to elicit responses regarding current considerations. Previous researchers have asked individuals to estimate their future academic misconduct behaviors, but such questions can be problematic as they require individuals to estimate future behavior without full knowledge of future extraneous factors such as the presence of test proctors (see Sheppard, Hartwich & Warshaw, 1988 for discussion of the measurement of future intentions and behaviors). Differences in time orientation of questions may also affect concept compatibility and may explain the slight differences in findings (see Kaiser, Schulz, & Scheuthle, 2007 for a discussion of the compatibility principle in regards to the TPB).

Second, the bulk of TPB research has examined positive behaviors such as dieting, smoking cessation, condom use and similar healthy behaviors in which people are motivated to engage. Conversely, academic misconduct research tends to be conducted on participants who have already had the opportunity to and often have previously engaged in academic misconduct. The stigma of cheating may affect the relationship between intention and behavior in a different way than for favorable behaviors.

Implications for Research

While these data provide strong support for the TPB model, the implications of the TPB model for both research and practice are also significant. First, support for attitudes in these data is consistent with McCabe and Treviño's (1993, p. 533) assertion that "academic dishonesty not only is learned from observing the behavior of peers, but that peers' behavior provides a kind of normative support for cheating."

Second, McCabe et al.'s (2002) finding that perceived risk of being caught is a strong predictor of cheating regardless of presence of an honor code, suggests that perceived behavioral control may have a more powerful effect on cheating behavior than the norms created by honor codes. To date, very little academic integrity research has explicitly examined perceived behavioral control. While perceived behavioral control has been identified as the most important component in the TPB model predicting cheating in several studies (Beck & Ajzen, 1991; Stone et al., 2007) including the current study, it was not a significant component in two other studies (Passow et al., 2006; Harding et al., 2007). This suggests future academic integrity research may benefit from a more rigorous operational definition of perceived behavioral control and perhaps even development of a standardized measure of the construct.

Finally, prudence not only emerged as an important antecedent of TPB model components but also as an antecedent of actual academic misconduct. Future research should

examine if prudence, a measure of personality, interacts with ability, such as academic ability, to predict academic misconduct. We suspect it might.

Implications for Practice

Empirical data support Ajzen's TPB (1985; 1991) for the prediction of academic misconduct behaviors and thus suggest several possible means for improving academic integrity in the classroom. First, consistent with work by McCabe and colleagues (McCabe, 2005; McCabe & Treviño ,1993; McCabe et al., 1996, 1999), when honor codes are adopted and accepted by at least a portion of a student body, they are a source of norms for positive academic behaviors and serve as a basis for attitudes favorable to academic integrity. Thus, institutions may want to enhance social norms by instituting honor codes or making a concerted effort to disseminate stories about students who resisted opportunities to cheat, students who received awards for integrity and efforts of students who actively support a culture of academic integrity. Such stories would likely be viewed as most significant and may have the greatest effect when conveyed by students and student leaders during freshman orientation sessions.

A second proactive approach to reducing cheating is based on findings of Beck and Ajzen (1991), McCabe et al. (2002), and the current study. The perceived behavioral control construct has been shown to affect academic misconduct intentions and behaviors, suggesting that raising the perception that cheaters will be caught may be an effective method of preventing academic misconduct. Increasing the perception that cheaters will be caught can also be done during freshman and new student orientations by telling stories regarding the difficulty and risks of cheating. Again, freshman orientation may be an especially appropriate time as many students likely engaged in academic misconduct during high school without any significant ramifications.

The history of mankind and much of the research cited above suggest the creation and dissemination of stories of cheaters who were caught is a strategy worthy of experimentation. For example, cheating was strongly discouraged in the ancient Olympic games. Athletes caught cheating were required to pay fines which were used to erect statues of Zeus; on the base of each of the statues, details of the cheating offenses were inscribed to shame the cheaters in perpetuity (Pausanias, as cited in both Barringer, 2005, p. 225 and Golden, 2004, p. 179). Additionally, given that perceived behavioral control is related to self-efficacy, students might be taught how to cope with situations in which they may be tempted to cheat.

Conclusion

Academic cheating is very prevalent and from all accounts seems to be on the rise. This is not surprising given that most of us have dealt with students who have engaged in dishonest academic conduct or know of colleagues who have wrestled with this issue. Some research indicates that cheating in school is related to unethical conduct at work (e.g., Sims, 1993). As academics, we seem to be part of the problem and it may be time to become part of the solution. To accomplish this goal, we believe academics need to conduct theory-based research to gain insights into why people cheat so we can develop suitable means to break the habit and contribute to the development of not only competent but also ethical citizens.

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Appendix

Scale Content and Completely Standardized Factor Loadings

Attitude toward Cheating (options ranged from *strongly disagree* to *strongly agree*)

It is important to report observations of academic dishonesty by other students. (R)   .30

It is always wrong to cheat. (R)   .35

I would report an incidence of cheating by a student whom I do not know. (R)   .36

I would report an incidence of cheating by a student whom I consider to be a friend. (R)   .88

Reporting incidences of cheating is necessary to be fair to honest students. (R)   .80

Students should go ahead and cheat if they know they can get away with it.   .75

I would let another student cheat off my test if he/she asked.   .68

Subjective Norm (response formats varied; generally frequency-based options)

Approximately what percentage of students do you think engage in some kind   .58

of cheating?

In the past year, how often, if ever, have you suspected another student of   .76

cheating during a test/exam?

In the past year, how often, if ever, have you suspected that another student   .73

plagiarized an assignment?

Some of my friends cheat and have NOT been caught.   .65

How frequently do you think plagiarism occurs in classes at your school?   .66

How frequently do you think inappropriate collaboration on assignments   .60

occurs in classes at your school?

How frequently do you think cheating during tests and examinations occurs in   .71

classes at your school?

Perceived Behavioral Control (options ranged from *strongly disagree* to *strongly agree*)

If I wanted to cheat on assignments or papers, it would be easy.	.71
If I wanted to cheat on exams, it would be easy.	.78
In this class, it would be fairly easy for me to cheat.	.84
It is difficult to cheat and NOT get caught. (R)	.49

Intention (Consider Cheating; options ranged from *very unlikely* to *very likely*)

How likely are you to consider turning in another's work done as one's own?	.88
How likely are you to consider collaborating on an assignment that is supposed to be completed individually?	.63
How likely are you to consider writing a paper for another student?	.72
How likely are you to consider getting information about a test from a student who has already taken it?	.39
How likely are you to consider copying from someone else during a test?	.87
How likely are you to consider using unapproved materials to complete an assignment?	.60
How likely are you to consider using unapproved materials to complete a test?	.85
How likely are you to consider plagiarizing a paper in any way using the Internet as a source?	.78

Behavior (options ranged from *never* to *many times*)

If or how often during college have you copied a few sentences from a published or internet source but not given credit to the author?	.57
If or how often during college have you copied from another student and turned in as your own work?	.64
If or how often during college have you helped someone cheat on a test?	.71
If or how often during college have you worked with others on assignment when the instructor asked for individual work?	.67
If or how often during college have you turned in work done by someone else?	.53
If or how often during college have you copied from another student on test?	.77
If or how often during college have you used a text or notes on test without the instructor's permission?	.73
If or how often during college have you received substantial help on assignment without the instructor's permission?	.56
If or how often during college have you cheated on test in any way?	.81
If or how often during college have you used unfair methods to learn about a test before taking it?	.68

Note: (R) is used to denote items that were reverse coded

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Table 1. *Means, Standard Deviations and Correlations between Study Variables*

|	M	SD	1	2	3	4	5	6	7
1. Adjustment	22.14	6.78	(.89)						
2. Prudence	17.89	4.07	.23**	(.78)					
3. Attitudes	2.66	.65	-.02	-.25**	(.81)				
4. Subjective Norms	2.95	.79	-.10	-.18**	.22**	(.85)			
5. Behavioral Control	2.86	.85	-.08	-.18**	.29**	.59**	(.80)		
6. Intention	2.33	.94	-.07	-.19**	.40**	.37**	.37**	(.90)	
7. Behavior	1.75	.68	-.14*	-.25**	.44**	.49**	.49**	.57**	(.89)

Note: * $p < .05$; ** $p < .01$, Scale reliabilities are reported on the diagonal
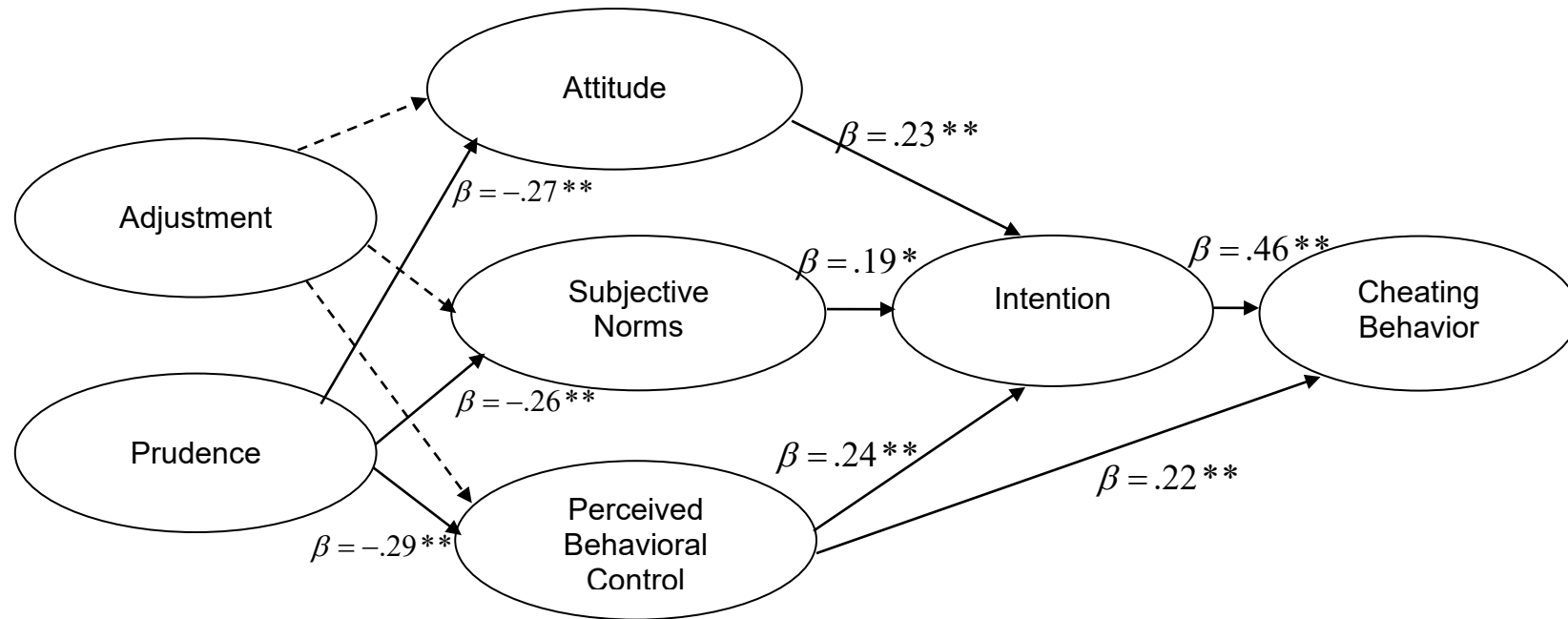
Figure Captions

Figure 1. Results of Structural Equation Model-Full TPB Model

Figure 2. Results of Structural Equation Model-Full Mediation Model
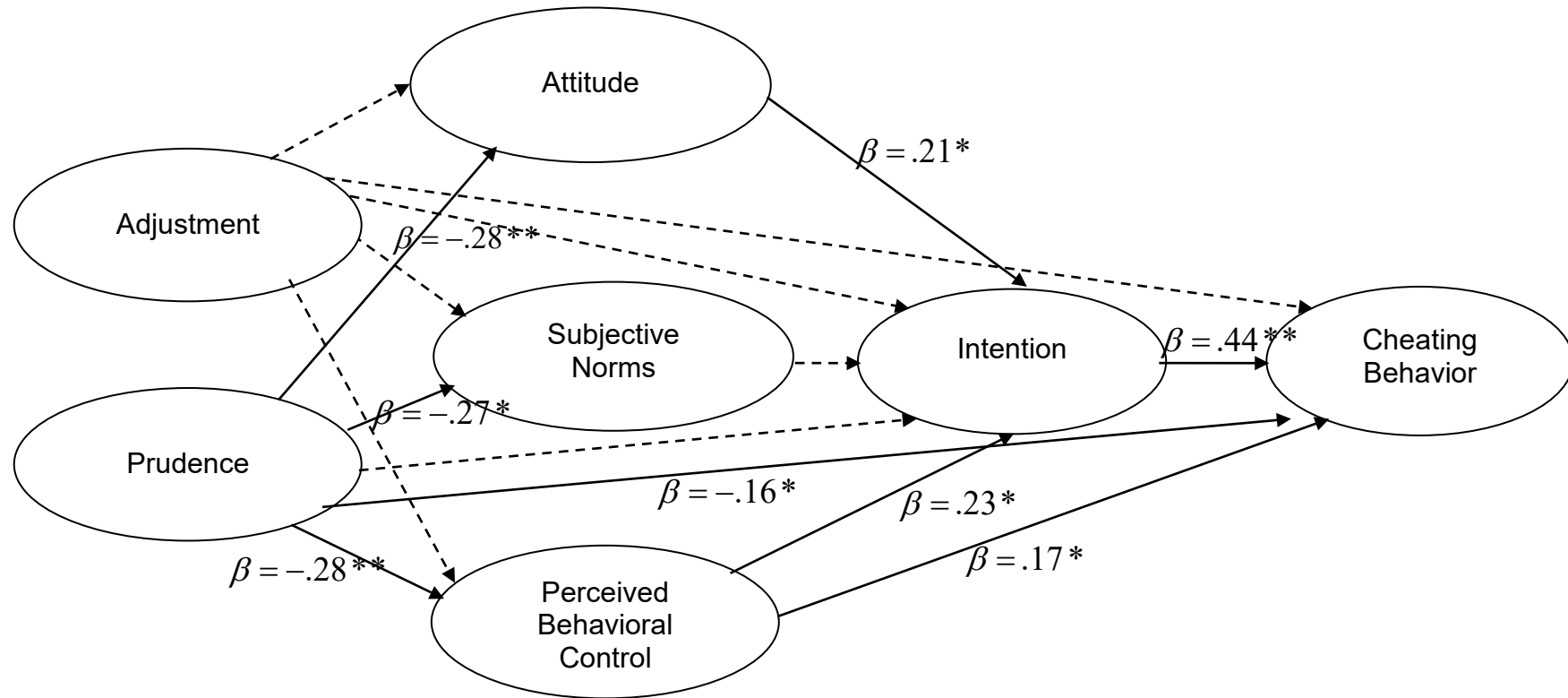
Figure 3. Results of Structural Equation Model-Partial Mediation Model
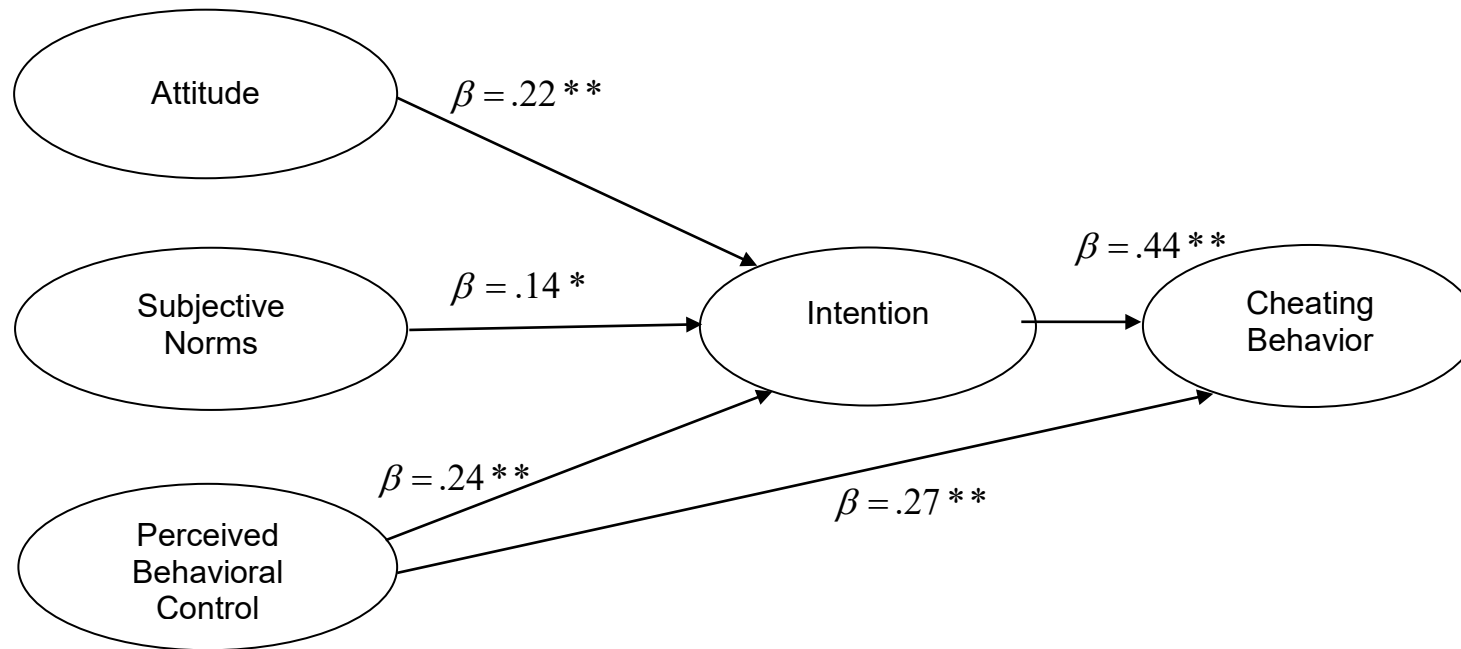
Note: *p< .05, **p< .01. Completely standardized factor loadings of indicators on latent variables are reported in Appendix and are not shown here.

Note: *p< .05, **p< .01. Completely standardized factor loadings of indicators on latent variables are reported in Appendix and are not shown here. Dashed lines denote tested but non-significant relationships.

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