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Recent national scandals and accusations of plagiarism have created a re-newed national interest in understanding issues related to ethics, character, and academic dishonesty. Accordingly, the Association of American Colleges and Universities (2002) charged institutions with providing educational environments that:

MATTHEW J. MAYHEW is Assistant Professor of Higher Education in the Department of Administration, Leadership, and Technology and STEVEN M. HUBBARD is Clinical Assistant Professor of Higher Education in the Department of Administration, Leadership, and Technology, both at New York University. CYNTHIA J. FINELLI is Associate Research Scientist at the College of Engineering and Director of CRLT North at the University of Michigan. TREVOR S. HARDING is Associate Professor of Materials Engineering at California Polytechnic State University, San Luis Obispo, California. DONALD D. CAR-PENTER is Associate Professor of Civil Engineering at Lawrence Technological University, Southfield, MI. ACKNOWLEDGMENTS: The authors gratefully acknowledge Honor Passow for her work collecting information relevant to this study and Laurie Behringer for her help in editing the paper. Address queries to Matthew J. Mayhew, 239 Greene Street, Suite #300, New York University, New York 10003; telephone: (212) 998–5068; fax: (212) 995–4041; email: matt.mayhew@nyu.edu.

> . . . foster intellectual honesty, responsibility for society's moral health and for social justice, active participation as a citizen of a diverse democracy, discernment of the ethical consequences of decisions and action, and a deep understanding of one's self and respect for the complex identities of others, their histories and their cultures. (p. xii)

As part of this charge, educators are trying to understand what constitutes academic dishonesty and what institutions can do to eradicate it.

Unfortunately, academic dishonesty in college is widespread. Though the percentage of undergraduate students reporting that they have cheated at least once during their college careers has remained consistent at about 80% over 30 years, the severity of cheating (e.g., percentages of students engaging in more "serious" cheating such as exam cheating) has increased substantially (Bowers, 1964; Brown & Emmett, 2001; McCabe & Klebe-Trevino, 1997; Spiller & Crown, 1995). In a recent study, Carpenter, Harding, Finelli, Montgomery, and Passow (2006) found that more than 96% of the engineering students reported engaging in at least one behavior they defined as either cheating or unethical while in college. It is not that these students did not understand what cheating was or even had difficulty establishing what behaviors were ethical; rather, the vast majority of students participating in the study were willing to engage in a behavior they recognized and defined as ethically wrong.

The implications of students' willing engagement in academic dishonesty are far-reaching for stakeholders in and beyond higher education. For example, research has also shown that students who cheated in college were more likely to shoplift (Beck & Ajzen, 1991), cheat on income taxes (Fass, 1990), abuse harmful substances (Blankenship & Whitley, 2000), cheat in graduate and professional schooling (Baldwin, Daugherty, Rowley, & Schwartz, 1996), and engage in unethical work-place behavior (Harding, Carpenter, Finelli, & Passow, 2004; Hilbert, 1985; Nonis & Swift, 2001; Ogilby, 1995; Sims, 1993; Todd-Mancillas, 1987). While no evidence of a causal relationship exists between college cheating and engagement in these behaviors, what these findings collectively suggest is that students who cheat in college are also more likely to engage in unethical behaviors in other contexts, both professional and academic.

The purpose of this study is to empirically validate the use of a modified form of the Theory of Planned Behavior (TPB) (Ajzen, 2002) as a model for predicting college cheating in general and specifically for cheating by students in the developmental periods of consolidation and transition. We used the TPB, Kohlbergian (1976) notions of moral reasoning development, and the consolidation-transition model of development advanced by Snyder and Feldman (1984) to ground an investigation of certain psychological processes and behaviors and their subsequent effects on predicting college

cheating. We constructed a survey based on our understanding of the TPB and how it relates to cheating. We administered this survey with DIT-2, which is a measure of moral reasoning (Rest, Narvaez, & Thoma, 1999) to 527 undergraduate students in three institutions, then analyzed the data using structural equation modeling to validate the use of our modified version of TPB in predicting student cheating.

Theoretical Frameworks

We drew upon three theoretical frameworks to guide this study. The first, Ajzen's TPB (2002), functions under the premise that individuals make rational decisions to engage in specific behaviors based on their own beliefs about the behaviors and their resultant expectations of positive outcomes after having engaged in the behavior. These beliefs and expectations underlie three conceptually distinct constructs at the core of the theory: (a) attitude toward a behavior, (b) perceived social pressures to engage in or not engage in the behavior (subjective norms), and (c) perceived ease of performing the behavior (perceived behavioral control). Taken together, these components directly influence an individual's intention to complete a behavior. Whether individuals actually engage in the behavior is a function of their intention to do so and the extent to which they have real control over circumstances that might otherwise interfere with engaging in the behavior. In cases in which a person's perception of his or her control aligns with reality, the construct of perceived behavioral control may serve as a measurable proxy for his or her actual behavioral control.

Despite substantial support for the TPB as a means of predicting behavior, research continues to examine additional variables that might enhance the predictive capabilities of the theory in certain circumstances (Conner & Armitage, 1998). We have modified the TPB by adding two separate constructs. (See Figure 1.)

Moral obligation, described by Ajzen (2002) as "personal feelings of . . . responsibility to perform, or refuse to perform, a certain behavior" (p. 6), is the first construct we have added to the TPB. Unlike other constructs comprising the TPB, moral obligation reflects an individual's context-free valuation of behavior and is less susceptible to change based on the effects of certain conditions or contexts in which the intended behavior takes place. For these reasons, we added moral obligation to our version of the TPB and situated it beside other constructs predicting intention to cheat.

The second construct that we added to the TPB is high school cheating behavior. To justify our inclusion of this construct as a predictive construct of a college behavior, we turned to research on college impact. College impact researchers (Astin, 1993) suggest that certain collegiate behaviors can be explained by prescribed characteristics (e.g., race, gender, high school
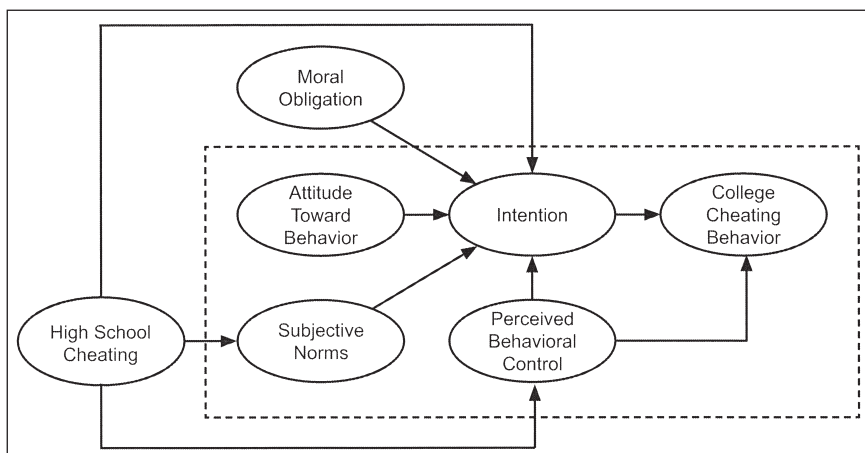
Figure 1. Conceptual framework for the modified theory of planned behavior.

grade point average) and high school behaviors (e.g., frequency of cheating in high school); these are attributes that students bring with them to college and that remain unchanged by the college experience. From this framework, it makes sense to include a measure of the behavior in high school for its explanatory power in predicting the same behavior in college.

The second framework that informed our study was Lawrence Kohlberg's theory of moral reasoning development. He posits six distinctive cognitive structures that serve as "general organizing principles or patterns of thought rather than specific moral beliefs or opinions" (Colby & Kohlberg, 1987, p. 2). These structures reflect the six sequential stages that describe development in moral reasoning with each stage representing "a qualitative re-organiza-tion of the individual's pattern of thought, with each new re-organization integrating within a broader perspective the insights achieved at the prior stages" (Colby & Kohlberg, 1987, p. 5). As individuals progress through stages, their concepts of justice expand from egocentric to societal. They conceptualize fairness first as a system that serves themselves (preconven-tional), then to one that serves one's close friends and family (conventional), and then to one that also serves larger communities, including strangers (postconventional).

Just how one moves within and between these stages is an area of research in its own right. Snyder and Feldman (1984) developed a model of these phenomena to explain the underlying psychological mechanisms associated with readiness and progression through developmental stages. They posit that individuals function within two states during any existing stage. In the first state, individuals use consistent patterns of reasoning when engaging

external stimuli and subsequently are considered "consolidated." In the second state, individuals use a variety of thought patterns within a given stage or sometimes between stages when making meaning of environmental cues; these individuals are considered "transitional." For development to occur, individuals progress through periods of consolidation and transition within and between every given stage. Several authors (Derryberry & Thoma, 2005; Rest, Narvaez, Bebeau, & Thoma, 1999; Thoma & Rest, 1999; Walker, Gustafson, & Hennig, 2001; Walker & Taylor, 1991) have extrapolated tenets of the consolidation-transition model and applied them to Kohlbergian notions of moral reasoning development. Taken together, these authors have suggested that individuals, when faced with a series of moral dilemmas, adopt reasoning strategies that reflect their likelihood of being consolidated within a particular stage, transitioning between levels that make up that stage, or transitioning between stages. Regardless of what stage an individual is in or moving toward, individuals can be grouped, analyzed, and compared based on whether they are consolidated or in transition.

Our study finds theoretical solace in each of these frameworks. Through structural equation modeling, we validate the use of the modified TPB as a model predicting student cheating among undergraduate students. Unlike other studies that investigate a robust set of determinants for their individual effects on student cheating, our approach is to show how well the modified TPB predicts student cheating. In short, results from this study will answer the question, "Should the Theory of Planned Behavior be used to predict student cheating?"

We also investigate the predictive relationship between the modified TPB and undergraduate cheating and how this relationship varied for students in moral consolidation versus those in moral transition. One hypothesis was that goodness of fit indices would remain statistically significant for each group (i.e., for students in moral consolidation versus those in moral transition) but that other parameter estimates between model constructs would slightly differ, based on the competing moral development trajectories of students in the two phases: consolidation and transition, respectively. As such, results of this study will also help answer the question, "How does a student's moral development phase affect how well the modified TPB predicts college cheating?"

Literature Review

We adopted a three-pronged approach for framing the literature review. First, we reviewed research that used the TPB as the theoretical model describing undergraduate cheating. Second, we investigated how moral reasoning as a psychological construct of inquiry has been positioned in research, specifically as a construct related to those comprising the modified TPB.

Finally, we synthesized moral psychology with college impact for constructing the relationships between constructs measured in the modified TPB.

In the last 30 years, more than 100 studies have been published examining cheating among college students (Crown & Spiller, 1998; Whitley, 1998). Several theoretical frameworks have been used to explain this relationship, including, but not limited to, cognitive consistency theory (Tang & Zuo, 1997), deterrence theory (Buckley, Wiese, & Harvey, 1998; Cochran, Chamlin, Wood, & Sellers, 1999), rational choice theory (Buckley et al., 1998; Cochran et al., 1999; Tibbetts, 1997), and the TPB (Beck & Ajzen, 1991; Genereux & McLeod, 1995; Nonis & Swift, 2001; Pratt & McLaughlin, 1989; Whitley, 1998). Although researchers have used these models to illuminate student cheating, no one has assessed the overall value of the models for their predictive utility in explaining this phenomenon. Herein is the distinctive contribution of this study: our use of structural equation modeling to assess the modified TPB for its utility in predicting student cheating.

Support for use of the TPB as a predictive model of cheating comes from a meta-analysis of 107 studies of academic dishonesty conducted by Whitley (1998). He found that academic dishonesty was a function of three related but mutually reinforcing psychological mechanisms: attitudes toward cheating, subjective norms about the ubiquity of cheating within a given social context, and self-perceptions about one's ability to cheat effectively. Further support for the TPB as a predictive model for cheating comes from Beck and Ajzen (1991) who showed that the model successfully predicted most of the systematic variance in student decisions to cheat.

Modifying the TPB draws empirical support from a study that adapted the TPB to include moral obligation as a construct relating to, but not substituting for, attitudes toward cheating (Harding et al., 2007). "We separated the block that we named *moral obligation not to cheat* (negative correlation, medium effect) from attitudes about cheating per Beck and Ajzen's (1991) adjustment to the TPB when applied to dishonest behaviors" (p. 657). Building on this rationale, we also included the moral obligation not to cheat as a construct for predicting college cheating.

The other modification to the TPB—addition of high school cheating—also emerged from the literature explaining college cheating. Frequency of high school cheating is related to Whitley's (1998) idea of including the construct "cheated in the past" (p. 257) for its power in predicting college cheating; he showed that such a construct had a positive correlation and large effect in terms of explaining college cheating. An earlier study that investigated exam cheating by college students found that, after controlling for a variety of pre-college variables (i.e., age, gender, socioeconomic status, year in college, and grade point average), frequency of high school cheating on exams explained a significant 10% of the variance in frequency of college cheating (Passow, Mayhew, Finelli, Harding, & Carpenter, 2006).

Due to this construct's power in explaining college cheating, we decided to include high school cheating as a model construct predicting three others: subjective norms, perceived behavioral norms, and intention to cheat.

How high school cheating situates itself in the adjusted TPB model finds theoretical support from two sources: (a) studies of college impact, and (b) psychological research investigating the underlying mechanisms that individuals use when deciding whether to cheat. First, college impact researchers have substantiated that peer effects are powerful determinants in predicting collegiate outcomes (Pascarella & Terenzini, 2005). How students understand their institutional culture, its norms, and their role in creating, sustaining, and reproducing each emerges from how they make meaning of themselves in relationship with their peers. Within a specific institutional context, this meaning-making exchange among students results in their understanding of and operation within the normative peer culture; although subjective to some degree, such norms have been found to predict involvement, retention, and learning (Astin, 1996, 1997; Milem & Berger, 1997; Tinto, 1993; Weidman, 1989). Of course, this meaning-making process is also shaped by precollege experiences (Baxter Magolda, 1999). Taken together, these ideas suggest that high school cheating would best be positioned to explain social pressures that students feel to engage or not engage in the cheating (subjective norms), perceived ease of performing the behavior within a given institutional context (perceived behavioral control) as well as their intention to engage in the behavior itself.

When we turned to the literature to identify where to position moral reasoning as a potential construct for consideration in the modified TPB, we realized its ubiquity as a construct for inquiry. Significantly, it shares important conceptual and empirical relationships with model constructs, such as obligation, intention, attitudes, subjective norms, and behaviors (Brabeck, 1983; Bredemeier & Shields, 1984; Cartwright & Simpson, 1990; Cummings, Dyas, Maddux, & Kochman, 2001; Duckett & Ryden, 1994; Galotti, 1989; Hay, 1983; Hubbs-Tait & Garmon, 1995; Hudec, 2002; King & Mayhew, 2002, 2004; Malinowki & Smith, 1985; Mason & Mudrack, 1997; Muhlberger, 2000; Mullane, 1999). Although many of the related constructs represented in this vast array of studies may not directly map onto those comprising the TPB, they demonstrate the extent to which moral reasoning has been used to explain relationships between underlying psychological constructs with moral dimensions. In short, moral reasoning has been positioned as a factor that (a) shares and subsequently explains many conceptual relationships with other constructs with value dimensions, (b) serves as the operational proxy for intention to act, and (c) often mediates the relationship between underlying psychological intention to act and the behavior itself. As a result, we decided not to include moral reasoning as a construct in the TPB but rather used it to differentiate students in moral consolidation from those

in moral transition in hopes of determining whether these classifications have any predictive value for explaining student cheating.

How will the modified TPB explain student cheating differently for those students in moral consolidation from those in moral transition? Very little research has examined the differences between students in consolidation from those in transition or has studied how these differences explain behavior. Most of the existing studies have used these phases to explain other psychological constructs (e.g., honest decision-making, altruism, human rights attitudes) or what authors have called "moral functional outcomes" (Derryberry & Thoma, 2005, p. 89). Across these studies (Rest, Narvaez, Bebeau, & Thoma, 1999; Thoma & Rest, 1999; Walker, Gustafson, & Hennig, 2001; Walker & Taylor, 1991), it is clear that individuals in phases of consolidation apply a less flexible standard in their approach to decision-making; those in transition are more susceptible to conditional factors exerting an influence over the same decision.

For this reason, we expected that the relationship between the TPB and student cheating would be stronger for students in moral consolidation than for those in moral transition. However, we also expected paths to differ in models predicting cheating for students in each phase. For those in moral transition, we expected coefficients between mutable constructs (i.e., attitudes toward behavior to intention) to be greater than the coefficients explaining this same path in the model predicting cheating for students in moral consolidation. Inversely, we expected parameter estimates for paths between more invariant constructs (i.e., moral obligation to intention, subjective norms to intention, perceived behavioral control to intention and behavior) to be greater in magnitude for students in consolidation versus those in transition. Moreover, we expected that the relationship between intention to cheat and college cheating would be equally strong for students in consolidation and transition, given the powerful correlations between these constructs cited by Beck and Ajzen (1991).

Although several studies have used the TPB to understand the relationship between underlying psychological mechanisms on cheating, none has empirically assessed the framework for its predictive utility in explaining student cheating. In fact, in an earlier article, we reported that we

> . . . did not use structural equation modeling software programs to generate goodness of fit indicators for assessing how well our data fit our modified version of Ajzen's Theory of Planned Behavior. Such an analysis would be a fruitful venue for future research and provide more evidence of the validity of the Theory of Planned Behavior in mapping students' ethical decision-making processes. (Harding et al., 2007, p. 273)

For this reason, we chose to use structural equation modeling to assess the degree to which this modified TPB successfully predicted student cheating.

It is our hope that adopting such an approach will provide empirical support for using the modified TPB in future studies of student cheating.

Our purpose in this paper is to empirically validate the use of the Theory of Planned Behavior (TPB) (Ajzen, 2002) as a model for predicting college cheating in general and specifically for cheating by students in the developmental periods of consolidation and transition. We anticipate that this study will not only advance empirically based discussions of how psychological processes are linked to moral behaviors but will also give educators a theoretically grounded roadmap for designing efficient and effective moral interventions.

Methods

Sample

Five hundred and twenty-seven undergraduate students from three institutions participated in this study. Of this number, 223 attended a large "Research University/very high research activity" public institution (School A), 208 attended a small private "Special Focus Institution/engineering" institution (School B), and 96 attended a private "Master's University/larger programs" institution (School C). Response rates varied by institution with 27.9% of students responding for School A, 52.0% for School B, and 24.0% for School C.

The sample consisted of 67.5% males. The average age of respondents was 20 with more than half (60.2%) of the sample consisting of first-year students. In addition, 15.6% of participants were students of color. Engineering students made up 78.8% of the sample, with humanities students accounting for the remaining percentage.[1] In terms of co-curricular activities, 71.5% of students reported participating in clubs, student teams, professional societies, and/or community service organizations at least one hour per week. Just over one in five (23.1%) students engaged in fraternity or sorority activities at least one hour per week. Finally, when asked about paying for their college education, just over one in five participants (22.3%) indicated that scholarships covered most or all of their expenses.

On the subject of college cheating, 71.3% of the sample reported never cheating on an in-class test or exams. More than a quarter (27.0%) of the respondents reported cheating on "a few" tests or exams. The remaining

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[1]We have a long-term interest in exploring ethical growth and decision-making in engineering specifically and envisioned this study both as an exploration of the TPB within the context of engineering education and as an opportunity to compare engineering students to those in another discipline. In this case, we included humanities students as the comparative group due to their historically low self-reported rates of college cheating.

1.7% of students reported cheating on exams half of the time (1.5%) or almost every time (.2%) they had the opportunity. No students reported cheating on every test.

Similar patterns were reported for high school test cheating. Half of the sample reported never cheating on an in-class test or exam, and just over two in five (40.9%) students reported cheating "a few times" on a test. The remaining percentages were comprised of students who reported cheating on an exam about half of the time (7.5%), almost every time (.8%), or every time (.8%) they had had an opportunity.

Of our total sample of students, 68.83% were in moral consolidation. The remaining 31.17% were in moral transition.

Measurement

We also administered to our sample three additional surveys: the Perceptions and Attitudes toward Cheating among Engineering Students Survey version 2 (PACES-2) (Harding et al., 2007), the Defining Issues Test (DIT-2) (Rest, Narvaez, & Thoma, 1999), and the Balanced Inventory of Desirable Responding (BIDR) (Paulhus, 1991). The PACES-2 Survey consists of demographic questions and items to assess the variables of the modified TPB. The DIT-2 (Rest, Narvaez, & Thoma, 1999) measures the degree to which respondents (a) use a principled approach to resolve moral issues, and (b) understand fairness and justice as systems that serve anonymous others. When faced with a moral dilemma, high-scoring students used principled moral reasoning to make decisions. The DIT-2 also includes an index that stratifies students into two categories: those in consolidation and those in transition. We used this index as the basis for generating our nested nonstandard model comparisons.

We included the BIDR at the end of the PACES-2 Survey as a measure of social desirability bias. The BIDR includes items for measuring two constructs associated with socially desirable responding: impression management and self-deceptive positivity (Paulhus, 1991). Since we were interested only in controlling for individuals' attempts to present themselves as more positive and less likely to cheat, we included only items associated with the impression management construct, slightly modifying their wording to make them more appropriate for the populations in question.

Before running the structural equation model, we conducted a confirmatory factor analysis on items comprising the five latent constructs of the modified TPB: intention, attitude toward behavior, subjective norms, perceived behavior control, and moral obligation. For each of these constructs, we constrained the variance for the item with the highest factor loading to be 1.0, leaving the variance for the remaining items comprising the factor free to vary. Table 1 provides the factor loadings for the total sample, as well as for the consolidated and transitional groups.

TABLE 1

FACTOR LOADINGS AND RELIABILITY ESTIMATES FOR VARIABLES USED IN MODEL CONSTRUCTION

	Total Sample	Consolidated	Transitional
Intention Items			
I will try to cheat on an in-class test during the current academic term.	0.83	0.81	0.86
I intend to cheat on an in-class test or exam during the academic term.	0.76	0.75	0.75
I do NOT plan to cheat on in-class test or exam during the academic term.®	0.79	0.78	0.84
I will NOT cheat on an in-class test or exam during the current academic term.®	0.95	0.97	0.92
If I had the opportunity, I would cheat on an in-class test or exam during the current academic term.	1.00	1.00	1.00
Attitude toward Behavior Items			
Positive to negative	0.89	0.98	0.75
Good to bad	1.00	1.00	1.00
Pleasant to unpleasant	0.88	0.86	0.85
Superior to inferior	0.80	0.80	0.81
Thrilling to boring	0.42	0.59	0.17
Subjective Norms Items (SN)			
If I cheated on an in-class test, most people who are important to me (e.g., my family, friends, etc.) would approve of my behavior.	0.61	0.64	0.53
The people in my life whose opinions I value (e.g., my family, friends, etc.) would be willing to cheat on an in-class test or exam if they were in my situation.	0.92	0.91	0.98
Most people who are important to me (e.g., my family, friends, etc.) would be willing to cheat on an in-class test or exam if they were in my situation.	1.00	1.00	1.00
The people in my life whose opinions I value (e.g., my family, friends, etc.) would NOT approve if I cheated on an in-class test.®	0.50	0.47	0.53
Most people who are important to me (e.g., my family, friends, colleagues, teachers, etc.) think I should NOT cheat on an in-class test or exam.	0.55	0.55	0.53
Most people who are important to me (e.g., my family, friends, colleagues, teachers, etc.) will look down on me if I cheat on an in-class test or exam.®	0.60	0.89	0.49
People whose opinions I value (e.g., my family, friends, etc.) expect me to cheat on an in-class test or exam.	0.44	0.89	0.49
NO ONE who is important to me (e.g., my family, friends, etc.) thinks it is OK to cheat on an in-class test or exam.®	0.94	0.54	0.35

Table 1, cont.

	Total Sample	Consolidated	Transitional
Perceived Behavior Control Items (PBC)			
I believe that I would have a great deal of control over whether I get caught attempting to cheat on an on-class or test exam.	0.85	0.87	0.97
I believe that I have the skills needed to cheat on an in-class test or exam in all circumstances.	0.44	0.37	0.41
It is mostly up to me whether or not I successfully cheat on an in-class exam.	0.38	0.39	0.50
Even if I wanted to, I could NOT cheat on an in-class test or exam.®	1.00	1.00	1.00
Moral Obligation Items			
Cheating on an in-class test or exam is against my principles.®	0.98	0.99	0.97
I would feel guilty if I cheated on an in-class test or exam.®	1.00	1.00	1.00
It would NOT be morally wrong for me to cheat on an in-class test or exam.	0.85	0.85	0.85

® Indicates items that were reversed-scored.

Variables

The dependent variables investigated for this study included self-reported test cheating. Using a five-point Likert scale, respondents were asked to indicate: "During the previous academic term in college, how frequently did you cheat on in-class tests or exams?" Due to the non-normal distribution of this variable, we attempted transformative procedures, including logit and square root. None of these normalized the variable distribution so we dichotomized the variable. Those coded as "0" never cheated on tests (71.3%); those coded as "1" reported cheating at least one time on in-class test or exam.

We also examined the independent variables used in the analysis for issues relating to normality. Like college cheating, high school cheating was also non-normally distributed, resulting in our decision to dichotomize that variable as well. We assigned a "0" to those who reported never cheating on a test in high school (50.0%) and a "1" to those who reported cheating at least one time on an in-class high-school test or exam.

Analysis

We used structural equation modeling (SEM) to analyze the data. LIS-REL was the primary statistical software package to test the validity of the hypothesized models and illustrate the interrelationship between variables. Similar to path analysis, SEM is an extension of the multivariate regression model. SEM, however, goes beyond regression models by providing coefficients that estimate the statistical significance and magnitude of the structural relationship between theoretical constructs. The purpose of using SEM in this study was to generate a final nested nonstandard model of cheating behavior in undergraduate students. We used fit indices to provide information on the paths between the four main constructs for the structural model (i.e., subjective norms, intention, perceived behavioral control, and college cheating behavior), to make adjustments to paths that failed to converge, and to evaluate the overall model's goodness of fit.

This study includes three models: one model which includes data for all students (total sample), and two separate models for those students in moral *consolidation* and those in moral *transition*. We used nested nonstandard model comparison to compare the differences between the consolidated and transitional models.

Tables 2, 3, and 4 provide covariances for the exogenous and endogenous variables used to construct the structural equation models reported in this study. These tables allow other researchers to validate or replicate results.

Results

Results and fit indices demonstrated that the model for the total sample was a good fit, validating our selection, use, and adaptation of the TPB for predicting student cheating. The chi-square for this model was 1,389 and the degrees of freedom reached 563, making the chi-square/degrees of freedom ratio equal to 2.47, which is less than the suggested maximum of 2.5. In addition, the root mean square error of approximation (RMSEA) was 0.065, and the normed fit index was 0.94, both indicating a good fit. The incremental fit index was 0.97, and the comparative fit index was also 0.97, again indicating an acceptable fit. The RMR (root mean square residual) for the model using the total sample was 0.16.

Overall, parameter estimates and fit indices for the model using the total sample validated our use of the modified TPB for predicting college cheating. Parameter estimates for paths occurred in the expected direction between subjective norms and intention, attitude and intention, and perceived behavioral control and intention as well as the path between intention and behavior. Moreover, our addition of moral obligation and high school cheating yielded a stronger model fit, emphasizing the importance of including these constructs in the modified TPB for predicting college cheating.

TABLE 2
COVARIANCE TABLE OF LATENT VARIABLES FOR THE MODEL USING THE TOTAL SAMPLE

	Subjective Norms	Intention	Perceived Behavioral Control	College Cheating Behavior	Moral Obligation	Attitude Toward Behavior	High School Cheating
Subjective norms	0.16						
Intention	0.11	0.43					
Perceived behavioral control	0.03	0.09	0.32				
College cheating behavior	0.03	0.10	0.06	0.25			
Moral obligation	0.05	0.37	0.06	0.08	0.59		
Attitude toward behavior	0.07	0.42	0.09	0.10	0.64	1.18	
High school cheating	0.07	0.19	0.09	0.05	0.15	0.20	0.21

TABLE 3
COVARIANCE TABLE OF LATENT VARIABLES FOR THE MODEL CONSTRUCTED FOR STUDENTS IN MORAL CONSOLIDATION

	Subjective Norms	Intention	Perceived Behavioral Control	College Cheating Behavior	Moral Obligation	Attitude Toward Behavior	High School Cheating
Subjective norms	0.14						
Intention	0.10	0.43					
Perceived behavioral control	0.02	0.09	0.33				
College cheating behavior	0.02	0.08	0.06	0.24			
Moral obligation	0.04	0.36	0.06	0.07	0.57		
Attitude toward behavior	0.05	0.40	0.09	0.08	0.61	1.19	
High school cheating	0.06	0.19	0.09	0.04	0.14	0.20	0.21

TABLE 4
COVARIANCE TABLE OF LATENT VARIABLES FOR THE MODEL CONSTRUCTED FOR STUDENTS IN MORAL TRANSITION

	Subjective Norms	Intention	Perceived Behavioral Control	College Cheating Behavior	Moral Obligation	Attitude Toward Behavior	High School Cheating
Subjective norms	0.16						
Intention	0.10	0.39					
Perceived behavioral control	0.04	0.09	0.35				
College cheating behavior	0.04	0.14	0.07	0.27			
Moral obligation	0.05	0.35	0.07	0.12	0.57		
Attitude toward behavior	0.07	0.45	0.10	0.16	0.61	1.19	
High school cheating	0.08	0.16	0.10	0.07	0.14	0.20	0.21

Table 5 provides the results of the four regression equations for all three models: the total sample, students in moral consolidation, and those in moral transition. We included only significant estimates for ease of comparison across models. The last row in Table 5 provides statistics reflecting the amount of variance explained for constructs predicting other constructs. For example, in the model using the total sample, 71% of the variability in intention is explained by five constructs: high school cheating, subjective norms, attitude toward behavior, moral obligation, and perceived behavioral control. Of these constructs, the only ones that reached statistical significance in explaining the variance were high school cheating (ß = 0.43, $p < .001$), subjective norms, (ß = 0.36, $p < .001$), and moral obligation (ß = 0.51, $p < .001$). As demonstrated in the table, when compared to the model for students in moral consolidation, the model for students in transition had higher explained variance for three of the four equations (subjective norms, perceived behavioral control, and college cheating).

Despite these differences in reported parameter estimates, chi-squared analyses comparing the model for moral consolidation and moral transition ($\chi^2 = 58.77$, $p > .05$) showed no significant differences between them. In addition, fit indices for each of these models still showed that each reached a certain amount of goodness of fit; the root mean square residual (RMR) reached 0.14 for the consolidated model and 0.17 for the transitional model. (The RMR for the model using the total sample reached 0.16.) Taken together, these findings suggest that the modified TPB was most effective at explaining the fit for the model using the total sample and that it was equally effective for explaining college cheating for students in consolidation and those in transition.

In addition, through our nested model comparison, we were able to identify the differences between the models for consolidated and transitional students, respectively. Figures 2, 3, and 4 present the significant beta weights for the paths between constructs for the model using the total sample, the consolidated model, and the transitional model, respectively. We examined the effects presented in these figures from three perspectives: First, we investigated the parameter estimates for each path for all three models and compared them based on their magnitude; second, we looked for any significant paths in one model that failed to reach significance in the other; and finally, we searched for non-significant paths across both models.

Taking this three-pronged approach, it is evident that parameter estimates differed for students in consolidation when compared to those in transition. Of particular interest were the coefficients for four paths: (a) between high school cheating and subjective norms, (b) between high school cheating and perceived behavioral control, (c) between attitude toward behavior and intention, and (d) between intention and college cheating. For these four paths, coefficient magnitudes were weaker for students in consolidation than those

TABLE 5
REGRESSION BETA WEIGHTS FOR THE MODEL USING THE TOTAL SAMPLE AND THE NESTED NONSTANDARD MODELS FOR STUDENTS IN MORAL CONSOLIDATION AND TRANSITION, RESPECTIVELY

Observed and Latent Variables	Model Using Total Sample				Consolidated Model				Transitional Model			
	To SN	To Intention	To PBC	To College Cheating	To SN	To Intention	To PBC	To College Cheating	To SN	To Intention	To PBC	To College Cheating
High school cheating	.33***	.43***	.43***		.27***	.50***	.43***		.37***	.28***	.50***	
Subjective norms (SN)		.36***				.35***				.31**		
Attitude toward behavior										.11*		
Moral obligation		.51***				.52***				.40***		
Perceived behavioral control (PBC)				.13*				.13*				
Intention				.20***				.17***				.33***
R^2	.14	.71	.12	.11	.10	.72	.11	.09	.18	.69	.15	.20

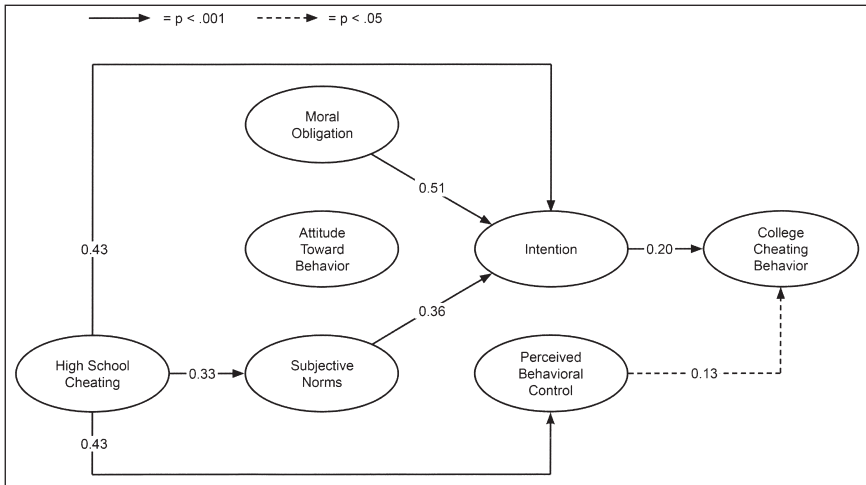*p < .05, **p < .01, ***p < .001

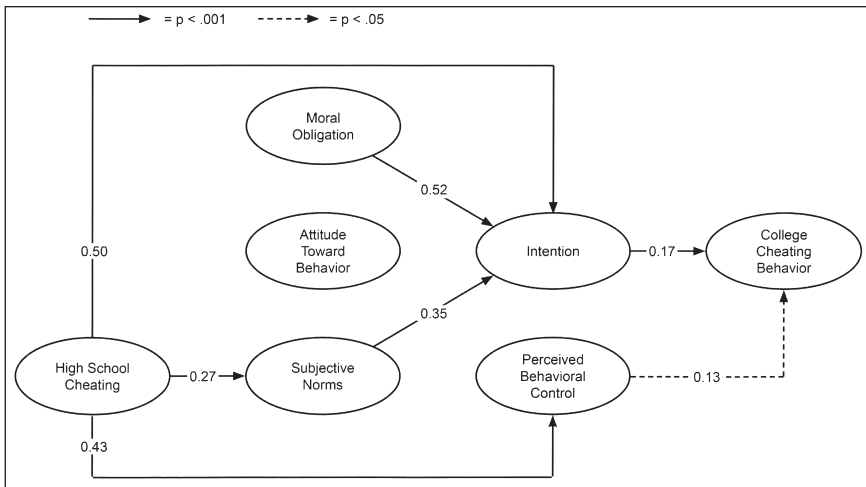Figure 2. Paths for model predicting college cheating using the total sample.

Figure 3. Paths for model predicting college cheating for students in moral consolidation.
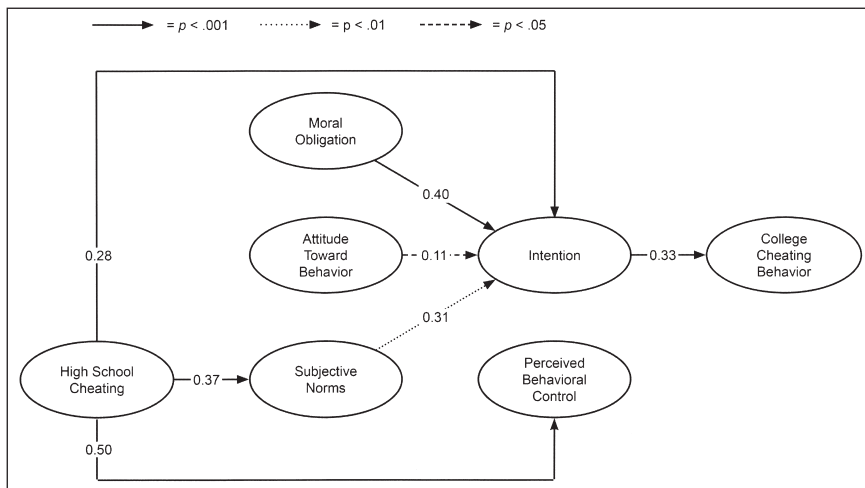
Figure 4. Paths for model predicting college cheating for students in moral transition.

in transition. For example, the relationship between intention and college cheating tended to be weaker for students in consolidation when compared to those in transition, with 17% of the variance in college cheating explained by intention for the former and 33% of the same variance explained for the latter. Similarly, for consolidated students, high school cheating explained only 27% of the variance in subjective norms; for transitional students, high school cheating explained 37% of the same variance. Moreover, for consolidated students, high school cheating explained 43% of the variance in perceived behavioral control but explained 50% of the same variance for transitional students. What was probably the most striking difference between models for students from differing moral phases was how attitudes toward behavior affected intention; for students in consolidation, the coefficient for the path failed to reach statistical significance; however, for those in transition, the same coefficient reached significance ($\beta = .11$, $p < .05$).

In some cases, effect magnitudes were greater for students in consolidation versus their counterparts in transition. Moral obligation was a stronger predictor of intention for consolidated students ($\beta = .52$, $p < .001$) than for transitional students ($\beta = .40$, $p < .001$). Similarly, the relationship between subjective norms and intention was slightly greater for students in consolidation ($\beta = .35$, $p < .001$) than for those in transition ($\beta = .31$, $p < .001$). Interestingly, the path between perceived behavioral control and college cheating reached statistical significance for students in consolidation ($\beta = .13$, $p < .05$) but not for those in transition ($\beta = .12$).

Limitations

As a first limitation, the distribution of our outcome measure, frequency of self-reported test cheating, was highly skewed. We performed a series of transformation procedures to correct for this issue, but none helped the variable reach normality. As a result, we dichotomized the variable and potentially reduced its statistical power (Irwin & McClelland, 2003; Mac-Callum, Zhang, Preacher, & Rucker, 2002). Second, generalizations from the study should be approached with caution given its sampling strategies: First, we assessed students from only three institutions and second, all of our students majored in engineering and/or humanities.

Discussion

This study has examined the use of a modified form of Ajzen's TPB as a model of the decision-making process used by students when they consider engaging in an unethical behavior, specifically cheating. What makes this study distinctive among the more than 100 others exploring student cheating is its empirical assessment of a specific theory's value as a model for predicting cheating among undergraduate students. Until now, researchers have used theories as conceptual and subsequent operational frameworks for organizing, selecting, measuring, and analyzing variables of interest for their individual and additive effects on student cheating (Beck & Ajzen, 1991; Buckley, Wiese, & Harvey, 1998; Caruana, Ramaseshan, & Ewing, 2000; Cochran et al., 1999; Genereux & McLeod, 1995; Lanza-Kaduce & Klug, 1986; Liska, 1978; Michaels & Miethe, 1989; Nonis & Swift, 2001; Pratt & McLaughlin, 1989; Tang & Zuo, 1997; Tibbetts, 1997; Whitley, 1998; Whitley & Kost, 1999). However, this study offers a new paradigm for empirically testing such theories. Through the use of SEM and its embedded parameter estimates assessing goodness of fit, value judgments can be made about which theories are useful in trying to understand student cheating and ultimately for creating empirically based interventions to deter it. The results of this study validated the use of the modified TPB as a model for predicting student cheating.

Not only was this study important for assessing the overall value of the modified TPB and its utility for explaining student cheating, it was also the first of its kind to investigate the predictive relationship between the TPB and undergraduate cheating and how this relationship varied for students in moral consolidation versus those in moral transition. Although we expected that the relationship between the modified TPB and student cheating would be stronger for students in moral consolidation compared to those in moral transition, we found that it was not.

Results showed that, despite differences in parameter estimates explaining relationships between variables, these differences were not prominent enough to conclude that the modified TPB was better at explaining college cheating for students in transition versus those in consolidation. These results are bitter-sweet to some degree—bitter to the extent that they do not confirm our governing hypothesis concerning a better model-fit for consolidated students versus those in transition, but sweet to the extent that fit indices across three iterations of model construction (i.e., total sample, moral consolidation, and moral transition) validated the use of the modified TPB to predict student cheating.

How do we explain path differences for the model predicting college cheating for students in moral consolidation versus those in moral transition? We expected model paths to differ for students in each phase. For those in moral transition, we expected coefficients between mutable constructs (i.e., attitudes toward behavior and intention to cheat) to be greater than those in consolidation. We also expected parameter estimates for paths between more invariant constructs (i.e., moral obligation to intention, subjective norms to intention, and perceived behavioral control to college cheating) to be greater in magnitude for students in consolidation versus those in transition. Results confirmed these hypotheses. We based these hypotheses on the idea that students in moral consolidation would be more consistent in their approach to reasoning when faced with moral dilemmas than those in moral transition (Derryberry & Thoma, 2005; Rest, Narvaez, Bebeau, & Thoma, 1999; Thoma & Rest, 1999; Walker, Gustafson, & Hennig, 2001; Walker & Taylor, 1991). With increased consistency in processing information comes an increase in reliance on modified TPB constructs that are less susceptible to change, namely moral obligation, subjective norms, and perceived behavioral control when making decisions to cheat. Relying on beliefs about whether cheating is morally wrong (i.e., moral obligation), about the norms influencing decisions to cheat (i.e., subjective norms), and about the individual's perception of his or her ability to cheat (i.e., perceived behavioral control) may indeed be the processes that students in consolidated moral periods prefer to engage when making decisions to cheat.

Students in transitional moral phases may be more likely to prefer using situational or more formative constructs when making decisions to cheat. One of the study's most striking findings is the difference between students in consolidation and those in transition with regard to the relationship between attitudes toward behavior and intention to cheat. The coefficient for the path did not reach statistical significance for students in moral consolidation, but it was statistically significant for those in transition. Perhaps, students who are less consistent in how they process information when reasoning about moral issues are more likely to make decisions about cheating intention based on their attitude toward cheating at any given time; for example, in

one context, these students may experience cheating as positive or thrilling but in another situation as negative or boring.

High school cheating is highly predictive of college cheating. For all three models (i.e., total sample, moral consolidation, and moral transition), the endogenous variable measuring high school cheating explained significant amounts of each of the exogenous variables, including subjective norms, perceived behavioral control, and intention to cheat. This finding shows the power of high school behaviors in predicting college behaviors, a relationship well-documented in the literature on college impact (Pascarella & Terenzini, 2005). It also demonstrates the need for empirical work that longitudinally assesses student cheating from high school to college. How might the under-lying psychological mechanisms that individuals use when deciding to cheat change over time? What can educators do to disrupt the cycle of cheating? Questions like these remain fruitful venues for future research.

Implications for Practice

This study has many implications for educators interested in developing classroom-based interventions to reduce cheating. Although we investigated how the modified TPB differs between students in moral consolidation and those in moral transition, it is impractical to suggest that educators would design interventions based on these differences. A more pragmatic approach would involve building an intervention strategy based on a synthesis across findings from this research. From students in transition, we learned that affecting change may involve the instructor's clearly defining cheating and emphasizing that its definition should not vary by condition. This approach may help transitional students take a small step toward changing their attitudes about cheating and their intention to cheat.

From students in consolidated moral phases, we learned that affecting change may involve shifting perceived institutional norms about cheating that are embedded in the institutional culture. As an example, launching a social norms campaign that exposes students to statistics comparing actual and perceived rates of campus cheating may help students change their thinking about what constitutes the "cheating norm" on campus, and subsequently might reduce their intention to cheat. Attempts to sponsor more open—and safer—dialogues between students and instructors could also tend to dispel myths about cheating within both groups and might help to reshape healthy and clear social norms within the broader college community. To summarize, results from this study suggest that effective interventions for cheating should include educating the college commu-nity about issues regarding what constitutes cheating and how individual cheating affects the moral milieu of the greater college community and, ultimately, of society.

CONCLUSION

Embedded within the call of higher education is the idea of preparing a responsible citizenry. This study provides a theoretical and practical means toward this end. It integrates moral psychology with research on college impact to answer questions regarding the value and use of theory to predict student cheating. We discovered that our modified TPB was a viable framework for understanding the psychological mechanisms that students use when deciding to cheat. We also learned that these mechanisms are differentially engaged by students based on the consistency with which they process information when faced with moral dilemmas (i.e., whether they are in moral consolidation or moral transition). It is our hope that this paper will spur more informed discussions about cheating on college campuses by equipping educators with the information needed to develop effective and lasting moral interventions.

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