

## ABSTRACT

SIEMAN, ASHLEY MOUBERRY. Motivational Predictors of Academic Cheating Among First-Year College Students: Goals, Expectations, and Costs. (Under the direction of Audrey J. Jaeger, Ph.D. and Joy Gaston Gayles, Ph.D.)

Academic cheating is a persistent and pervasive problem that threatens the core values of higher education (Burnett, Rudolph, & Clifford, 1998; McCabe, Trevino, & Butterfield, 2001a; Whitley & Keith-Spiegel, 2002). While a significant amount of research has been devoted to exploring the problem of student cheating, much of what exists is descriptive in nature and lacks an overarching theoretically-based conceptual framework. This study aimed to fill this gap in the existing literature by proposing and testing a theoretically-based conceptual model of the motivational predictors of academic cheating using a population of first-year college students. The model used in this study was developed based on the combined work of Murdock and Anderman (2006) and Harding, Mayhew, Finelli, and Carpenter (2007) and relied generally on expectancy-value theory and, specifically, on the theory of planned behavior, to explore how goals, expectations, and costs influence first-year college students' decisions to cheat. The proposed model was tested using a quantitative web-based survey instrument that was administered during the spring of 2008 to all 4,462 full-time, second semester, first-year students attending a large, public, land grant, institution located on the east coast of the United States. Data were analyzed using a variety of quantitative statistical techniques including multiple and hierarchical regression, general linear modeling, and structural equation modeling. Results provided support for the use of expectancy-value theory and, specifically, the theory of planned behavior, as a theoretical model for understanding how motivational factors influence students' decisions to cheat. Results showed that goals and expectations are important for understanding how students' perceive the costs associated with cheating and that attitudes toward cheating and past cheating behavior are among the strongest predictors of intention to cheat and actual cheating behavior. Implications for practice and future research are presented and discussed.

Motivational Predictors of Academic Cheating Among First-Year College Students:  
Goals, Expectations, and Costs

by  
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## DEDICATION

This dissertation is dedicated to my family. This dissertation is dedicated first to my husband, John, whose unending love and support made this all possible. Thank you for your patience and for your willingness to read and edit multiple versions of this document. Thank you for keeping me focused and for telling me that I could even when I thought that I couldn't. This dissertation is also dedicated to my parents and my sister who have always encouraged me to pursue the things that interest me and make me happy.

## BIOGRAPHY

Ashley Mouberry Sieman was born in 1979 in Raleigh, North Carolina to Arthur and Debbie Mouberry of Fuquay-Varina, North Carolina. She was raised, with her twin sister, Rebecca, in Fuquay-Varina. After graduating from Fuquay-Varina High School in 1997, Ashley attended the University of North Carolina at Chapel Hill. In May of 2001, she graduated with a Bachelor of Science degree in Biology. In the fall of 2001, Ashley began graduate studies at the University of Maryland, College Park. While in graduate school, Ashley worked as a graduate assistant and later as a full-time Resident Director within the Department of Residence Life. Under the direction of John Zacker, Ashley completed a master's thesis on student and faculty attitudes and behaviors related to academic dishonesty. She received her Master of Arts degree in College Student Personnel in August of 2003. Upon completion of her master's coursework, Ashley returned to the University of North Carolina at Chapel Hill to work as a Community Director in the Department of Housing and Residential Education. She married John Sieman in the summer of 2004. Also during the summer of 2004, Ashley was awarded a Junior Fellowship from the John Templeton Foundation and the Center for Academic Integrity to study the missing links in academic integrity research. During the fall of 2004, while continuing to work as a full-time practitioner, Ashley began her doctoral studies in Higher Education Administration. Ashley's research interests include academic integrity, student learning, development and motivation, student leadership, experiential education, and quantitative and qualitative research methods. Her professional interests include housing and residence life, judicial affairs, service learning, assessment, and teaching.

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## CHAPTER 1: INTRODUCTION

“There is a problem festering within our institutions of higher education that threatens to weaken their very foundations. The problem is more threatening than faculty-administration disputes; more costly than the recent and pervasive funding cutbacks; and has a greater potential of eroding the core of the teaching-learning process than under prepared students or over populated classrooms. The problem is academic dishonesty, and the need to address the problem is paramount” (Burnett, Rudolph, & Clifford, 1998, p. vii).

This statement is just as true today as it was ten years ago, as evidenced by the number of large scale cheating scandals recently reported in the national press. In February of 2007, an entire class of 4,300 freshmen cadets at the United States Air Force Academy was detained on campus for a weekend following allegations of cheating by nearly 40 freshmen (Cooperman, 2007; German, 2007). Students were accused of obtaining answers to a weekly knowledge test and sharing those answers over the Internet (Cooperman; German). Since that time, 15 students have been expelled, 3 have resigned, and 13 others were placed on probation (USAToday.com, 2007).

An equally large and arguably more costly scandal was recently investigated at Florida State University. In December of 2007, Florida State announced that at least 24 football players would be suspended from playing in the Music City Bowl game after they were caught cheating in an Internet course (Associated Press, 2008; Schlabach, 2007). These players were among nearly 50 student athletes who were allegedly involved in the incident (Associated Press). Reports suggest that a tutor and a full-time athletic department employee facilitated cheating among athletes by giving students answers during exams and quizzes, taking quizzes for students, and typing papers for students (Glier, 2007; Schlabach). During questioning, a tutor involved in the case admitted that he had been providing student athletes with answers for over a year (Schlabach). As a result of this incident, the football team lost the bowl game; several members of the athletic department lost their jobs; and the institution’s athletic and academic programs lost credibility (Associated Press).

Unfortunately, large-scale cheating scandals like those mentioned here are not

isolated events. Evidence suggests that academic cheating is a persistent and pervasive problem for institutions of higher education (Burnett et al., 1998; McCabe, Trevino, & Butterfield, 2001a; Whitley & Keith-Spiegel, 2002). Prior studies have shown that most students entering college today have either cheated in high school or at the very least have known someone who has (Bowers, 1964; Davis & Ludvigson, 1995; Harding, Mayhew, Finelli, & Carpenter, 2007; Hendershott, Drinan, & Cross, 2000; McCabe et al.). The first year of college is a critical time for influencing students' attitudes and behaviors related to cheating (McCabe et al.). During this time, institutions work to provide students with the resources and tools necessary to complete college-level work while educating them about value of pursuing that work with honesty and integrity. Understanding what motivates first-year college students to cheat will provide valuable insights for researchers and educators who are in search of effective strategies for reducing cheating at the undergraduate level.

This quantitative study was designed to explore the motivational predictors of first-year college students' decisions to cheat at a large, public, land grant institution located on the east coast of the United States. This chapter presents the background and problem, provides an overview of the conceptual framework, and presents the research questions that were used to guide this study. Key terms, delimitations, and limitations are also presented and discussed.

### Background and Problem

Academic cheating is a serious issue that threatens the core values of higher education (Whitley & Keith-Spiegel, 2002). A recent report commissioned by the Secretary of the Department of Education suggests that college graduates today are learning less and, as a result, are entering the workforce unprepared (U.S. Department of Education, 2006). Student learning and vocational preparation are central to the mission of many institutions of higher education. Students who cheat bypass learning in an effort to obtain higher grades. In doing so, they lose the opportunity to engage in the learning process and are unable to experience the intellectual struggles that lead to the development of new knowledge and skills (Whitley & Keith-Spiegel).

Cheating also raises concerns related to equity (Whitley & Keith-Spiegel, 2002). Students who cheat have an unfair advantage over students who do not, especially in classes that are graded on a curve. Cheating also inflates grades and makes it difficult to accurately assess students' abilities, which, in turn, has implications for curriculum and course development (Magnus, Polterovich, Danilov, & Savvateev, 2002; Passow, Mayhew, Finelli, Harding, & Carpenter, 2006).

In addition, cheating negatively affects student and teacher morale (Whitley & Keith-Spiegel, 2002). Honest students become disheartened when they know that other students are cheating and getting away with it. They may become frustrated and begin to question the value of engaging in honest academic work (Magnus et al., 2002; Whitley & Keith-Spiegel). Faculty members are also negatively affected by cheating (Passow et al., 2006; Whitley & Keith-Spiegel). Faculty who believe that their students are cheating may begin to question their ability to effectively motivate their students to learn and, in turn, may become less motivated to maintain rigorous standards of integrity in the classroom (Whitley & Keith-Spiegel). In addition, faculty members who report cheating are often faced with bureaucratic red tape, angry students and parents, and threats of litigation. Research has shown that faculty members who have negative experiences adjudicating cheating cases of academic dishonesty become more reluctant to report future cases (Keith-Spiegel, Tabachnick, Whitley, & Washburn, 1998; Vandehey, Diekhoff, & LaBeff, 2007).

Research has also shown that cheating can be habit forming. Students who cheat and get away with it are more likely to cheat again. Studies have shown that students who cheat in high school are more likely to cheat in college (Harding et al., 2007). Additionally, students who cheat in college are more likely to cheat in graduate or professional school (Baldwin, Daugherty, Rowley, & Schwartz, 1996) and in the workplace (Crown & Spiller, 1998; Nonis & Swift, 2001).

When students cheat, institutions suffer. Large cheating scandals, like those mentioned at the beginning of this chapter, often draw the attention of local and national press. This type of negative publicity calls into question the credibility of both students and

institutions. Whitley and Keith-Spiegel (2002) suggest that increases in the number of widespread and public cheating scandals may lead to the loss of public confidence in higher education which may negatively impact higher education's future support.

These concerns are amplified when coupled with studies of the prevalence of cheating on college campuses. In recent web-based survey of nearly 40,000 students on 68 college campuses, McCabe (2005a) found that over half of the students surveyed reported engaging in at least one incident of serious homework cheating and nearly a quarter of those surveyed reported engaging in at least one incident of serious test or exam cheating while in college. These findings are consistent with the work of earlier scholars who have also reported high prevalence rates of undergraduate cheating on homework and tests (Smyth & Davis, 2003; Whitley, 1998). One step towards reducing cheating is developing a better understanding of what motivates students' decisions to cheat (Jordan, 2001). This study aimed to contribute to that goal.

### The Problem

Academic cheating is not a new issue, however, as a systematic and progressive body of scholarship, it is in its infancy. Some of the first studies on student cheating (Bowers, 1964) are not all too different in content and methodology from studies that are published in major peer-reviewed journals today. Within the last decade, research focused on understanding and predicting cheating has grown significantly (Harding et al., 2007; Murdock & Anderman, 2006). However, the scholarship in this area continues to lack an overarching conceptual framework and suffers from the repeated use of unsophisticated methodological and analytical techniques. The disjointed nature of the cheating literature makes it difficult to make meaning of research findings.

### The Conceptual Framework

In an effort to address these concerns, Murdock and Anderman (2006) proposed a theoretically-based conceptual framework for exploring the motivational predictors of student cheating. This model, which was not empirically tested, was developed based on a review of cheating literature and was framed using concepts from achievement motivation

theory. It is one of two motivationally-based theoretical models that have been proposed in the cheating literature, to-date (Harding et al., 2007; Murdock & Anderman, 2006; Whitley, 1998). The other, originally proposed by Whitley, and recently tested by Harding and his colleagues, is based on Ajzen's (1991, 2002) theory of planned behavior. This model explored the factors that students consider as they weigh the costs associated with cheating.

These two models both use an expectancy-value framework to frame students' cheating decisions. In an effort to develop a more comprehensive model of the motivational predictors of student cheating, this study combined the Murdock and Anderman (2006) and Harding et al. (2007) models to create a new model of student cheating.

### Theoretical Models

#### *Murdock and Anderman (2006) Model of Academic Cheating*

Murdock and Anderman (2006) used achievement motivation theory as a framework for organizing the academic cheating literature. Their work resulted in a proposed model of academic cheating (see Figure 1). The model consists of three motivational mechanisms thought to influence students' decisions to cheat: (a) goals, (b) expectations, and (c) costs. Murdock and Anderman framed each of these mechanisms with a guiding question that students consider as they approach their academic work: (a) "What is my purpose?" (b) "Can I do this?" and (c) "What are the costs (associated with cheating)?"

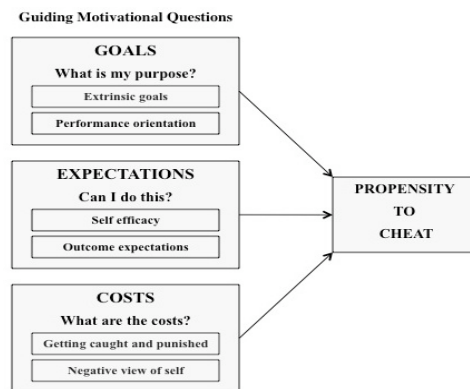


Figure 1. Murdock and Anderman's (2006) proposed motivational framework for integration of the cheating literature.



*Question 1: What is my purpose?*

Murdock and Anderman (2006) suggest that one of the first questions that students consider as they approach their academic work is “What is my purpose?” Within a motivational framework, purpose is driven by goals. In their proposed model, Murdock and Anderman used motivation theory (Deci, 1975; Deci & Ryan, 1985; Deci & Ryan, 2000; Ryan & Deci, 2000) and achievement goal theory (Ames, 1992; Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Nicholls, 1984) to explain how motivations and goals drive academic attitudes and behavior and, in turn, influence students’ decisions to cheat. Based on their review of the literature, Murdock and Anderman proposed that students who are extrinsically motivated/performance oriented (i.e., driven by a desire to achieve higher grades) would be more likely to cheat than students who are intrinsically motivated/mastery oriented (i.e., driven by a desire to learn).

*Question 2: Can I do this?*

Murdock and Anderman (2006) suggest that a second question that students consider as they approach their academic work is “Can I do this?” In their proposed model, Murdock and Anderman used self-efficacy theory (Bandura, 1986, 1997) and expectancy-value theory (Eccles, 1983) to explain how students’ expectations for success drive their academic attitudes and behavior and, in turn, influence their decisions to cheat. Based on their review of the literature, Murdock and Anderman proposed that students with low self-efficacy and negative outcome expectations would be more likely to cheat than students with high self-efficacy and positive outcome expectations.

*Question 3: What are the costs?*

After considering the first two questions, a student with strong performance goals, low self-efficacy, and low outcome expectations would be expected to be more motivated to cheat than a student with strong mastery goals, high self-efficacy, and positive outcome expectations (Murdock & Anderman, 2006). However, Murdock and Anderman suggest that before deciding to cheat, students consider a third and final question, “What are the costs

(associated with cheating)?” In their proposed model, Murdock and Anderman used an expectancy-value framework (Eccles, 1983) to explain how students weigh the costs associated with cheating against the expected value of achieving their academic goals.

Based on their review of the literature, Murdock and Anderman identified two costs that students consider when deciding whether to cheat: the cost of getting caught and punished and the cost associated with having to view themselves negatively. They proposed that when students are able to minimize these two types of costs, cheating is more likely to occur. In contrast, when students perceive that the costs outweigh the perceived gains, cheating would be less likely to occur.

*Harding et al. (2007) Model of Academic Cheating*

Harding and his colleagues (2007), drawing from the work of Whitley (1998), used Ajzen’s (1991, 2002) theory of planned behavior as a model for exploring undergraduate students’ decisions to cheat. The theory of planned behavior is based on the premise that humans are rational beings and make decisions to engage in a specific behavior by weighing the costs associated with engaging in that behavior against the “expectation of a positive outcome after having engaged in [that] behavior” (Harding et al., 2007, p. 559). Harding et al.’s modified model (see Figure 2) consisted of four factors thought to influence how students weigh the costs associated cheating. Three of the factors are original to Ajzen’s theory of planned behavior model (indicated in Figure 2 by the box drawn with a dotted line). These factors include attitudes toward cheating, subjective norms, and perceived behavioral control. Harding et al. added a fourth factor, moral obligation (not to cheat), as an additional predictor of cheating in their proposed model.

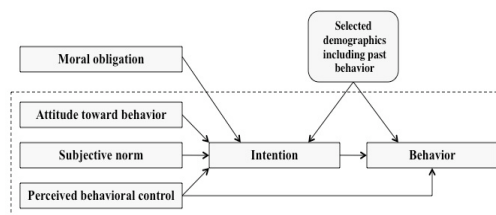


Figure 2. Harding et al.’s (2007) model of academic cheating.

The four motivational factors in the Harding et al. (2007) model were proposed as predictors of students' intentions to cheat and intention was proposed as a direct antecedent of cheating behavior and a possible mediator of the effects that demographic variables (including past cheating behavior) have on cheating behavior.

#### *Intention*

Intention to engage in a specific behavior refers to the "motivation required to perform a particular behavior, reflecting an individual's decision to follow a course of action, as well as an index of how hard people are willing to try and perform the behavior" (Armitage & Christian, 2004, p. 4). In the theory of planned behavior, attitudes toward behavior, subjective norms, and perceived behavioral control influence behavior via the effects that they have on intention. Harding et al. (2007) found that intention to cheat was strongly and positively correlated with actual cheating behavior.

#### *Attitude Toward Behavior*

Attitudes toward behavior refer to an individual's overall evaluation of a behavior or an individual's inclination to respond either favorably or unfavorably toward a behavior (Ajzen, 1991, 2002; Francis, Eccles, & Johnston, 2004; Harding et al., 2007). With respect to cheating, Harding et al. found that students who held more favorable attitudes toward cheating were more likely to cheat than students who held less favorable attitudes toward cheating.

#### *Subjective Norms*

Subjective norms about a behavior refer to an individuals' perception of the "social pressure to perform or not perform the target behavior" (Francis et al., 2004, p. 9). In studies of student cheating, subjective norms refer to the beliefs that students have about how people of importance (family, friends, etc.) will respond to their cheating behavior (Harding et al., 2007). Harding and his colleagues found that students are more likely to engage in cheating behaviors when they perceive that norms are supportive of cheating.

#### *Perceived Behavioral Control*

Perceived behavioral control refers to the "extent to which a person feels able to enact

the behavior” (Francis et al., 2004, p. 9). Perceived behavioral control influences both intention and behavior (Armitage & Christian, 2004; Harding et al., 2007). Greater perceptions of behavioral control increase the likelihood that an individual will engage in a specific behavior (Armitage & Christian). Perceptions of behavioral control are based on past experience with the behavior and on anticipated internal and external barriers to engaging in the behavior (Harding et al.). Therefore, a student with a history of successful cheating who perceives a high degree of control over whether he or she would be caught cheating would be more likely to cheat than a student who is considering cheating for the first time and perceives a low degree of control over whether he or she would be caught cheating.

#### *Moral Obligation*

Harding et al. (2007) modified Ajzen’s original theory of planned behavior model by adding moral obligation as a motivational predictor. Moral obligation refers to an individual’s “personal feelings of ...responsibility to either perform, or refuse to perform, a certain behavior” (Ajzen, 1991, p. 199). Moral norms differ from subjective norms in that they represent the personal pressures (shame and guilt) an individual places on him or herself as opposed to the social pressures that he or she feels from others (Harding et al.). Harding et al. found that moral obligation not to cheat was associated with less cheating.

#### *Proposed Model of Academic Cheating With New Variables*

This study used Murdock and Anderman’s (2006) and Harding et al.’s (2007) models of academic cheating (see Figure 3) to create a new model of the motivational predictors of academic cheating. The new model was designed address limitations identified in both Murdock and Anderman’s (2006) and Harding et al.’s (2007) models. Additionally, the new model was designed to provide an overarching, theoretically-based, conceptual framework for exploring factors that motivate first-year college students to cheat on homework and tests.

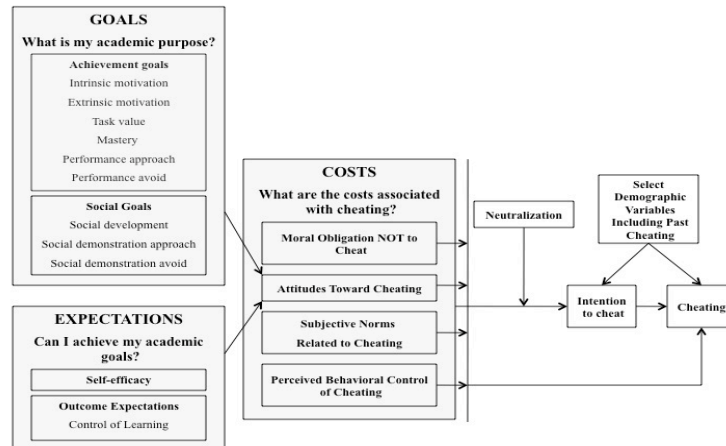


Figure 3. Proposed model of the motivational predictors of academic cheating: Goals, expectations, and costs.

### *Limitations of Previous Models*

Murdock and Anderman's model (2006) was limited for three reasons. First, the model was purely conceptual and has never been tested. Second, the model included achievement goals but failed to include social goals as possible predictors of cheating behavior. To address this gap, social goals were included in the model used in this study. Third, in the presentation of their model, Murdock and Anderman shift domains from an academic domain (academic goals and academic expectations) to a cheating domain (costs associated with cheating), which made the model conceptually confusing. Within an academic domain, constructs are framed with respect to students' academic beliefs and behaviors, whereas, within a cheating domain, constructs are framed with respect to students' cheating attitudes and behaviors. For example, self-efficacy framed in an academic domain would refer to the belief in one's ability to accomplish one's academic goals (i.e., achieve a good grade or learn the material). Whereas, self-efficacy framed in a cheating domain would refer to the belief in one's ability to successfully accomplish one's cheating goals (i.e., cheating without getting caught). This study aimed to address this weakness by clearly demonstrating how students' achievement goals and expectations are related to their perceptions of the costs associated with cheating.

Harding et al.'s (2007) model, which has been previously tested, was limited in three ways. First, Harding et al. measured cheating at a very general level. However, research suggests that students' decisions to cheat are likely very specific and can vary across contexts (i.e., classrooms, teachers, etc.) (Murdock & Anderman, 2006). This study aimed to increase the specificity of the Harding et al. model by assessing cheating decisions within a single classroom context. Specifically, students were asked to consider their motivations to cheat in their most challenging course.

Second, in testing their proposed model, Harding and his colleagues relied solely on the use of semantic differentials scales (good vs. bad, positive vs. negative, etc.) to measure students' attitudes toward cheating. While semantic differentials provide a general description of students' overall attitudes toward cheating, they do not provide insight into why these attitudes exist. This study aimed to extend the Harding et al. model by exploring if and how students' academic and social goals and expectations influence their attitudes toward cheating.

Finally, Harding and his colleagues failed to consider neutralization as a motivational predictor in their proposed model despite the fact that, in previous studies, Harding and his colleagues demonstrated that there was a positive relationship between neutralization and self-reported cheating (Passow et al., 2006). Neutralization is a technique that individuals use to motivate their decisions to engage in behaviors that they know to be wrong (Murdock & Anderman, 2006; Sykes & Matza, 1957). Therefore, students who have strong motivations not to cheat may do so anyway after employing neutralizing strategies. Neutralization was included in the present study as a possible moderator of the relationship between students' perceptions of costs associated with cheating and students' intentions to cheat.

In summary, the model used in this study provided a framework for simultaneously exploring how students' goals, expectations, and costs influence their decisions to cheat. With respect to goals, the proposed model suggests that academic and social goals influence students' decisions to cheat via the effect that they have on students' attitudes toward cheating. Students who pursue intrinsically motivated mastery goals were expected to hold

less favorable attitudes toward cheating and, as a result, were expected to be less likely to cheat than students who pursue extrinsically motivated performance goals. Prior to this study, the relationship between social goals and cheating had been studied directly; therefore, the exploration of social goals as a possible predictor of student cheating is a new contribution of this study.

With respect to expectations, the model used in this study suggests that, like achievement goals and social goals, self-efficacy and outcome expectations also influence students' decisions to cheat via the effect that they have on students' attitudes toward cheating. Students with low self-efficacy and negative outcome expectations were expected to view cheating more favorably than students with high self-efficacy and positive outcome expectations.

With respect to costs, the model used in this study suggests that students assess the costs associated with cheating based on their moral obligation not to cheat, attitudes toward cheating, perceived subjective norms related to cheating, and perceived behavioral control related to cheating. Students who perceive the costs associated with cheating to be high are expected to be less likely to cheat, unless they use neutralization techniques to motivate their cheating behavior. Students who perceive the costs associated with cheating to be low are expected to be more likely to cheat.

### Purpose

The purpose of this study was to explore the predictive ability of the proposed model of academic cheating. Specifically, this study was designed to simultaneously explore how goals, expectations, and costs motivate first-year college students' decisions to cheat on homework and tests in their most challenging course.

### Research Questions

The following research questions were used to guide this study:

1. To what extent do students' goals and expectations predict their attitudes toward cheating on homework and tests?

2. To what extent do students' perceptions of the costs associated with cheating predict their intention to cheat and actual cheating on homework and tests before and after controlling for the effects of select demographic variables and past cheating behavior?
3. To what extent do students' neutralizing attitudes moderate and students' intention to cheat mediate relationships between variables in the proposed model?
4. How well does the proposed model fit the observed data?

### Key Terms

#### *Cheating Behavior*

Within the academic cheating literature there is a lot of debate about what exactly constitutes cheating because it is a term that many find difficult to define precisely and that few agree on completely. In this study, students were able to define cheating for themselves. By allowing students to define cheating on their own, the researcher aimed to obtain a measure of cheating behavior that reflected cheating acts that students engaged in knowingly and intentionally (Harding et al., 2007).

#### *Achievement Goals*

Achievement goals are the academic motivations that drive students' attitudes and behavior. For this study, two types of achievement goal orientations were explored: intrinsic and extrinsic. Students with an intrinsic goal orientation pursue academic tasks because of a desire to master the material or because they believe that learning the material will be personally satisfying. Students with an extrinsic goal orientation pursue academic tasks because of a desire to receive external rewards (i.e., higher grades) or because of a desire to demonstrate competence to others.

#### *Social Goals*

Social goals are the social motivations that drive students' attitudes and behaviors. For this study, three types of social goals were explored: social development goals, social demonstration approach goals, and social demonstration avoid goals. Students who are motivated by social development goals pursue tasks in an effort to improve social competence and develop meaningful social relationships (Ryan & Shim, 2006). Students who



are motivated by social demonstration approach goals pursue tasks in an effort to demonstrate social competence or to gain approval from others (i.e., being labeled as popular or cool) (Ryan & Shim). Students who are motivated by social demonstration avoid goals pursue tasks in order to demonstrate that they are not socially incompetent or to avoid being disliked by others (Ryan & Shim).

#### *Self-Efficacy*

Academic self-efficacy refers to the belief that one has in their ability to effectively use the skills that they possess to achieve their desired academic outcomes (Bandura, 1986, 1997).

#### *Outcome Expectations*

Academic outcome expectations refer to the beliefs that one has about the likelihood that they will be able to achieve their desired academic outcomes. Expectations are based on one's past experiences and the perceived barriers to achieving one's goals.

#### *Moral Obligation*

Moral obligation refers to "personal feelings of ... responsibility to perform, or refuse to perform, a certain behavior" (Ajzen, 1991, p. 199). In this study, moral obligation not to cheat referred to students' personal beliefs that cheating is morally wrong and against their principles.

#### *Attitudes Toward Cheating*

Attitude refers to a person's overall evaluation of a specified behavior (Francis et al., 2004, p. 9). Students' evaluations of cheating are based on what they perceive will be outcome of cheating (i.e., getting a higher grade) and their judgments of those outcomes (i.e., desirable vs. undesirable, positive vs. negative).

#### *Subjective Norms*

Subjective norms related to cheating are a person's perceptions of the social pressures to either perform or not perform a specified behavior (Francis et al., 2004). Subjective norms are based on students' perceptions of how others will judge their cheating behavior.

### *Perceived Behavioral Control*

Perceived behavioral control refers to the extent to which a person feels that he or she can control a specified behavior (Francis et al., 2004). Students' perceptions of behavioral control of cheating are based on their past experiences with cheating and their beliefs about internal or external factors that either inhibit or facilitate cheating.

### *Neutralization*

Neutralization is a technique that individuals use to justify and motivate their decisions to engage in a behavior that they know to be morally wrong (Sykes & Matza, 1957).

### *Intention*

Behavioral intention is “a summary of the motivation required to perform a particular behavior, reflecting an individual's decision to follow a course of action, as well as an index of how hard people are willing to try and perform the behavior” (Armitage & Christian, 2004, p. 4). Attitudes toward the behavior, subjective norms, perceived behavioral control, and moral obligation direct behavior only to the extent that they influence behavioral intentions. Intentions are direct antecedents of behavior (Ajzen, 1991, 2002).

### Delimitations

While this study promises to make a significant contribution to the cheating literature, it is important to note that there were a number of delimitating factors inherent in the study design. First, this study was designed to test a proposed conceptual model of academic cheating using a limited population. This study was conducted using one grade level (first-year college students) at a single institution. Therefore, the results of this study cannot be generalized to other grade levels or other institutions.

Second, this study focused only on cheating. This study did not attempt to measure other types of academically dishonest behavior. Therefore, the results of this study cannot be used to explain students' motivations to engage in other academically dishonest behaviors such as plagiarism, fabrication, or facilitation.

Third, many theoretical and empirical studies acknowledge that student goals, expectations, and perceptions of costs are influenced by factors in the classroom environment, specifically interactions with teachers and peers (Anderman & Anderman, 1999; Anderman & Midgley, 1997; Kaplan & Maehr, 2007; Lyke & Kelaher Young, 2006; Meece, Anderman & Anderman, 2006; Murdock, Miller, & Goetzinger, 2007). In their review of the literature, Murdock and Anderman (2006) also gave considerable attention to contextual influences such as social comparisons in the classroom, classroom goal structures, and student-teacher relationships. While this study was designed to explore cheating within a classroom context, exploring specific aspects of the classroom context was beyond the scope of the study. Variables that measure specific aspects of the classroom environment, however, should be included in future studies in order to gain a more complete understanding of how they influence students' goals, expectations, and perceptions of costs associated with cheating.

#### Limitations

As with any study on student cheating, there were certain factors associated with this study that were inherently limiting. First, cheating is a highly sensitive topic that is not often openly discussed. As a result, some students may not have been willing to participate in this study. Additionally, those students who actually participated may not have been willing to provide honest responses and may have underreported their cheating behaviors. The effect of underreporting would be weaker observed relationships, thereby making the results derived from this study conservative (Finn & Frone, 2004). Prior research, however, has supported the use of self-reports when collecting sensitive information, specifically information related to academic cheating (Cizek, 2003).

#### Significance

This study was significant for several reasons. First, Murdock and Anderman's (2006) model of academic cheating, which was used as an overarching framework for this study, had never been empirically tested. Therefore, prior to this study, no experimental evidence existed that could attest to its fit or predictive ability. Second, this study included

social goals in addition to achievement goals in the proposed model and demonstrated the importance of both as predictors of students' perceptions of the costs associated with cheating.

Prior to this study, no studies, to-date, had explored all three of the proposed motivational mechanisms (goals, expectations, and costs) at the same time. By doing so, this study was able to shed light on how these three factors work together to influence students' intentions to cheat and actual cheating behavior. By testing the fit and predictive ability of the proposed model, this study added to the theoretical literature by identifying an overarching, theoretically-based, conceptual framework that researchers could continue to use in future studies to explore additional factors associated with student cheating.

#### Summary

The purpose of this study was to test the predictive ability a proposed model of academic cheating. The model used in this study was developed based on the combined work of Murdock and Anderman (2006) and Harding et al. (2007) and relied on an expectancy-value framework, specifically, the theory of planned behavior, to explore how goals, expectations, and costs influence students' decisions to cheat on homework and tests in their most challenging course. The model was tested in the spring of 2008 using a population of 4,462 first-year college students from a large, public, land grant institution located on the east coast of the United States.

Understanding what motivates students to cheat is the first step that faculty, staff, and administrators must take in order to address or change student behaviors. The results of this study are intended to provide all members of the academic community with a better understanding of the complex nature of student cheating decisions and, in turn, help them become better equipped to design and implement effective strategies for preventing cheating at the undergraduate level in the future (McCabe, Trevino, & Butterfield, 2001b). The next section provides an overview of the theoretical and empirical literature that was used to guide this study.

## CHAPTER 2: LITERATURE REVIEW

Academic cheating is a persistent and pervasive problem in higher education. Based on a meta-analysis of over 100 studies on academic cheating, Whitley (1998) estimated that 70.4% of college students cheat at some point in their undergraduate careers. Estimates of cheating were reported to be as high as 95% in one study (Whitley). In a more recent study of 674 undergraduate students, Vowell and Chen (2004) reported that 85% of the students surveyed admitted to cheating. While the prevalence of cheating on college campuses is well documented, less is known about what actually motivates students' decisions to cheat. This lack of knowledge is likely due to the fact that much of the existing literature on cheating is descriptive in nature, relies on unsophisticated analytical procedures (i.e., correlation), and lacks a theoretical base (Murdock & Anderman, 2006).

In recent years, only a handful of studies have examined the issue of academic cheating through a theoretical lens. Theories that have been applied to cheating in the literature include anomie theory (Caruana, Ramaseshan, & Ewing, 2000), crime theory (Brandao & Teixeira, 2005); deterrence theory (Buckley, Wiese, & Harvey, 1998a), deviance theory (Michaels & Miethe, 1989), expectancy-value theory (Beck & Ajzen, 1991; Genereux & McLeod, 1995; Nonis & Swift, 2001; Passow et al., 2006; Whitley, 1998), moral development theory (Whitley & Kost, 1999), and rational choice theory (Cochran, Chamlin, Wood, & Sellers, 1999). Of these, expectancy-value theory seems to hold the most promise for understanding and predicting student cheating, however, to-date, the use of this theory has not been extensively tested.

This study aimed to achieve that goal by testing the predictive ability of a proposed model of student cheating that was developed based on the recent work of Murdock and Anderman (2006) and Harding et al. (2007). In both studies, the authors used expectancy-value theory as a framework for identifying possible predictors of undergraduate student cheating. This review first provides an overview of expectancy-value theory and then provides a discussion of the cheating literature that supports the use of the proposed model

for predicting cheating among first-year college students.

### Theoretical Framework

#### *Expectancy-Value Theory*

Expectancy-value theory, developed by Atkinson (1957) and later refined and applied to achievement settings by Eccles and her colleagues (Eccles, 1983, 1987; Eccles et al., 1993; Eccles & Wigfield, 1995, 2002; Wigfield & Eccles, 1992, 2000, 2002; Wigfield, 1994), is a theory that describes how attitudes motivate and direct behavior (Armitage & Christian, 2004). Expectancy-value theorists believe an individual's decision to engage in a task is a function of his or her expectations for success with that task and the value that he or she places on being successful in that task (Wigfield & Eccles, 2000).

#### *Expectancy*

Expectancy refers to the judgments that one makes about his or her ability to accomplish a specific task or achieve a specific outcome or goal (Murdock & Anderman, 2006). Bandura (1986, 1997) distinguishes between two types of expectancies: self-efficacy and outcome expectations.

*Self-Efficacy.* Self-efficacy is defined as one's judgments of his or her ability to organize and execute the actions necessary to achieve in a given situation (Bandura, 1986, 1997). Self-efficacy is "concerned not with the skills one has but with the judgments of what one can do with whatever skills one possesses" (Bandura, 1986, p. 391). Self-efficacy beliefs are developed based on past experiences and successes with specific tasks or behaviors (Bong, 2006). Self-efficacy beliefs are domain specific (i.e., a specific class, subject matter, task, etc.) (Zajacova, Lynch, & Espenshade, 2005) which means that students can have high self-efficacy in one domain (i.e., science) and low self-efficacy in another (i.e., math). As a result, self-efficacy "must be evaluated at a level that is specific to the outcome domain" (Zajacova et al., pp. 678-679).

*Outcome expectations.* Outcome expectations refer to the "belief that a given action will lead to a given outcome" (Wigfield & Eccles, 2000). Lorschach and Jinks (1999) distinguish between outcome expectations and self-efficacy indicating that outcome

expectations refer to “the beliefs [that one has] regarding the results of given actions regardless of one’s beliefs about one’s personal efficacy to perform those actions” (p.160). Therefore, a student may have high self-efficacy for successfully completing a given task (i.e., performing well on an assignment) but may have low outcome expectations because he or she believes that factors outside of his or her control will impact his or her ability to be successful (i.e., the professor has unfair grading practices) (Linnenbrink & Pintrick, 2003; Lorschach & Jinks; Murdock & Anderman, 2006).

Both self-efficacy and outcome expectations work as powerful motivators of future behavior by influencing the type of activities that one will choose to engage in, how much effort one will be willing to exert, and how long one will be willing to persist when faced with challenges (Bandura, 1986, 1997; Bong, 2006; Eccles, 2005; Schunk & Pajares, 2002). With respect to motivation, prior research has found that self-efficacy is a better predictor of attitudes and behaviors than outcome expectations (Wigfield & Eccles, 2000). Bandura (1986) suggests that this may be because “the types of outcomes that people anticipate depend largely on their judgments of how well they will be able to perform in a given situation” (p. 392).

### *Value*

Within an expectancy-value framework, value is assessed with respect to a specific task and refers to the “quality of the task that contributes to the increasing or decreasing probability that an individual will select it” (Eccles, 2005, p. 109). Quality is assessed based on four components: attainment value, intrinsic value, utility value, and cost (Eccles; Wigfield & Eccles, 2000). Eccles defines these components as follows:

- Attainment value is the “personal importance attached to doing well on, or participating in, a given task” (p. 109).
- Intrinsic value is the “enjoyment one gains from doing the task or the anticipated enjoyment one expects to experience while doing the task” (p. 111).
- Utility value refers to the perceived “usefulness” of a task or “how a task fits into an individual’s future plans...and personal goals” (p. 112).

- Cost is a measure of “how the decision to engage in one activity (e.g., doing school work) limits access to other activities (e.g., calling friends).” In this case, cost is assessed with respect to lost time and energy (Wigfield & Eccles, p. 72). However, many factors influence one’s perceptions and assessments of costs including anticipated anxiety, fear of failure, fear of social consequences, and fear of a loss of self-worth (Eccles).

As mentioned before, Murdock and Anderman (2006) and Harding et al. (2007) used expectancy-value theory as an overarching framework for their respective models. However, each takes a slightly different approach to framing the problem of student cheating. Murdock and Anderman used motivation, goal, academic self-efficacy, moral reasoning, and neutralization theories to explain how students’ decisions to cheat are based on their values and expectancies within two domains: an achievement/learning domain and a cheating domain. Harding et al. (2007) used Ajzen’s (1991, 2002) theory of planned behavior to explain how values and expectancies related to cheating influence students’ intentions and subsequent decisions to cheat.

This study combined these two models in an effort to provide a more comprehensive, and possibly more predictive, model of student cheating. The model used in this study suggests that students’ assessment of their achievement goals and expectations inform their perceptions of the costs associated with cheating. The goal of this study was to explore the fit and predictive ability of the proposed model. As a reminder, the proposed model is presented again in Figure 4.



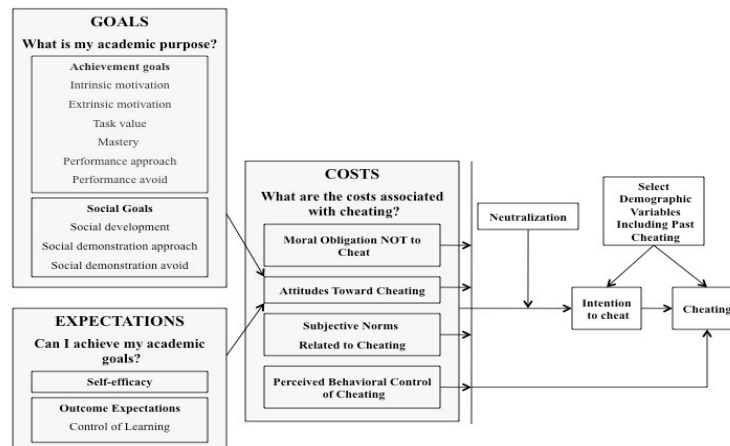


Figure 4. Proposed model of the motivational predictors of academic cheating: Goals, expectations, and costs.

The next section will provide a review of the cheating literature that supports the use of the proposed model for predicting cheating among first-year college students. This review is organized in a similar fashion to the Murdock and Anderman review as it is structured around three motivational mechanisms thought to drive students' decisions to cheat: goals, expectations, and costs. As in the Murdock and Anderman review, each motivational mechanism was framed using a question that students are thought to consider as they approach their academic work: (a) What is my purpose?, (b) Can I do this?, and (c) What are the costs?. For each question, the underlying theoretical concepts and relevant cheating literature is presented and discussed.

### What is my Purpose?

Murdock and Anderman (2006) suggest that one of the first questions that students consider as they approach their academic work is "What is my purpose?" (p.130). From an achievement motivation perspective, purpose is determined by goals, and goals are motivational mechanisms that drive behavior (Covington, 2000; Pintrich & Schunk, 2002; Wentzel, 2002). Students are motivated in their academic work by both achievement and social goals (Anderman, 1999; Anderman & Anderman, 1999; Anderman, Freeman, &

Mueller, 2007; Covington; Horst, Finney, & Barron, 2007; Patrick, Anderman, & Ryan, 2002; Patrick, Hicks, & Ryan, 1997; Ryan, Hicks & Midgley, 1997; Ryan & Shim, 2006; Urdan & Maehr, 1995). Murdock and Anderman limited their review of the cheating literature by discussing only achievement goals, stating that social goals have been minimally examined in relation to student cheating. While it is true that social goals have been explored less than achievement goals, the research that does exist suggests that both achievement and social goals play a role in students' decisions to cheat (Anderman et al., 2007; Calabrese & Cochran, 1990; Eisenberg, 2004; Jordan, 2001; McCabe & Trevino, 1993; Murdock et al., 2001). As such, this review will include a discussion of both achievement and social goals. The following section will provide a review of the theoretical and empirical literature that connects motivation, goals, and cheating.

### *Theoretical Perspectives*

Several theories of achievement motivation are useful for explaining individual differences in the way that students approach their academic work. Murdock and Anderman (2006) identify two theories, intrinsic motivation theory (Deci, 1975; Deci & Ryan, 1985; Ryan & Deci, 2000) and achievement goal theory (Ames, 1992; Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Nichols, 1984), as tools for explaining how motivation and goals influence students' attitudes and behaviors. A third theory, social goal theory (Patrick et al., 1997; Ryan et al., 1997; Ryan & Shim, 2006), will also be presented and discussed to provide a more complete picture of the role that goals (academic and social) play in motivating students' cheating attitudes and behavior.

#### *Intrinsic Motivation Theory*

Intrinsic motivation theory, also referred to as self-determination theory (Deci & Ryan, 1985), distinguishes between two types of motivation, intrinsic motivation and extrinsic motivation. Individuals who are intrinsically motivated "do something because it is inherently interesting or enjoyable," whereas individuals who are extrinsically motivated "do something because it leads to a separable outcome" (i.e., a reward or punishment depending on success or failure) (Ryan & Deci, 2000, p. 55).

At the heart of Deci and Ryan's theory (Deci & Ryan, 1985; Ryan & Deci, 2000) is the belief that individuals have a basic need for competence and self-determination. Intrinsically motivated individuals are guided by the pursuit of competence and self-determination whereas extrinsically motivated individuals are guided primarily by self-determination (Eccles, 2005).

Within an achievement/learning domain, students who are intrinsically motivated are driven by their desire to learn and understand course materials whereas students who are extrinsically motivated are driven by their desire to achieving rewards (i.e., higher grades, the promise of a higher salary upon graduation, or praise by teachers, parents, or peers). With respect to expectancy-value theory, intrinsic motivation is similar to the intrinsic value construct and extrinsic motivation is similar to utility value construct (Eccles, 2005; Wigfield & Eccles, 2000).

#### *Achievement Goal Theory*

Achievement goal theory (Ames, 1992; Ames & Archer, 1988; Dweck, 1986; Dweck & Leggett, 1988; Nicholls, 1984) is another framework which describes how achievement goals motivate students' attitudes and behavior in an achievement/learning domain. Early research in achievement goal theory used two distinct conceptualizations of the achievement goal construct: (a) learning versus performance goals (Dweck; Dweck & Leggett) and (b) ego versus task goals (Nicholls; Harackiewicz & Elliot, 1993). While similar, these two conceptualizations were viewed as distinct until the late 1980s when Ames and Archer suggested that they be integrated into a mastery versus performance goal construct (Elliot, 2005; Harackiewicz & Elliot). This two-factor mastery/performance construct continues to be widely used in the literature today (Elliot; Harackiewicz & Elliot; Kaplan & Maehr, 2007; Meece et al., 2006; Pintrich & Schunk, 2002).

Mastery goals represent "a focus on developing one's abilities, mastering a new skill, trying to accomplish something challenging, and trying to understand learning materials" (Meece et al., 2006, p. 490). When confronted with challenges, mastery-oriented students typically adopt positive achievement patterns like working harder or trying new things (Ames

& Archer, 1988; Miller & Murdock, 2007; Ross et al., 2005).

In contrast, performance goals represent “a focus on demonstrating high ability relative to others, striving to be better than others, and using social comparison standards to make judgments of ability and performance” (Meece et al., 2006, p.490). When confronted with challenges, students driven by performance goals break down and resort to maladaptive achievement strategies (i.e., cheating) (Anderman, Griesinger, & Westerfield, 1998; Miller & Murdock, 2007; Ross et al., 2005).

While the two-factor mastery versus performance construct is the most widely used today, in recent years, researchers have developed increasingly complex models for exploring mastery and performance goals. Specifically, researchers have distinguished between two types of performance goals: performance-approach goals and performance-avoid goals. Performance-approach goals “focus on the attainment of favorable judgments of competence” whereas performance-avoid goals “focus on avoiding unfavorable judgments of ability” (Meece et al., 2006, p. 490).

Performance-approach goals have been found to be positively associated with achievement outcomes among college students (Elliot & Church, 1997; Elliot, McGregor, & Gable, 1999; Harackiewicz, Barron, Pintrich, Elliot, & Thrash, 2002). With respect to intrinsic and extrinsic motivation, performance-approach goals have been positively associated with extrinsic motivation and have been found to have no relationship with intrinsic motivation (Elliot & Church). With respect to self-efficacy, the research on performance approach goals is unclear. Some studies have found a positive relationship between performance-approach goals and self-efficacy (Pajares, Britner, & Valiante, 2000) whereas others have found performance-approach goals to be unrelated to self-efficacy (Anderman & Midgley, 1997). In contrast to performance-approach goals, performance-avoid goals been found to undermine both intrinsic and extrinsic motivation (Elliot & Church) and have been consistently found to have a negative relationship with self-efficacy (Middleton & Midgley, 1997; Pajares et al.).

In line with the distinction made between performance-approach and performance-

avoid goals, researchers have attempted to further divide the mastery construct into mastery-approach and mastery-avoid goals (Elliot & McGregor, 2001; Pintrich, 2000). Within this framework, mastery-approach goals involve striving to “develop one’s skills and abilities, advance one’s learning, understand material, or master a task” whereas, mastery-avoid goals involve striving “to avoid losing one’s skills and abilities... forgetting what one has learned, misunderstanding material, or leaving a task incomplete” (Elliot, 2005, p. 61). The application and use of the four-factor construct has been limited. Most researchers choose to use either the two or three factor models. For the purposes of this study the three factor model (the mastery, performance-approach, and performance-avoid) will be used.

Often, the terms intrinsic value, intrinsic motivation, and mastery goal orientation are used interchangeably in the literature, as are the terms utility value, extrinsic motivation, and performance goal orientation (Murdock & Anderman, 2006). While these concepts are highly related, they are conceptually different (Harackiewicz & Elliot, 1993; Elliot & Harackiewicz, 1996). While mastery goals are thought to enhance intrinsic motivation and performance goals are thought to undermine intrinsic motivation (i.e., enhance extrinsic motivation), a distinction has been made in the literature between the relationship between performance approach goal orientation and performance avoid goal orientation and their effects on intrinsic motivation (Elliot & Harackiewicz). Specifically, Elliot and Harackiewicz have found that only performance-avoid goal orientations undermine intrinsic motivation. To future explore these relationships and their subsequent influences on student cheating intrinsic and extrinsic motivation and mastery and performance goals will be explored in this study.

From a theoretical perspective, one could argue that extrinsically motivated, performance (avoid) oriented students are more likely to view cheating as a favorable strategy for achieving their academic goals (i.e., achieving higher grades) (Murdock & Anderman, 2006). Whereas, intrinsically motivated, mastery oriented students are more likely to view cheating as an unfavorable strategy because cheating would hinder their ability to achieve their academic goals (i.e., learning or mastering the material).

### *Social Goal Theory*

In addition to achievement goals, many scholars (Anderman & Anderman, 1999; Anderman et al., 2007; Covington, 2000; Deci & Ryan, 2000; Dweck & Leggett, 1988; Horst et al., 2007; Patrick et al., 2002; Ryan & Shim, 2006; Spera & Wentzel, 2003; Urdan, 1997; Urdan & Maehr, 1995; Wentzel, 1991, 1996, 2000, 2002, 2005) have acknowledged the influence that social goals have on students' attitudes and behaviors within an achievement/learning domain. Social goals are defined generally as "the social outcomes that students wish to achieve at school" (Wentzel, 2005, p. 281). Social goals have been explored in a variety of ways in the literature. Two of these approaches will be presented here: social goals classified by "type" and social goals classified by "motivational orientation."

One of the most common approaches to exploring social goals to classify them by type and then explore how different types of social goals relate to various student outcomes (Horst et al., 2007). Three types of social goals have been identified in the literature: social responsibility goals, social relationship goals, and social status goals (Horst et al.; Patrick et al., 2002, 1997; Ryan et al., 1997).

Social responsibility goals involve "students' formal social demands and role expectations in the classroom" (Patrick et al., 2002, p. 89). Expectations are based on societal norms (Anderman et al., 2007). As such, within an academic context, "responsibility goals can be thought of as a student's expressed goal of being a 'good citizen' ... including his or her willingness to adhere to class rules, to follow directions, and to behave in ways that are not distracting to others" (Patrick et al., p. 89). Students who endorse social responsibility goals are more likely to endorse mastery goals (Anderman & Anderman, 1999), experience increased levels of school satisfaction (Anderman & Anderman), and engage in help-seeking behaviors when needed (Ryan et al., 1997)

Social relationship goals involve "wanting to form and maintain close friendships with peers in school" (Patrick et al., 2002, p.90). Students who endorse social relationship goals are more likely to seek out opportunities to develop friendships and receive support from others (Patrick et al.). Social relationship goals have been found to be positively

associated with increased endorsement of performance (approach) goals and decreased levels of school satisfaction (Anderman & Anderman, 1999). Also, because students who endorse social relationship goals prioritize their social relationships, they are more likely to use their peers as a comparison group when making judgments about their own success (Patrick et al.).

Social status goals involve “an orientation to peers, but is focused on students’ desire for social visibility and prestige within the larger peer group” (Patrick et al., 2002, p. 91). In contrast to social responsibility goals, social status goals represent an acceptance of the social norms and expectations of the peer group over an acceptance of the norms and expectations set by the formal classroom or larger society (Patrick et al.). Social status goals have been positively associated with increased endorsement of performance (approach) goals (Anderman & Anderman, 1999) and decreased willingness to engage in help-seeking behaviors when needed (Ryan et al., 1997).

An alternative approach has been to classify social goals in the same way that achievement goals are classified, that is, by motivational orientation (Dweck & Leggett, 1988). Within this framework, social goals, like achievement goals, focus on the pursuit of competence (Horst et al., 2007; Ryan & Shim, 2006; Wentzel, 2005). Individuals strive to develop social competence while avoiding the appearance of social incompetence (i.e., negative judgments about one’s social actions) (Horst et al.; Ryan & Shim). Because this study is interested in exploring both achievement and social goals and the possible relationship between the two, Dweck and Leggett’s framework more appropriate to use.

Ryan and Shim (2006), drawing from Dweck and Leggett’s (1988) framework, define social goal orientations in a way that parallels the three-dimensional framework of achievement goal orientation by distinguishing between three social goal orientations: (a) social development goals, (b) social demonstration-approach goals, and (c) social demonstration-avoid goals.

Individuals with social development goals “focus on developing social competence [by] improving social skills, deepening the quality of relationships, or developing one’s social life in general” (Ryan & Shim, 2006, p. 1247). Individuals with social demonstration-

approach goals focus on “demonstrating social competence and gaining from others positive judgments that one is socially desirable” (Ryan & Shim, p. 1247). Finally, individuals with social demonstration-avoid goals focus on “demonstrating that one does not lack social competence, [that is], avoiding doing something that would incur negative judgments from others and indicate social undesirability” (Ryan & Shim, p. 1247).

For the latter two goals, attention is focused on how one appears to others. For students with social demonstration-approach goals, success is defined as being viewed as popular or being seen as having a good reputation, whereas students with social demonstration-avoid goal orientation define success as not being seen unfavorably by others (i.e., as a loser) (Ryan & Shim, 2006). In general, social goals are thought to influence achievement related outcomes in the same manner as achievement goals with social development goals being correlated with positive learning strategies and outcomes and social demonstration goals being correlated with maladaptive learning strategies and negative learning outcomes (Horst et al., 2007).

Ryan and Shim’s (2006) social goal framework appears to provide a promising tool for exploring social goals within an achievement motivation framework. However, this approach is very new and has not yet been extensively tested. From a theoretical perspective, one could predict that students who hold social demonstration (avoid) goals are more likely to cheat than students who hold social development goals. However, to-date, these relationships have not been thoroughly or directly explored in the cheating literature. This study aimed to fill that gap.

### *Social Goals and Achievement Goals*

Researchers suggest that although social goals and achievement goals appear to be similar based on their structure, they should be viewed as distinct from one another due to differences in the focus of their domain (Horst et al., 2007; Ryan & Shim, 2006; Wentzel, 2002; Urdan & Maehr, 1995). Achievement goals focus on why students pursue their academic work (i.e. to learn or to get a higher grade) whereas social goals focus on what students want to accomplish in their interactions with others in an academic setting (Urdan &



Maehr). In a study of both social and achievement goals Wentzel (1996) found that students' pursuit of social goals, like cooperation and sharing, was positively related to learning goals but not performance goals. This study provides evidence that these two concepts are related and may in fact interact to influence students' attitudes and behaviors.

In a more recent study, Ryan and Hopkins (2003, as cited in Ryan & Shim, 2006) found that social goals were moderately yet positively related to their respective achievement goal constructs (0.41, 0.38, and 0.51 for mastery, performance approach, and performance avoid, respectively). These findings provide further evidence that these constructs are related but distinct from each other (Horst et al., 2007).

From a theoretical perspective, research suggests that achievement goals and social goals work together to influence achievement related outcomes, however, the nature of this relationship is not well understood (Covington, 2000). It is possible that varying combinations of achievement and social goals will exert both positive and negative influences on students' achievement-related attitudes and behaviors, which in turn could have differential effects on students' decisions to cheat. To-date no studies have directly explored the relationship between achievement goals, social goals, and cheating. This study aimed to fill that gap. The following review will provide an overview of the empirical evidence that exists which connects motivation, achievement goals, social goals, and cheating.

### *Empirical Evidence*

#### *Motivation*

The relationship between motivation and cheating attitudes and behaviors has been explored in a variety of ways in the cheating literature. The most common approach has been to ask students to self-report which factors they consider to be most influential in their decisions to cheat. In a 1996 study, Newstead and his colleagues (Newstead, Franklyn-Stokes, & Armstead), asked a sample of 943 undergraduate students to self-report their past engagement (while in college) in 21 (researcher identified) cheating behaviors. After responding yes (indicating that they had engaged in the behavior) or no (indicating that they had not engaged in the behavior) to each of the 21 behaviors, students were asked to provide

their reasons for cheating or not cheating for each of the 21 behaviors. Two of the top three reasons students provided for cheating were to increase their grades and to avoid failure. Two of the top four reasons students provided for not cheating was because they viewed cheating as “unnecessary or pointless” or because they believed that it would devalue their achievement. These findings show that students cheat for extrinsically motivated reasons and choose not to cheat for intrinsically motivated reasons

One of the major critiques of this approach is that it assesses cheating at a very general level. Not only were students asked report their cheating over an extended time frame (while in college), they were asked to report cheating generally across contexts (i.e., classes, subjects, etc.). Additionally, the measure used by the authors to assess cheating only provided information about whether the student had engaged in the behavior at all. It did not provide any indication of how many times and under what circumstances cheating occurred. This approach is problematic because, according to achievement goal theory, achievement goals are domain specific and can vary across function, time, and context (Eccles, 2005). In Newstead et al.’s (1996) study, a student who reported cheating on a test may have cheated on one test or more than one test. If the student had cheated on more than one test, his or her motivation to cheat may have been different for each occurrence. For example, an engineering student’s motivation to cheat on a psychology test may be purely extrinsic (i.e., to achieve a higher grade), however, that same student may choose not to cheat on a physics test because of an intrinsic motivation to learn the materials. Not assessing cheating within a specific context or during a specific time makes it difficult to truly understand the true nature of the relationship between motivation and cheating.

Another approach that has been used to more specifically, yet still indirectly, assess the relationship between motivation and cheating is to ask students to self-report their level of interest in or satisfaction with a specific type of activity or a specific content area (Ryan & Deci, 2000). In this type of cheating study, students’ interest level in a particular subject area, course, or task is correlated with their self-reports of actual cheating or willingness to cheat in that subject area, course, or task. In a study of 280 undergraduate students, Pulvers and

Diekhoff (1999) reported that students who found their classes more satisfying admitted less cheating than those who found their classes less satisfying. In a 2002 study, Carpenter, Harding, Montgomery, Steneck, and Dey found that 50% of the 349 undergraduate students surveyed felt that they would not cheat if they believed that the course material was important to their future career. In a more recent study, Schraw and his colleagues (2007) asked 82 undergraduate students to describe how personal interest in a topic impacts the likelihood that they would cheat in a given situation. None of the respondents indicated that interest in the topic would increase the likelihood that they would cheat, 21% of respondents indicated that interest in a topic would have no effect on their decision to cheat, while 63% of students reported that being interested in the topic would decrease the likelihood that they would cheat. Together, these studies suggest that motivation for cheating varies across context and that students are less likely to cheat in subjects, courses, or tasks that they find personally satisfying or intrinsically motivating.

One of the major critiques of these studies and the cheating literature in general is the continued reliance on correlation analysis. Correlation simply indicates that a relationship exists. It does not indicate causation, nor does it provide information about the mechanisms through which the variables are related. Based on the studies presented here, one can conclude that intrinsic motivation is negatively associated with cheating and extrinsic motivation is positively associated with cheating.

Within the achievement motivation literature, researchers have used a variety of instruments to explore intrinsic and extrinsic motivation directly. Some of the most commonly used instruments include: (a) the Motivated Strategies for Learning Questionnaire (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1993), (b) the Learning and Study Strategies Inventory (LASSI) (Weinstein, Palmer, & Schulte, 1987) (c) the Work Preferences Inventory (WPI) (Amabile, Hill, Hennessey, & Tighe, 1994). All these instruments have been determined to produce valid and reliable measurements of student motivation (Cano, 2006; Duncan & McKeachie, 2005; Melancon; 2002; Mills & Blankstein, 2000; Prevatt, Petscher, Proctor, Hurst, & Adams, 2006).

Of the three instruments, the MSLQ is the most widely used among scholars and has specifically been used recently in a study of college student cheating (Bong, 2007). The MSLQ is based on an expectancy-value framework and is designed to specifically assess intrinsic motivation and extrinsic motivation within a specific context (i.e., course or classroom) (Duncan & McKeachie, 2005). The LASSI has also been widely used among scholars, in particular among higher education scholars. The LASSI measures motivation at a general level, but does not distinguish between intrinsic and extrinsic motivation. The WPI (Amabile et al., 1994) also explores motivation at a general level but does make a distinction between intrinsic and extrinsic motivation.

Because the framework used in this study acknowledges that motivations vary across context and time, the MSLQ (Pintrich et al., 1993; Duncan & McKeachie, 2005), which provides the most specific measure of achievement goals, is the most appropriate tool to use.

#### *Achievement Goals*

Achievement goals have just recently begun to be explored directly in the cheating literature. Across these studies, achievement goals have been measured via the use of two instruments: (a) the Learning and Grade Orientation Scale (LOGO and LOGO II) (Eison, 1981; Eison, Pollio, & Milton, 1986) and (b) the Patterns of Adaptive Learning Survey (PALS) (Midgley et al., 1997, 2000).

Eison and colleagues developed the LOGO and LOGO II instruments to distinguish between students who are learning oriented versus students who are grade oriented (Eison, 1981; Eison et al., 1986). Two studies (Huss et al., 1993; Weiss, Gilbert, Giordano, & Davis, 1993) were found that used the LOGO to explore the relationship between self-reported cheating and learning orientation among college students. Both of these studies found inverse relationships between learning orientations and self-reported cheating (Murdock & Anderman). These findings are consistent with achievement motivation theory, which suggests that learning oriented students will view cheating less favorably and, as a result, will engage in less cheating than grade oriented students.

A more recent study (Rettinger, Jordan, & Peschiera, 2004) explored the relationship

between academic cheating and goal orientation as measured by LOGO II using a sample of 103 undergraduate students. In this study, vignettes were used to simulate common classroom settings and to manipulate the protagonist's goal orientation and competence. After reading each vignette, respondents were asked to indicate the likelihood that the protagonist would cheat in the given situation and the likelihood that they, themselves, would cheat in the given situation. The LOGO II was used to measure the motivational orientations of the respondents. When the protagonist was depicted as being intrinsically or mastery motivated, respondents were significantly less likely to expect him to cheat than when he was depicted being extrinsically or performance motivated. In addition to providing a new experimental methodology for exploring the relationship between motivation and academic cheating, this study provides further evidence for support for the relationship between grade orientation and students' decisions to cheat.

The Patterns of Adaptive Learning Survey (PALS) (Midgley et al., 1997, 2000) provides another tool for exploring the relationship between motivation and academic cheating. The PALS distinguishes between students with mastery, performance-approach, and performance-avoidance goals. In a recent study, Murdock et al. (2007) used a methodology similar to the methodology used by Rettinger et al. (2004) to explore the relationship between personal goals and attitudes toward academic cheating among a sample of 224 undergraduate students using the PALS. Personal performance goals were found to account for a significant amount of the variance in student attitudes toward cheating, specifically, the extent to which cheating was viewed as being justifiable. Murdock and Anderman and their colleagues (Anderman & Midgley, 2004; Murdock et al., 2001, 2007) have used the PALS scales extensively to study cheating and their studies have produced similar findings. These studies are all limited by the fact that they focus primarily on younger student populations (i.e., elementary, middle, and high school students). As such, the results are not generalizable to college student populations.

Together, the results from the use of the LOGO, LOGO II, and PALS instruments suggest that students who approach their work with performance goals will have more

favorable attitudes toward cheating and will be more motivated to cheat than students who approach their work with mastery/learning goals. This study proposes that students who endorse mastery goals will be more intrinsically motivated and therefore hold less favorable attitudes toward cheating and students who endorse performance (avoid) goals will be more extrinsically motivated and hold more favorable attitudes toward cheating.

### *Social Goals*

Social goals (responsibility, relationship, and status) have been limitedly and indirectly explored in the cheating literature. Students who endorse social responsibility goals feel that it is important to follow school rules and social norms. Students are more likely to value and endorse school rules and expectations if they feel a sense of belonging or attachment to their school (Finn & Frone, 2004). Level of alienation is one way that social attachment has been explored in the cheating literature (Calabrese & Cochran, 1990, Finn & Frone; Newhouse, 1982; Smith, Davy, & Easterling, 2004; Whitley, 1998).

In one of the earliest studies of alienation and students cheating, Newhouse (1982) surveyed 120 college freshmen and found that students who felt alienated were more likely to cheat. Calabrese and Cochran (1990) found similar findings in their study of 1,534 high school students. Although these studies indicate that a relationship exists between alienation and cheating, the findings are limited by the researchers' reliance on simple correlation measures. In addition, the Newhouse study suffered from a small sample size and the Calabrese and Cochran study was focused only on high school students. Both of these factors limit the generalizability of these results to a college student population.

Going a step beyond simple correlation measures and using a college sample, Finn and Frone (2004) used hierarchical regression to explore, among other things, how school identification interacts with other variables (i.e., performance and self-efficacy) to affect cheating. Overall, they found that low levels of school identification were positively associated with cheating. In addition, when combined with academic performance, low levels of school identification increase the likelihood that students will cheat. This study's reliance on a self-selected (volunteer) cross-sectional sample, limits its generalizability and use.

Students who volunteer to participate in a study of cheating may have distinctly different attitudes from those who do not. In addition, students who feel alienated from their school environment are probably less likely to volunteer to participate. Finally, due to the cross-sectional nature of the study it is difficult to tell whether differences exist due to differences in the variables of interest or due to differences in other unrelated and/or unmeasured factors.

Smith et al. (2004) go a step further in exploring the relationship between alienation and student cheating by using structural equation modeling to predict how feelings of alienation are associated with student cheating. Their final model showed that the relationship between alienation and cheating is mediated by prior cheating and students' tendency to justify or rationalize cheating behavior. This suggests that while alienation may be an important factor to consider in the student cheating equation, it does not directly influence students' decisions to cheat (Smith et al.). These findings are consistent with the earlier findings of Smith and his colleagues (Smith, Davy, Rosenberg, & Haight, 2002).

Murdock et al. (2001) explored the relationship between social motivation and cheating by examining two aspects of the social motivational climate: social structure and teacher competence and commitment using a sample of 495 middle school students. The social variables were entered into a regression equation with measures of achievement motivation and the results showed that the social variables emerged as the "best predictors of cheating and accounted for significantly more variance in cheating than academic variables alone" (Murdock et al., 2001, p. 110). This study provides further support for the inclusion of social goals in the proposed model. However, the findings of this study may not be generalizable to a college student population as college students may differ significantly from middle school students in the type and level of social goals that they endorse.

One of the major weaknesses of the cheating literature with respect to social goals is the lack of a consistent theoretically based approach to conceptualizing and measuring the social motivational predictors of cheating. Most of the existing studies of cheating conceptualize and measure social variables as demographic factors (i.e., athletic team membership, fraternity or sorority membership). This approach, however, "omits important

information about the individual's goals for being in that relationship (Anderman et al., 2007, p. 222). Ryan and Shim's (2006) social goal framework provides a promising framework for exploring the relationship between social motivation goals and student cheating, however, to-date this framework has not been tested in the cheating literature. This study aimed to achieve that goal.

### *Summary*

This review has demonstrated that academic goals and social goals are both important factors that need to be considered as possible predictors of students' motivations to cheat. This study proposes that goals motivate students' decisions to cheat via the effect that they have on students' attitudes toward cheating. To-date, no one study has examined the relationship between academic goals, social goals, and student cheating. Therefore, it is still unclear if and how academic goals and social goal work together to motivate cheating. This study aimed to fill that gap. The next section will discuss how academic expectations motivate students' decisions to cheat.

### *Can I Do This?*

Murdock and Anderman (2006) suggest that a second question that students consider as they approach their academic work is "Can I do this?" (pg.134). From an achievement motivation perspective, this question relates to the judgments that students make about their ability to accomplish specific academic tasks or to achieve specific learning outcomes (Murdock & Anderman). This section will provide an overview of the theoretical and empirical literature that connects academic expectations and student cheating.

### *Theoretical Perspectives*

Students' expectations about their ability to pursue and achieve their desired academic goals play an important role in achievement motivation and, in turn, in students' decisions to cheat. Murdock and Anderman use two concepts from Bandura's (1986, 1997) self-efficacy theory, self-efficacy and outcome expectations, to demonstrate how academic expectations motivate students' decisions to cheat.



### *Academic Self-Efficacy*

Within an expectancy-value framework, self-efficacy is domain specific. Therefore, academic self-efficacy is conceptualized as a student's judgments about his or her ability to organize and execute the actions necessary to successfully engage in and complete specific academic task (i.e., perform well on a test, complete a homework assignment) (Zajacova et al., 2005, p. 679). Research has shown that specific measures of academic self-efficacy have more predictive power than generalized measures of academic self-efficacy (Zajacova et al.). When specific measures have been used, academic self-efficacy has been shown to be a strong predictor of motivation, learning, and achievement (Bong, 2006; Pajares, 1996; Schunk & Pajares, 2002). Academic self-efficacy is thought to mediate learning by encouraging perseverance and by providing students with the confidence to try new strategies (Lorsbach & Jinks, 1999).

When faced with challenging tasks, efficacious students are likely to try new things and work harder in order to achieve their goals (Schunk & Pajares, 2002). Efficacious students have been shown to spend more time on schoolwork (Torres & Solberg, 2001), be more engaged in the classroom environment (Linnenbrink & Pintrich, 2003), experience less stress (Torres & Solberg), and take responsibility for their own learning (Zimmerman & Kitsantas, 2005)

In contrast, when faced with challenging tasks, students with low self-efficacy doubt their abilities and stop trying as soon as they perceive that their efforts will not end in success. Lorsbach and Jinks (1999) describe this process as a "negative spiral" in which low self-efficacy leads to less effort, which leads to less success, which leads to even lower self-efficacy (p. 160). In academic settings, students with low self-efficacy are more likely to resort to using shortcuts and other maladaptive strategies to accomplish their goals (i.e., cheating) (Finn & Frone, 2004).

### *Outcome Expectations*

Within an expectancy-value framework, outcome expectations refer to the belief that certain actions lead to certain outcomes. Outcome expectations are based on one's past

experiences with a behavior and one's perception of barriers that will impact one's ability to be successful. Within the achievement/learning domain, outcome expectations have been explored with respect to a construct called "learned helplessness." Learned helplessness "refers to students' beliefs that they cannot control their own behavior and that there is no relationship between their behavior and an outcome (Linnenbrink & Pintrich, 2003, p. 128). Learned helplessness is characterized by an "unwillingness on the part of the student to engage in the task because he or she believes that effort is futile and failure is imminent" (Seifert, 2004, p. 146). Learned helplessness is an indication of low outcome expectations. Students are considered to be "helpless" when they believe that no matter what they do or how hard they work they will not be able to achieve in school (Linnenbrink & Pintrich). Students with high levels of learned helplessness exert less effort and are less likely to persist in their academic work.

From a theoretical perspective, one could argue that cheating may be an attractive option for students with low self-efficacy and/or poor outcome expectations (Murdock & Anderman, 2006). What is unclear is if and how these variables interact to effect students' decisions to cheat. To-date, no one study has examined the relationship between academic self-efficacy, outcome expectations, and student decisions to cheat. The following review of the literature will provide empirical evidence to demonstrate the relationship between self-efficacy, outcome expectations, and students' decisions to cheat.

### *Empirical Evidence*

#### *Academic Self-Efficacy*

Academic self-efficacy has been explored both indirectly and directly in the cheating literature. An indirect approach to measuring self-efficacy has been to explore the relationship between cheating and students' negative or anxious emotions (Murdock & Anderman, 2006). Researchers who have used this strategy have found that academic cheating is positively correlated with fear of failure (Calabrese & Cochran, 1990; Evans & Craig, 1990; Michaels & Miethe, 1989; Norton, Tilley, Newstead, & Franklyn-Stokes, 2001; Schab, 1991), test anxiety (Malinowski & Smith, 1985), and stress (Zajacova et al., 2005) all

of which are correlates of low self-efficacy. While correlation studies provide a good starting point for identifying possible relationships that exist between variables, they do not provide information about the causal nature of that relationship. For example, it is unclear whether low self-efficacy causes negative or anxious emotions or vice versa. Also, negative or anxious emotions may occur as a result of factors that are unrelated to self-efficacy.

Another strategy has been to use a student's grade point average as a measure of self-efficacy (Murdock & Anderman, 2006). Murdock and Anderman suggest that students use their grades to form self-efficacy judgments related to their academic work (Murdock & Anderman). Studies that have explored the relationship between GPA and cheating have produced mixed results. Several studies have found a strong inverse relationship between GPA and academic cheating (Finn & Frone, 2004; McCabe & Trevino, 1997; Michaels & Miethe, 1989; Newstead et al., 1996; Roig & DeTommaso, 1995). However, in a 1998 meta-analysis of the cheating literature, Whitley found that the relationship between GPA and cheating was small. Murdock and Anderman cited one study (Stephens, 2004 as cited in Murdock & Anderman, 2006) that reported high levels of cheating among high achieving students. High achieving students are thought to have higher levels of self-efficacy. One possible explanation for this finding is that higher achieving students achieve better grades because they cheat. This line of research also suffers from limitations similar to the studies that use emotions as a proxy measure for self-efficacy. These studies tend to rely heavily on correlation analysis and therefore do not provide additional information about the nature of the causal relationship between self-efficacy and cheating.

Lack of preparedness has also been studied in relation to academic cheating. If a student is not able to put in the time and energy required to prepare for a test or to complete an assignment, he or she will likely have low expectations for success on that test or assignment and, as a result, may be more likely to cheat. Two studies have found that lack of preparedness is positively correlated with students' decisions to cheat (Kerkvliet, 1994; Norton et al., 2001). One factor that impacts preparedness that has been studied by scholars is class attendance. Class attendance has been shown to be positively correlated with less

cheating (Michaels & Miethe, 1989). Students who attend class on a regular basis are more likely to be prepared to complete their academic work than students who skip class regularly (Murdock & Anderman, 2006).

Procrastination is yet another factor that would cause a student to have lower self-efficacy (Murdock & Anderman, 2006). Procrastination directly influences the ability of students to complete work in a thorough and timely manner. Procrastinating makes students feel rushed and shifts the balance of costs and benefits associated with engaging in academically dishonest behaviors. Procrastination has been shown to be positively associated with cheating (Roig & DeTommaso, 1995).

The final individual factor presented by Murdock and Anderman (2006) associated with self-efficacy is the perceived difficulty of course materials. A student could have high self-efficacy in math, but low self-efficacy in science. In this case, the student would be more likely to view science as a more difficult course and therefore would be more likely to be motivated to cheat on a science assignment (Schab, 1991). Daniel, Blount, and Farrell (1991) also cite course difficulty as a common justification given by students who have cheated.

A handful of studies have explored the relationship between self-efficacy and cheating directly. Finn and Frone (2004) explored the relationship between self-efficacy and student cheating using a population of 315 students between the ages of 16 and 19 (66% of the students were in high school and 34% of the students were in college at the time of the study). Self-efficacy was measured using an 8-item scale developed and validated by Riggs, Warka, Babasa, Bentacourt, and Hooker (1994). The scale included general measures of self-efficacy including items like “I have confidence in my ability to do my school work” and “I have all of the skills needed to do very well at school.” Students were asked to use a 6-point scale ranging from (1) strongly agree to (6) strongly disagree.

Their results showed that students with low self-efficacy report higher levels of cheating than students with high self-efficacy (Finn & Frone, 2004). Specifically, they found that cheating increased by 0.15 for every standard deviation decrease in self-efficacy. These results support the use of self-efficacy as a predictor of student cheating. However, these

findings do not do is shed light on the mechanism through which self-efficacy influences cheating.

Based on the work of Murdock and Anderman (2006) and Harding et al. (2007), the model used in this study predicts that self-efficacy influences students' decisions to cheat via the influence that it has on students' attitudes toward cheating. To-date this relationship has not been tested in the research literature.

#### *Outcome Expectations*

Outcome expectations have not been explored directly in the cheating literature because most studies fail to include a measure of outcome expectations in their analysis of the relationship between self-efficacy and student cheating. This continued neglect of outcome expectations occurs despite the fact it has been well established that self-efficacy and outcome expectations work together to influence students' attitudes and behaviors (Bandura, 1986, Bong, 2006, Schunk & Pajares, 2002).

Finn and Frone (2004) do not include a specific measure of outcome expectations in their study of self-efficacy and student cheating, however, their results demonstrate the need for the use of both self-efficacy and outcome expectations scales in studies of cheating. Finn and Frone explored the hypothesis that self-efficacy serves as a moderator of the inverse relationship that is known to exist between academic performance (i.e., self-reported GPA) and cheating. Their analysis showed that students who reported high academic performance and high self-efficacy also reported the lowest levels of cheating. While this finding was expected, what was not expected was the finding that students' who report high levels of self-efficacy and low levels of performance reported the highest levels of cheating. One explanation for this finding may be the interaction between self-efficacy and outcome expectations. A student who is a poor performer may feel that he or she has the requisite skills and knowledge to succeed at an academic task but is unable to succeed due to factors that are out of his or her control (e.g., unfair exams). As a result of this combination of high self-efficacy and low outcome expectations, the student may view cheating as viable option for achieving his or her academic goals. This is especially true if a student's heightened self-

efficacy causes him or her to believe that he or she is deserving of a good grade. Because the researchers failed to include a measure for outcome expectations within their self-efficacy construct, this hypothesis was unable to be explored. This demonstrates the need to include measures of both self-efficacy and outcome expectations in future studies designed to explore the relationship between expectations formed in the academic domain and student cheating.

### *Summary*

To-date, no study has explored the relationship between academic self-efficacy, outcome expectations, and cheating. This study aimed to achieve that goal. Based on the proposed model of student cheating, this study suggests that academic expectations (self-efficacy and outcome expectations) influence students' decisions to cheat via the impact that they have on students' attitudes toward cheating. This study hypothesizes that students who have low self-efficacy and negative outcome expectations will be more likely to cheat than students with high self-efficacy and positive outcome expectations.

The first two sections of this review used an expectancy-value framework and concepts from achievement motivation theory to explain how students' goals (achievement and social) and expectations for success (academic self-efficacy and outcome expectations) within an academic domain can motivate students' decisions to cheat. An expectancy-value framework, when applied to the cheating domain, can also be used to analyze students' cheating decisions, as will be demonstrated in the next section.

### What are the Costs?

Murdock and Anderman (2006) suggest that the third and final question that students consider as they approach their academic work is "What are the costs associated with cheating?" (p. 136). To answer this question, students use a cost/benefit analysis. When students perceive the costs associated with cheating to be high, they will be less motivated to cheat than when they perceive the costs associated with cheating to be low (Murdock & Anderman).

Within an expectancy-value framework, students' decisions to cheat are motivated by their expectations for success, that is, their expectations (self-efficacy and outcome

expectations) that cheating will lead to a desired outcome (i.e., cheating without getting caught) and the value that they associate with achieving that desired outcome. Harding et al. (2007) offer a specific expectancy-value framework, the theory of planned behavior (Ajzen, 1991, 2002), as a model for predicting how students weigh the costs associated with cheating. This section will provide an overview of the Harding et al. model and a discussion of the empirical literature that supports its use as a tool for predicting students' decisions to cheat.

### *Theoretical Perspectives*

#### *Theory of Planned Behavior*

As an expectancy-value theory, the theory of planned behavior (Ajzen, 1991, 2002) provides a framework for understanding and predicting human behavior (Ajzen, 1991, 2002). This theory is based on the assumption that humans are rational beings and, when faced with a choice between two options, will choose the option that provides the greatest utility or yields the highest benefits (Ajzen, 1991, 2002; Wigfield & Eccles, 2002).

Within this framework, decisions are guided by three factors: (a) behavioral beliefs, which are “beliefs about the likely outcomes of the behavior and the evaluations of these outcomes,” (b) normative beliefs, which are “beliefs about the normative expectations of others and one’s motivation to comply with those expectations,” and (c) control beliefs, which are “beliefs about the presence of factors that may facilitate or impede performance of the behavior and the perceived power of these factors” (Ajzen, 2006, p.1).

Behavioral beliefs work together to “produce a favorable or unfavorable attitude towards the behavior” (Ajzen, 2006, p. 1). As discussed in earlier in this chapter, the proposed model of student cheating suggests that students’ attitudes toward cheating are predicted by students’ goals and expectations for success within an academic domain.

Students who hold performance/demonstration goals and who have negative expectations for success will likely view cheating favorably if they perceive that it will result in a higher grade on an exam or homework assignment. In contrast, students who hold mastery/development goals and who have positive expectations for success will likely view

cheating as a less favorable option. This is just one example of the many combinations of goals and expectations that could influence students' attitudes toward cheating. In general, this theory suggests that if a student has favorable attitudes toward cheating, his or her intentions to cheat will be stronger which, in turn, will result in an increased likelihood that cheating will occur.

Normative beliefs influence students' perceptions of social pressure or social norms (Ajzen, 2006). Norms refer to the perceptions that individuals have about the beliefs of others who they consider to be important (i.e., peers, teachers, family members) (Harding et al., 2007). Specifically, in the context of cheating, subjective norms are the perceptions that a student has about whether others will approve or disapprove of his or her cheating behavior. In general, the theory of planned behavior suggests that if a student perceives that social pressures and social norms encourage cheating, his or her intentions to cheat will be stronger, and as a result, he or she will be more likely to cheat.

Control beliefs influence students' perceptions of behavioral control (Ajzen, 2006). This construct is similar to the construct that was used earlier in the model to answer the question "Can I do this?" Both combine measures of self-efficacy and outcome expectations however, the target behavior of interest is different. Earlier in the model, within an academic domain, the behavior of interest was attaining a goal-directed academic outcome, whereas in a cheating domain, the behavior of interest is cheating.

When students are considering whether to cheat, their control beliefs influence their perceptions of behavioral control. Strong behavioral control is characterized by a belief in one's ability to successfully accomplish a desired task (i.e., cheat without getting caught) (Ajzen, 2006). Like the self-efficacy construct presented in the first part of the model, perceived behavioral control is based on students' past experiences with cheating and their perceptions of their ability to control factors in their environment that either facilitate or inhibit their ability to cheat. Students who demonstrate strong behavioral control are more likely to believe that they can cheat and get away with it. In general, the more favorable a student's attitudes are toward cheating, the stronger his or her perceptions are that norms



support cheating, and the stronger his or her perceptions are that he or she can control the outcome of their cheating behavior, the more likely he or she will be to cheat (Ajzen, 2006).

These three factors - attitudes toward behavior, subjective norms related to cheating, and perceived behavioral control of cheating - work together to influence students' intention to cheat. In the theory of planned behavior, intentions are immediate antecedents of behaviors (Ajzen, 1991, 2002). "Given a sufficient degree of actual control over the behavior, people are expected to carry out intentions when the opportunity arises" (Ajzen, 2006, p.1). Therefore, when benefits are perceived to outweigh cost (i.e., when attitudes and social norms regarding cheating are favorable and perceived behavioral control is high) cheating will likely occur.

#### *Moral Obligation*

Harding et al. (2007), drawing from the work of Beck and Ajzen (1991), added two additional factors - moral obligation not to cheat and its antecedent, moral reasoning - to the theory of planned behavior in an effort to increase the predictive ability of their model of student cheating. Similar to the findings of Beck and Ajzen, Harding et al. (2007) found that when moral obligation is added to the theory of planned behavior model it becomes a significant, albeit modest, predictor of student cheating. They also found moral obligation was predicted by moral reasoning. Students who use higher levels of moral reasoning are more likely to feel a sense of moral obligation not to cheat.

Murdock and Anderman's (2006) model also suggests that morality should be included as a motivational predictor of students' decisions to cheat. Because moral obligation has been shown to increase the predictive ability of the theory of planned behavior, and because it was noted as an important predictor both models, it will also be included as a variable in this study with the expectation that students who report higher levels of moral obligation not to cheat will be less likely to cheat than students who report lower levels of moral obligation not to cheat.

#### *Neutralization*

Neutralization was not included in the Harding et al. (2007) model however Murdock

and Anderman (2006) indicated that it should be considered as a factor in students' assessment of costs. Neutralization theory was developed by Sykes and Matza (1957) in an effort to demonstrate how individuals rationalize and justify engaging in behaviors that they know to be morally wrong. Engaging in behaviors that one knows to be wrong results in increased feelings of guilt (Nonis & Swift, 1998; Steenhaut & Van Kenhove, 2006). Neutralization has been proposed as a technique that individuals use to free themselves from feeling guilty for engaging in dishonest and/or deviant behaviors (Nonis & Swift; Topalli, 2005).

Neutralization comes in a variety of forms and is thought to both precede and follow dishonest and/or deviant behaviors (Sykes & Matza, 1957). Neutralizations are used in advance of behavior as motivation for engaging in the behavior and are used after a behavior as tool for rationalizing away the guilt associated with engaging in the behavior. Five types of neutralization techniques are defined in the literature: denial of responsibility ("It's not my fault"), denial of injury ("No one got hurt"), denial of the victim ("The test was not fair"), condemnation of the condemners ("But everyone does it"), and appealing to higher loyalties ("I had to help my friend") (Sykes & Matza). A student may employ one or more of these techniques to rationalize and, in effect, neutralize some or all of the perceived costs associated with cheating. Therefore, in this study, neutralization is proposed as a moderator of the relationship between students' assessments of costs and students' intention to cheat.

The next section will provide an overview of the empirical evidence that supports the use of the theory of planned behavior as a model for describing how students assess the costs associated with cheating.

### *Empirical Evidence*

The most compelling evidence for the use of the theory of planned behavior as a model for predicting student cheating comes directly from the work of Harding and his colleagues (2007) who tested this model, with the exclusion of the neutralization variable, using a population of 527 undergraduate students from three diverse institutions using a locally developed instrument (PACES-2). The PACES-2 instrument was specifically

designed and validated to test constructs in the theory of planned behavior (Passow et al., 2006). In the following sections, the specific findings of the Harding et al. (2007) study will be discussed with respect to each of the variables of interest for this study. Additional evidence for the use of these variables, based on the work of other scholars, will also be provided.

### *Attitudes Toward Cheating*

Research has shown that students with favorable attitudes toward cheating are more likely to cheat than students with unfavorable attitudes (Whitley, 1998). Attitudes towards cheating have been defined and measured in a variety of ways in the cheating literature (Magnus et al., 2002; Hardigan, 2004; Harding et al., 2007).

One strategy for exploring students' attitudes toward cheating has been to examine students' attitudes toward cheaters (Magnus et al., 2002; Hardigan, 2004). Magnus and colleagues evaluated high school, college, and graduate students' attitudes toward cheaters, across cultures, by asking students from five countries (provincial Russia, Moscow, the Netherlands, Israel, and the United States) to read and respond to single cheating vignette. The vignette depicted a student who reported test/exam cheating (one student copying from another student) to a school authority. Students were asked to characterize their attitudes toward each of the students in the vignette: the student who reported cheating, the student who copied from another student, and the student who was copied from. They used students' responses to create a tolerance of cheating index. Their findings showed that students from the United States had a low tolerance for cheating when compared to students from other countries. One possible explanation for this finding is the value that the US educational system places on competition. Students in the US may view cheating as an unfavorable option if it is viewed as an unfair instrument of competition (Magnus et al.). The Magnus et al. study's use of cross-sectional data limits its application to the college cheating literature because the differences that were identified may be due to differences that exist in the educational levels of the respondents. In addition, the sample sizes from each country were not comparable to one another, with nearly 60% of the sample coming from provincial

Russia or Moscow, which limits the authors' ability to make meaningful comparisons across groups.

In a more recent study, Hardigan (2004) explored students' attitudes toward cheating by administering a locally developed 31-item "Attitudes Toward Cheating" (ATC) scale to a population of 823 first and third year pharmacy students across 9 colleges and universities. The ATC scale consisted of measures of students' attitudes and assessments of instances that may or may not be regard as cheating, the morality of cheating, teachers' behaviors, cheaters' behaviors, and contingencies placed on cheating.

With respect to gender, they found that when controlling for other demographics, women were 9% more likely to hold less favorable attitudes toward cheating than men. This finding was not surprising because most studies of cheating have reported that women cheat less than men (Whitley & Keith-Spiegel, 2002). One possible explanation for this finding is that men may be more motivated by performance goals and women may be more motivated by learning goals (Vallerand et al., 1992).

With respect to age, they found that third-year pharmacy students were 18% more likely than first-year pharmacy students to hold less favorable attitudes toward cheating. This finding is consistent with prior research that has found that younger students cheat more than older students (Whiltey, 1998). One possible explanation for this finding is that younger students may operate at lower levels of moral reasoning than older students and therefore may feel less of a sense of moral obligation to view cheating as wrong (Harding et al., 2007).

Finally, with respect to GPA, they found that higher achieving students were 6% more likely to hold less favorable attitudes toward cheating. These findings are consistent with prior research that has shown that GPA is negatively correlated with student cheating (Whiltey, 1998). One possible explanation for this finding is that students who have higher GPAs may have higher self-efficacy and as a result may not view cheating as necessary (Murdock & Anderman, 2006).

The findings of the Hardigan (2004) study suggest that students' attitudes toward cheating may vary across groups, specifically with respect to demographic and achievement

variables. The generalizability of this study was limited by the researcher's use of a non-random sampling technique, which resulted in a sample that was overrepresented by females (67%) and students who classified themselves as religious (74%).

In the Harding et al. (2007) study, attitudes were measured using a semantic differential scale, as recommended by Ajzen (1991, 2002). This scale consisted of 5 items anchored positively on the left and negatively on the right (i.e., good/bad). Results showed that the attitude toward cheating variable was significantly correlated with both test (0.39) and homework cheating (0.44) in the expected direction. Findings also showed that the attitude toward cheating variable was highly correlated with other predictor variables in the model, namely subjective norms (0.56 and 0.61 for test and homework cheating, respectively) and moral obligation (0.69 and 0.69 for test and homework cheating, respectively). This finding is consistent with the findings of other studies that have applied the theory of planned behavior to student cheating (Beck & Ajzen, 1991). This means that students' attitudes toward cheating may influence or be influenced by other factors including subjective norms and moral obligation not to cheat.

#### *Subjective Norms*

Research has shown that students who perceive that social norms support cheating will be more likely to engage in cheating behaviors than students who perceive that social norms are not supportive of cheating (Beck & Ajzen, 1991; DeVries & Ajzen, 1971; Graham, Monday, O'Brien, & Steffen, 1994; Genereux & McLeod, 1995; Haines, Diekhoff, LaBeff, & Clark, 1986; McCabe, Trevino & Butterfield, 2001a; Jordan, 2001; Whitley, 1998).

In 2001, Jordan explored the relationship between social norms and cheating by surveying 175 students at a small private liberal arts college. Social norms were measured by asking respondents to respond to a series of items that assessed their perceptions of cheating (frequency) by other students at the school. In addition, students were also asked to report their own cheating behaviors. The reported frequency of peer behavior varied widely (1% to 95%) with a mean score of 26.2%. The actual level of cheating in the population was found to be 54.9%. While it is difficult to get an accurate assessment of peer cheating behavior, the

wide variance in the reported frequency calls into question the usefulness of the measure used. The measure was very subjective and relied on the respondents' ability to remember cheating by peers. This approach is problematic because cheating is often a private behavior and is not one that many students talk about openly. Therefore, the finding that students' underestimated peer cheating was not surprising.

An interesting finding from this study emerged when cheaters were compared to non-cheaters. Specifically, cheaters reported cheating more often by their peers than non-cheaters. Additionally, mean cheating scores were higher among those who witnessed cheating by peers when compared to those who did not. There are several possible explanations for these findings. First, cheaters may associate more often with other cheaters, specifically when cheating is collaborative as is often the case in homework cheating. Second, cheaters may be more attuned to the cheating that goes on around them and may be more likely to notice cheating by their peers. Third, the more cheating that one sees, the more likely he or she may be to feel that cheating is acceptable and the more likely one may be to cheat (Jordan, 2001).

While this study provided interesting insights into the relationship between perceived norms and cheating, it is limited in several ways. Specifically, the study relied primarily on correlation and chi-square analysis. This means that the findings only show that a relationship exists, they do not indicate causality. Additionally, the generalizability of this study is limited because of its use of one campus and because White (90%) female (68%) students were over represented in the respondent group.

In the Harding et al. (2007) study, subjective norms about cheating were measured using a scale that consisted of 8 items such as "If I cheated on an in-class test or exam, most of the people who are important to me (e.g., my family, friends, colleagues, teachers, etc.) would approve of my behavior." Items were measured on a 5-point scale with higher scores indicating social norms that were more supportive of cheating, which meant an increased likelihood of cheating. Results showed that subjective norms were significantly correlated with cheating on tests (0.32) and homework (0.31) in the expected direction. These findings suggest that subjective norms have a similar influence on students' decisions to cheat across

tasks (test and homework).

As mentioned before, analysis by Harding and his colleagues (2007) showed that subjective norms were highly correlated with other variables (attitude and moral obligation) in their model. As a result, the researchers combined attitudes, subjective norms, and moral obligation to produce a second order factor. This factor was found to be a significant predictor of students' intention to cheat on both tests ( $b = 0.66$ ) and homework ( $b = 0.64$ ). While these findings show that attitudes, subjective norms, and moral obligation are important predictors of cheating intention, the combination of these three variables into one factor limits our understanding of the unique contribution of each of these variables to the prediction equation which makes it difficult to tell which of these three variables is the strongest unique predictor of student cheating.

#### *Perceived Behavioral Control*

Perceived behavioral control is based on self-efficacy (i.e., a student's confidence in his or her ability to cheat) and outcome expectations (i.e., the beliefs that a student has about factors in his or her environment that will either facilitate or impede his or her ability to cheat and get away with it). Research has shown that students who view themselves as effective cheaters (i.e., have high cheating self-efficacy) will be more likely to cheat than students who lack confidence in their abilities to cheat and get away with it (Beck & Ajzen, 1991; Harding et al., 2007; Michaels & Miethe, 1989; Ward & Title, 1993; Whitley, 1998). Research has shown that past cheating behavior is a strong predictor of future cheating behaviors (Harding et al.). Students who cheat and get away with it develop increased self-efficacy and outcome expectations with respect to cheating and are therefore more likely to cheat again in the future.

The best way to decrease students' perceptions of behavioral control is to find ways to increase the real and/or perceived likelihood that cheaters will be caught and punished.

In 2003, Nagin and Pogarsky conducted a randomized experiment with 256 students from a large Southwestern university that was designed to explore the effectiveness of different types of cheating deterrents. Participants were recruited to complete an in-person

survey, which included eight (impossible to answer) trivia questions on the last survey page. Students were told that answering 6 of the 8 questions correctly would result in a financial reward (\$10) and that the correct answers to the trivia questions were included in their packet for their review (to satisfy their curiosity) after submitting the completed survey. Students who qualified for the financial reward were classified as cheaters. To explore differences in cheating deterrents, students were randomly assigned to one of four testing conditions that differed with respect to the level of certainty and severity of getting caught (certainty X severity). The inclusion of an experiment proctor was used to increase the perception of certainty of getting caught and the threat of not getting paid for participation in the survey was used to increase perceptions of severity.

Results from this study showed that perceived certainty of getting caught has a much stronger effect on students' cheating decisions than perceived severity of punishment. Specifically they found that the probability of cheating was 89% higher when the certainty of getting caught was low. These findings are consistent with other studies that have reported decreased cheating under conditions where the perceived certainty of getting caught is higher, such as in small class sizes (Houston, 1986), when the level of surveillance is increased (Eisenberg, 2004), when test items have been scrambled (Hollinger & Lanza-Kaduce, 1996), when there is increased space between students during tests (Houston, 1976), and when seating during tests has been random assigned (Houston, 1983).

The strength of the Nagin and Pogarsky (2003) study lies in its experimental design. Most of what is known about the deterrents of cheating comes from non-experimental, self-report studies. One of the weaknesses of this study is that the conditions (certainty and severity) may have been too contrived to produce meaningful results that can be translated to the classroom. Students probably view the value of cheating on a test or homework assignment much differently than they view the value of cheating on a survey. Certainly, the costs associated with cheating in a class are much higher than cheating on a survey.

In the Harding et al. (2007) study, perceived behavioral control was measured using a scale that consisted of 4 items such as "I believe I have the skills needed to cheat on an in-



class test or exam in all circumstances” (a measure of cheating self-efficacy) and “Even if I wanted to, I could NOT cheat on an in-class test or exam” (a reverse coded measure of cheating outcome expectations). Items were measured on a 5-point scale with higher scores indicating more perceived behavioral control, which meant an increased likelihood of cheating. Results showed that perceived behavioral control was significantly correlated with both test (0.15) and homework (0.13) cheating in the expected direction. However, when entered into the regression model with the other variables (attitude, subjective norm, and moral obligation) perceived behavioral control was not found to be a significant predictor of cheating. These findings suggest that if motivations to cheat are strong (based on one’s assessment of attitudes, subjective norms, and moral obligation) then students will cheat whether or not they think they have the ability to do so successfully.

#### *Moral Obligation*

While some scholars frame cheating as simply a pragmatic decision (Tanner, 2004), others have framed cheating as a moral issue. Research on moral reasoning and cheating has shown, with few exceptions (Bruggeman & Hart, 1996; West, Ravenscroft, & Shrader, 2004), that moral reasoning is empirically related to students’ decisions to cheat (Abdolmohammadi & Baker, 2007; Beck & Azjen, 1991; Eisenberg, 2004; Harding et al., 2007; Passow et al., 2006; Whitley, 1998).

The relationship between moral reasoning and cheating, however, is not completely understood. Some researchers have found that students who acknowledge that cheating is morally wrong are less likely to cheat (Murdock, Miller, & Kohlhardt, 2004) whereas others have found that students will choose to cheat even though they acknowledge cheating as wrong (Bernardi et al., 2004). Regardless of a student’s moral orientation, within an expectancy-value framework, there may be situations (i.e., a high stakes test) where the perceived benefits of cheating outweigh the costs of violating one’s moral code (Murdock & Anderman, 2006).

In the Harding et al. (2007) study, moral obligation was measured using a scale that consisted of 3 items such as “Cheating on an in-class test or exam is against my principles.”

Items were measured on a 5-point scale with higher scores indicating less of a sense of moral obligation not to cheat, which meant an increased likelihood of cheating. Results showed that moral obligation was significantly correlated with correlated with both test (0.40) and homework (0.39) cheating in the expected direction.

The Harding et al. (2007) study was limited for a number of reasons. First, the sample size was small compared to the total number of students in the population of the three institutions studied. This limits the generalizability of the findings because the sample group may have not been representative of the population with respect to the variables of interest. In addition, a number of the main variables in the model (attitudes toward cheating, subjective norms, and moral obligation) were highly correlated and were combined in order to address concerns with multicollinearity. Combining these variables into one factor eliminated the ability to discern the individual effects of attitudes, subjective norms, and moral obligation on cheating. Harding and his colleagues also acknowledge that their study would have benefited from the use of structural equation modeling, which would have allowed for generation of goodness of fit indicators to determine how well the data fit the proposed model. Finally, Harding et al. failed to acknowledge the possibility that neutralization may serve as a moderator between attitudes, subjective norms, perceived behavioral control, and moral obligation and students' intention to cheat. The literature that supports the addition of neutralization to the Harding et al. will be presented in the next section.

### *Neutralization*

Neutralization is a technique that many cheaters use to rationalize or justify their behaviors. In studies that compared cheaters and non-cheaters, results have consistently shown that cheaters differ significantly from non-cheaters with respect to their tendency to neutralize cheating (Anderman et al., 1998; Haines et al., 1986; Davis, Grover, Becker, & McGregor, 1992; LaBeff, Clark, Haines, & Diekhoff, 1990; Lester & Diekhoff, 2002; Smith et al., 2004; Stephens, Young, & Calbrese, 2007; Ward & Beck, 1990). The use of neutralization techniques may help to explain why some students acknowledge that cheating

is wrong but choose to do it anyway (Anderman et al.; Davis et al.; Jordan, 2001; Stephens et al.).

Neutralization has been measured and explored in a variety of ways in the cheating literature. Ward and Beck (1990) measured neutralization by asking students to indicate their level approval and disapproval with statements designed to parallel the five techniques identified by Sykes and Matza (1957). Statements included items like “Its ok to cheat because it really doesn’t hurt anyone” and “Its ok to cheat because sometimes instructors intentionally design tests to fail students.” Students’ answers to the five items were then summed to create a total excuse score. Total excuse scores were then correlated with students’ self-reported cheating. Results showed that cheating and neutralization were positively correlated among women. No relationship was found between cheating and neutralization among men. This studies’ reliance on correlation as the primary step in analysis limits the usefulness of these findings. Correlation analysis only indicates that a relationship exists, but it does not provide information as to why the relationship exists. It is possible that differences in neutralization exist between men and women because of differences in their attitudes with respect to their achievement goals and expectations or because of differences in the way that they assess the costs associated with cheating. In order to explore these relationships more fully, the use of more sophisticated analysis techniques is required.

Smith et al. (2004) used a neutralization scale, developed by Ball (1966) and later tested by Haines et al. (1986), to explore whether neutralization mediates the influence of demographic variables, attitudinal factors, and cheating deterrents on cheating behavior. This scale consisted of 11 situations which described different types of offenses, both personal and property, presented along a continuum of severity. Students were asked to indicate their level of agreement with whether the student depicted in the situation was justified in cheating. Each of the 11 items was measured using a 5-point scale ranging from (1) strongly agree to (5) strongly disagree. Smith and his colleagues found neutralizing attitudes were an important mediator of the relationship between attitudinal and demographic variables and

cheating behaviors.

Another approach has been to explore the different types of neutralizing attitudes that students employ with respect to cheating (Polding, 1995; Storch, Storch, & Clark, 2002). Using an instrument developed by Polding, Storch and his colleagues explored neutralization among college athletes and found that “denial of responsibility” and “appealing to higher loyalties” were significantly correlated to self-reported cheating.

Denial of responsibility was also found to be a strong correlate of cheating behavior in a recent study by Carpenter, Harding, Finelli, Montgomery, and Passow (2006). In a survey of 643 undergraduate engineering students, Carpenter et al. found that students often shifted the blame for cheating to their instructors, indicated by the fact that many of the top neutralization strategies employed by students were instructor related (i.e., the instructor had done an inadequate job of teaching the course, the instructor assigned too much material, the instructor wrote unfair exams, the instructor didn’t seem to care if I learned the material, and the instructor did not grade fairly).

Murdock and colleagues (2007) also found evidence to suggest that students neutralize cheating behaviors by blaming factors associated with the classroom environment. In a study of 224 undergraduate students, vignettes were used to portray differences in classroom goal structures (mastery versus performance oriented) and pedagogical quality of the teachers (good versus bad). The findings showed that cheating was viewed as more acceptable and more likely when students were presented with a context that emphasized performance goals over mastery goals and when teacher pedagogy was portrayed as poor instead of good. These findings support the findings of earlier work (Anderman et al., 1998; Pulvers & Diekhoff, 1999) providing increased evidence that neutralization strategies are influenced by factors in the classroom environment.

Neutralization has been linked to students’ motivations for learning. Carpenter et al. (2006) found that one quarter of the students studied would consider using their lack of interest in the course materials as justification for cheating. One possible explanation for this finding is that students with low intrinsic motivation to learn are more likely to have

favorable attitudes toward cheating.

Another common strategy that students use to neutralize academically dishonest behaviors is appealing to peer norms. Consistent with social learning theory (Bandura, 1986), students have been found to neutralize cheating behaviors when they know peers are also cheating (Bandura, 1997). That is, when students perceive that subjective norms support cheating, it is easier for students to justify or rationalize their own cheating.

It is clear that neutralization techniques are related to many of the variables in the proposed model and are positively associated with increased cheating among undergraduates. To-date, however, no studies have directly explored the effect of adding neutralization to a model that is based on the theory of planned behavior. This study aimed to fill that gap by using Haines et al.'s (1986) neutralization scales to explore neutralization as a possible moderating factor between students' assessments of costs associated with cheating and their intentions to cheat.

### *Summary*

It is clear from the literature that the theory of planned behavior provides a good model for exploring and predicting cheating among undergraduate students. Harding et al. (2007) tested this model (without neutralization) and found that the model variables predicted 58% of the variance in intention to engage in both test and homework cheating and between 27% and 39% of the variance in actual test and homework cheating behaviors, respectively. Adding neutralization to the model as a possible mediator of the relationship between attitudes, subjective norms, perceived cost, and moral obligation, will likely increase the model's explanatory power. This study aimed to achieve that goal.

### *Criterion Variables*

#### *Cheating Frequency*

The criterion variable of interest in the proposed model is academic cheating. Cheating has been conceptualized and measured in a variety of ways in the cheating literature. In fact, the lack of a commonly defined measure of student cheating is one of the most frequently cited critiques of the cheating literature as a whole (Brown & Emmett,

2001).

Within an expectancy-value framework it is important to define the criterion variable according to action, target, context, and time. For this study, the action of interest is student cheating. Cheating is a behavior that most people can recognize but few can define precisely (Whitley & Keith-Spiegel, 2002). This makes cheating a very difficult to measure. Many researchers have chosen to define cheating for students by providing them with a list of behaviors that researchers consider to be cheating (Smith et al., 2004). Students are then asked to self-report their level of engagement in each of the cheating behaviors. Level of engagement has been measured using a variety of response options including categorical responses (i.e., yes/no), continuous responses (i.e., 1, 2, 3, etc.) that measure the number of times a student has engaged in a specified behavior, and ordinal scaled responses (i.e., (1) never to (5) always) indicating how frequently a student engages in a specified behavior.

It is easy to see the problems with this approach for defining and measuring cheating behavior. First, researchers and students may be using different definitions for what constitutes cheating. Students may indicate that they have participated in a particular behavior (i.e., receiving answers to a test from someone who has already taken the test), not realizing that the behavior constitutes cheating. Yet the researcher will likely still classify the student as a cheater. This approach not only calls into question the validity of the cheating measure, it also prevents researchers from being able to make meaningful comparisons across studies. In addition, using only a single self-reported item to measure student cheating relies heavily on the accuracy of a students' memory, which raises questions about the reliability of that item.

To address these concerns to the extent possible, the present study will use a different approach for measuring the cheating variable. This approach, which is modeled after the work of Harding et al. (2007), will use two items, a continuous item and an ordinal item, to measure cheating frequency and will allow respondents to define cheating for themselves. The primary concern with this approach is that it will result in conservative measures of cheating (Harding et al.). However, this approach is still preferable because it allows for

evaluation of cheating behaviors that students knowingly engage in and recognize as cheating.

Two cheating targets will be explored in this study: test cheating and homework cheating. Recently, Harding and his colleagues (Harding et al., 2007; Passow et al. 2006) found that certain correlates and predictors of student cheating (e.g., year in school, Greek membership, moral obligation, etc.) vary by assessment type (i.e., test and homework cheating). These findings suggest that students view cheating on tests and exams differently from cheating on homework. One possible explanation for these differences may be differences in students' motivations to cheat. This study will explore if and how the motivational predictors of student cheating vary by assessment type.

For this study, cheating will also be evaluated within a specific context; the class that student find most challenging. Theory suggests that achievement motivation is context specific and students' motivation to cheat has also been shown to vary across contexts (Murdock & Anderman, 2006). Students have more motivation to cheat in classes that they find challenging than in classes that are not challenging (Lambert, Hogan, & Barton, 2003). Perceived workload has been used as an indirect measure of course difficulty or challenge. Whitley (1998) found that there is a positive relationship between student cheating and students' perceptions of course work load. Students also use course difficulty as a neutralizing strategy for justifying their cheating behaviors (Whitley). Therefore, this study will explore the frequency of and motivations for cheating in courses that students classify as challenging.

The time frame of this study will focus on students' experiences during their first year of college. The attitudes that students develop during their first year of college influence their attitudes and behaviors in subsequent years in college. Understanding what motivates students to cheat as freshman will provide useful information for faculty and administrators who are interested in deterring cheating at all undergraduate levels.

## Control Variables

### *Demographics*

In addition to the proposed model variables, a number of demographic variables are included in this study. These variables will be used to determine the representativeness of the respondent group and to explore whether there are differences in the predictive ability of the model across groups. The demographic variables included in this study are gender, age, race, residency status, location of residence during the academic year, program of study, athletic participation, and Greek membership. Additionally, information about students' current and past academic achievement and past cheating behavior will be collected.

#### *Gender*

The relationship between gender and academic has been explored extensively; however, research findings have been mixed. Most studies of college students report that men are more likely to cheat than women (Bushway & Nash, 1977; Calabrese & Cochran, 1990; Davis et al., 1992; Finn & Frone, 2004; Michaels & Miethe, 1989; Newstead et al., 1996; Smith et al., 2004; Ward & Beck, 1990; Whitley, 1998). However, a few studies have found no differences in self-reported cheating among men and women (Haines et al., 1986). One study (Jacobson, Berger, & Millham, 1970) found that women cheated more than men. In studies in which gender has been used as a control variable, it has not been found to be a significant predictor of self-reported cheating (Anderman et al., 1998; Anderman & Midgley, 2004; Genereux & McLeod, 1995; McCabe & Trevino, 1997). This study will use gender as a control variable in the proposed model. In addition, this study will work to determine if the effects of the proposed model differ across gender.

#### *Age*

Age and grade level are also variables that have been explored extensively in the cheating literature. Age is typically defined as an individual characteristic whereas grade level is defined as a contextual characteristic; however, both are strongly correlated with one another and can be reviewed together as one construct (Miller, Murdock, Anderman, & Poindexter, 2007). Based on reviews of the cheating literature, Cizek (2003) and Miller et al.



suggest that the relationship between age/grade level and cheating is curvilinear with cheating beginning in elementary school, increasing as students transition from one grade level to the next, peaking in high school and leveling off in college.

Among college students, several studies have reported differences in self-reported cheating across ages and grade levels (Franklyn-Stokes & Newstead, 1995; Haines et al., 1986; Harding et al., 2007). These studies have consistently found that younger students cheat more than older students and that, underclassmen, especially freshmen, cheat more than upperclassmen. These findings may be due to differences in levels of motivation, ability and experience, moral obligation, maturity (Finn & Frone, 2004).

Studies that have used gender and age as control variables in a prediction models for student cheating have found mixed results. Finn and Frone (2004) entered gender, along with age, into the first step of a regression equation designed to explore the predictors of student cheating among a population of 315 high school and college students. Their results showed that both gender and age were significant predictors of student cheating with younger males reporting cheating more frequently than older females. In contrast, Smith et al. (2004, 2002) used structural equation modeling to evaluate a proposed model of student cheating using a population of 742 business school students (undergraduate and graduate) and found neither gender nor age to be significant direct predictors of student cheating (Smith et al., 2004; 2002).

These differences likely exist due to differences in the ages of respondents for each of these studies. The Finn and Frone (2004) study used a cross-sectional sample of high school and college students with ages ranging from 16 to 19. Smith et al. (2004) used a cross-sectional sample of college business school students. The group consisted of students from all classifications ranging from first-year undergraduate students to graduate students. The average age for the respondent group was 23.1 years. Students in the Finn and Frone study were much younger than students in the Ryan and Smith study. Younger students likely have different motivations to cheat than older students based on differences in goals, expectations and costs associated with cheating.

In this study, age is not expected to be a significant predictor of cheating because the age range of respondents will likely be limited due to the fact that only first-year college students are being included. Therefore, information about respondents' age will be collected only to determine if the respondent group differs significantly from the target population.

#### *Race*

There is little evidence to suggest that race is related to cheating. In two studies that have explored the relationship between race and cheating, no differences were found (Ward & Tittle, 1993; Cochran, Wood, Sellers, Wilkerson, & Chamlin, 1998). Information about respondents' ethnicity will be collected in order to determine if the respondent group differs significantly from the target population.

#### *Residency Status*

Residency status has also been explored limitedly with respect to cheating. However, studies have shown that international students have different attitudes toward when compared to students from the United States (Magnus et al., 2002). Therefore, this study will examine whether differences in the model variables exist between international students and students from the United States.

#### *Residence*

There is little evidence to suggest that residence during the academic year is related to cheating (Robinson, Amburgey, Swank, & Faulkner, 2004). It is possible that students who live on-campus or off-campus in a Greek house, may have more opportunities to cheat, especially on homework assignments, than students who live off-campus. This study will explore whether differences exist in the model variables between students who live on campus and students who commute.

#### *Program of Study*

Several researchers have explored the relationship between field of study and academic cheating (Baird, 1980; Bowers, 1964; Harding et al., 2007; McCabe, 1997; Newstead et al., 1996; Passow et al., 2006). These studies have consistently shown that students in "vocationally oriented" (McCabe, 1997, p. 444) majors, like engineering and

business, report the highest rates of cheating. In their study of the theory of planned behavior, Harding et al. found that academic discipline was an important variable in explaining the variance of the regression equations. Engineering students were more likely than humanities students to form an intention to cheat and to cheat in both the test and homework conditions. This study will explore whether differences exist with respect to the model variables between students of different academic majors.

#### *Athletic Participation*

Athletic participation has generally been found to be positively associated with increased levels of college cheating (McCabe & Trevino, 1997; Diekhoff et al., 1996). There are several reasons that these results may exist. First, athletes may have more time demands than non-athletes, which may result in less time to do homework or study for exams. This may, in turn, lower their expectations for success, which could lead them to have more favorable attitudes toward cheating and in turn make them more likely to cheat. Athletes may also be more extrinsically motivated to succeed because they have to meet specific grade requirements to remain on a team. This study will explore whether differences exist with respect to the model variables between athletes and non-athletes.

#### *Greek Membership*

Greek membership is one of the few demographic variables that have been consistently and positively associated with increased prevalence of cheating (Baird, 1980; Diekhoff et al., 1996; Haines et al., 1986; Kierkvliet, 1994; McCabe & Bowers, 1996; McCabe & Trevino, 1997; Robinson et al., 2004). One possible explanation is that Greek students may view cheating differently from non-Greeks. Studies that have examined differences in cheating attitudes of Greeks and non-Greeks have been mixed.

However, a recent study found that Greeks did not differ with respect to non-Greeks in their cheating attitudes and behaviors, except with respect to their level of fabrication of bibliographies and their level of agreement about whether turning someone in for cheating was worse than cheating itself (Eberhardt, Rice, & Smith, 2003). This study will explore whether differences exist between Greeks and non-Greeks with respect to the model

variables.

### *Achievement*

The relationship between academic achievement and cheating has been extensively studied in the literature. Prior research has consistently shown that academic achievement scores are negatively correlated with student cheating (Diekhoff et al., 1996; Genereux & McLeod, 1995; Haines et al., 1986; Michaels & Miethe, 1989; Newstead et al., 1996; Whitley, 1998).

Like cheating behaviors, academic achievement is often measured by using self-reports. Students are typically asked to report either their actual GPA (using either a continuous or ordinal scale) or their “overall academic performance” (using an ordinal scale). Measuring academic achievement with a one-question self-report approach raises concerns for the validity of the achievement construct. A more valid measure of achievement could be to link students’ survey responses with actual achievement records (i.e., grades provided by the professor or the registrar). This approach however, requires obtaining an additional level of consent from students and removes the anonymity of responses, which may in turn have serious consequences for participation.

### *Past Cheating Behavior*

Finally, past cheating has been shown to be one of the most powerful predictors of cheating behavior (Nonis & Swift, 2001; Whitley, 1998; Harding et al., 2007). Several researchers have explored the relationship between high school cheating and college cheating (Harding et al.). In one of the earliest studies of academic cheating, Bowers (1964) found that 64% of students who cheated in high school cheated in college. In a 1995 study, Davis and Ludvigson found that 98% of students who cheated in high school continued cheating in college. Cheating and getting away with it may have positive effects on students’ self-efficacy for cheating which in turn could make them more likely to cheat again in the future. In order to explore this relationship, this study will also ask students self-report their frequency of cheating in high school.

### *Social Desirability*

Socially desirable responding occurs when students lie in their survey responses in order to protect their self-image or avoid embarrassment (Smith, 2004; Tourangeau, Rips, & Rasinski, 2000). Student cheating is a sensitive issue. Students may not be willing to answer honestly when asked questions regarding their attitudes and behaviors related to cheating. A major weakness in the cheating literature is researcher's lack of attention to the possible effect of socially desirable responding on data quality. Of the researchers that do acknowledge the possibility of socially desirable responding, many simply include it as an afterthought in the discussion of research limitations (e.g., Finn & Frone, 2004). The effect of socially desirable responding does not have to be, nor should it be, an afterthought when examining the issue of student cheating.

As in the Harding et al. (2007) study, this study will use a scale to assess socially desirable responding by participants. Harding et al. used Paulhus's (1991) Balanced Inventory of Desirable Responding (BIDR). This scale consists of 40-items and is a frequently used measure of social desirability (Leite & Beretvas, 2005). However, for this study, the addition of a 40-item scale is not feasible because it would add significantly to the survey length.

An alternative measure of social desirability is the Marlowe-Crowne Social Desirability Scale (MCSDS) (Crowne & Marlowe, 1960). The MCSDS and its variants are the most commonly used measures of social desirability (Leite & Beretvas, 2005). The original MCSDS scale consisted of 33 true-false items (Crowne & Marlowe). Since that time, several short forms of the MCSDS have been created (Fischer & Fick, 1993). In their examination of these scales, Fischer and Fick determined that the best short alternative to the original Marlowe-Crowne scale is the 10-item scale (MCSDXS1) developed by Strahan and Gerbasi (1972). This scale was found to produce the most reliable measures of socially desirable responding using the least number of questions. Therefore, the Strahan and Gerbasi MCSDXS1 scale will be used in this study.

## Summary

This review has demonstrated that academic cheating is a complex motivational issue. Decisions to cheat are made based on one's assessment of goals, expectations, and costs across two domains, an academic domain and a cheating domain. Students' goals and expectations within the academic domain are the mechanisms that motivate students' decisions to cheat. Once motivated, students' decisions to cheat will depend on a cost-benefit analysis. Benefits may outweigh costs when students do not feel a strong moral obligation not to cheat, when students have positive attitudes toward cheating, when subjective norms support cheating, and when students believe that they can cheat and get away with it.

It is clear from this review that the proposed model of academic cheating holds great promise for exploring and predicting the factors that motivate student cheating. This model needed to be empirically tested. The next chapter describes the methods that were used to achieve this goal.

### CHAPTER 3: METHODS

The purpose of this study was to test the predictive ability of a proposed model of academic cheating (see Figure 5) using a population of first-year college students attending a large, public, land grant institution located on the east coast of the United States. Specifically, this study examined the extent to which (a) achievement goals, (b) social goals, (c) self-efficacy, (d) outcome expectations, (e) moral obligation, (f) attitudes toward cheating, (g) subjective norms, and (h) perceptions of behavioral control predicted students' decisions to cheat on homework and tests in their most challenging course. Students' neutralizing attitudes and intentions to cheat were examined as possible moderators and mediators, respectively, of relationships between variables in the proposed model. Demographics and past cheating behavior were examined as both predictors and controls in the proposed model.

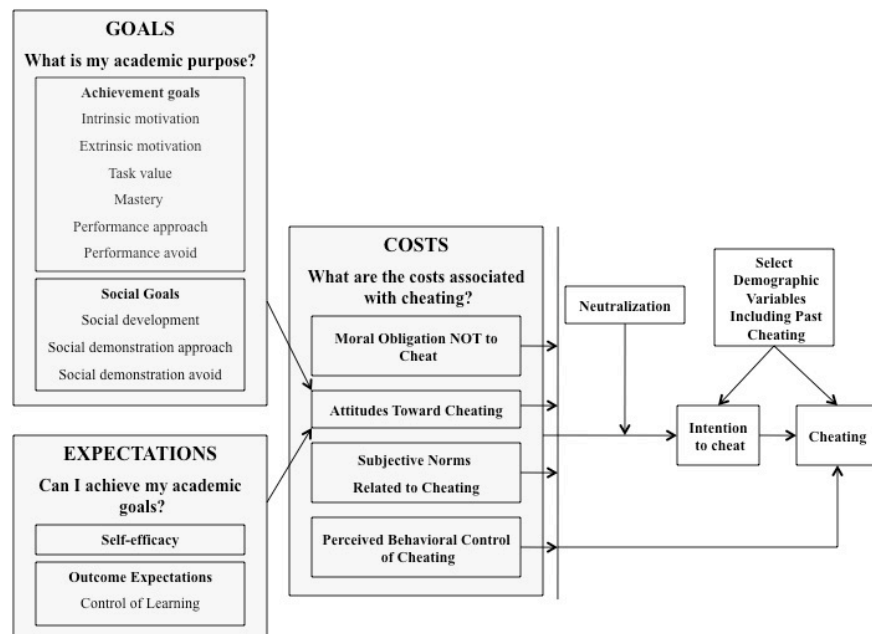


Figure 5. Proposed model of the motivational predictors of academic cheating: Goals, expectations, and costs.

The model presented in Figure 5 was developed based on the combined work of Murdock and Anderman (2006) and Harding et al. (2007) and uses an expectancy-value theory framework to explain how goals, expectations, and costs predict students' intentions to cheat and actual cheating on homework and tests.

The research questions that guided this study were as follows:

1. To what extent do students' goals and expectations predict their attitudes toward cheating on homework and tests?
2. To what extent do students' perceptions of the costs associated with cheating predict their intention to cheat and actual cheating on homework and tests before and after controlling for the effects of select demographic variables and past cheating behavior?
3. To what extent do students' neutralizing attitudes moderate and students' intention to cheat mediate relationships between variables in the proposed model?
4. How well does the proposed model fit the observed data?

#### Research Design

This study used a quantitative, non-experimental, cross-sectional, explanatory research design. A quantitative design was chosen instead of a qualitative or mixed-methods design for several reasons. First, this study required collecting a large amount of descriptive information from a large population in a short amount of time. Therefore, a quantitative approach was both appropriate and practical. Second, quantitative designs are well suited for testing theory and developing conceptual models (Creswell, 2003), which was the primary focus of this study.

A non-experimental research design was chosen instead of an experimental research design because it was impossible, impractical, and unethical to manipulate relationships between the proposed model variables (Johnson, 2001; Mertler & Charles, 2005). Unlike experimental research, however, non-experimental research cannot be used to establish a cause and effect relationship. At best, non-experimental research can be used to provide strong evidence to support the existence of a relationship between predictor and criterion variables (Johnson; Mertler & Charles).



A cross-sectional design was chosen primarily for convenience and ease of data collection. In a cross-sectional design, data is collected from participants at a single point in time and “comparisons are made across variables of interest” (Johnson, 2001, p. 9). Finally, an explanatory design was chosen as opposed to descriptive or predictive design because the primary focus of the study was to test an explanatory model of student cheating.

### Participants and Sample

The population for this study included all first-year students enrolled as full-time undergraduates in their second semester at the institution of interest during the spring 2008 semester. According to the institution’s fall 2007 enrollment report, the number of full-time first-year students totaled 4,787. This represented 99.9% of all first-year students, with 5 part-time students representing the other 0.1%. The enrollment report also indicated that there were approximately 70 transfer students in the first-year class. Because this study focused on traditional first-year college students, part-time and transfer students were not included in the population of interest.

Among the first-year students enrolled during the fall of 2007, 54.5% identified as female, and 79.4% identified as White. People of color made up the remaining fifth of the population with 9% of the population identifying as Black, 5% identifying as Asian, 2.7% identifying as Hispanic, 0.6% identifying as Native American, and 0.6% identifying as International. Approximately 3% of the population did not report their race. With respect to residency status, 90.3% of the first-year students were classified as in-state residents for tuition purposes. Of the remaining 9.7%, 9.1% lived outside of the state and 0.6% lived outside of country where the institution of interest was located.

Of particular interest was the population breakdown by academic college. At the institution of interest, first-year students were dispersed throughout 10 academic colleges. For ease of summary, students were grouped into 5 categories of colleges: applied sciences (Design, Engineering, and Textiles) (34.3%), natural sciences (Agriculture and Life Sciences, Natural Resources, and Physical and Mathematical Sciences) (26.2%), social sciences (Education and Humanities and Social Sciences) (14.0%), business (Management) (7.8%),

and undecided/general college (Undergraduate Academic Programs) (17.7%). Colleges were grouped based on similarities in subject matter taught in major courses.

It was difficult to determine the average age of a first-year college student at the institution of interest because the fall 2007 enrollment report did not include information related to age. In the United States, traditionally aged college students are typically 18 to 20 years old at the end of the spring semester of their freshmen year; therefore, it was assumed that students at the institution of interest would be similarly aged. Freshmen who were under the age of 18 at the time of survey administration were excluded from this study due to the difficulties associated with obtaining parental consent.

To achieve this study's objectives, a census survey was administered to the entire first-year student population. Access to student census data (gender, race, age, residency status, and academic program) and contact information (name and email address) was requested through the Dean of Undergraduate Academic Programs. The email request (see Appendix A) specifically asked that part-time, transfer, and distance education students be removed from the data set. Because incomplete and inaccurate information is inherent in sampling frames, to the extent possible, the dataset provided by the Dean's office was examined for ineligible respondents, duplicates, and inaccurate or missing information (Czaja & Blair, 2005).

Conducting a census had many advantages over other sampling strategies. First, a census provided all eligible members of the population with an opportunity to participate in the study. Therefore, no person's or group's opinion was intentionally or unintentionally excluded as a result of sampling. Census-based studies are also known to produce more reliable and accurate data than their sampling-based counterparts (Srivastava, Shenoy, & Sharma, 1989). One of the primary disadvantages associated with census studies is the cost associated with administering and surveying a large number of people (Czaja & Blair, 2005). The use of a web-based survey design in this study, which is discussed in detail in the next section, significantly decreased the costs associated with survey administration and, in turn, made conducting a census study a logical and feasible choice.

## Instrumentation

This study relied on the use of previously published scales and measures to assess the variables of interest in the proposed model of student cheating. Permissions were obtained from the original scale authors to reproduce and use all of the scales included in this study (see Appendix B). Data were collected using the following six instruments: the Motivated Strategies for Learning Questionnaire (MSLQ) developed by Pintrich et al. (1993), the Patterns of Adaptive Learning Scales (PALS) developed by Midgley and her colleagues (2000), the Social Goal Orientation Scales (SGOS) developed by Ryan and Shim (2006), the Perceptions and Attitudes of Cheating Among Engineering Students survey, version 2 (PACES-2) developed by Harding et al. (2007), the Neutralization scale developed by Haines et al. (1986), and the short version of the Marlowe-Crowne scale developed by Strahan and Gerbasi (1972). This section provides an overview of the development of these instruments, including a discussion of their established reliability and validity. A discussion of the specific scales and measures used to assess the variables in this study is also included.

### *MSLQ*

The MSLQ is an 81-item questionnaire that was originally developed and validated by Pintrich et al. (1993). The questionnaire was designed to evaluate college student learning motivation and self-regulation with respect to a specific course. The MSLQ is conceptually divided into two parts. The first part focuses on motivation and the second part focuses on learning strategies. Since motivation was the focus of this study, only scales from the first part of the MSLQ were used.

The motivation section of the MSLQ consists of 31 items divided into 6 subscales designed to assess intrinsic goal orientation, extrinsic goal orientation, task value for learning, control of learning, self-efficacy for learning, and test anxiety (Pintrich et al., 1993). All of the motivation sub-scales, with the exception of the test anxiety scale, were used in this study.

Because the MSLQ was designed to assess student motivation for learning at the course level, no norms have been developed (Duncan & McKeachie, 2005). However,

several steps have been taken to establish the instrument's reliability and validity. Formal testing and development of the MSLQ began in 1986 and continued in three waves over the next five years under the direction and leadership of McKeachie and Pintrich (Duncan & McKeachie). In total, the instrument was administered to nearly 1,800 students. After each wave of data collection, the data were analyzed and correlated with other measures of academic performance (i.e. course grades) to determine the predictive validity of survey scales. All correlations were in the expected direction and the instrument was determined to have sound predictive validity (Pintrich et al., 1993). Confirmatory factor analysis was used to construct scales and assess levels of internal consistency (Pintrich et al.). The final version resulted in sub-scales with internal consistency measures ranging from 0.62 to 0.93 (Duncan & McKeachie).

Since publication of the MSLQ in 1993, the instrument has been used extensively in research and practice. In a 2005 review of the literature, Duncan and McKeachie (2005) identify and cite over 50 empirical research studies published between 2000 and 2004 that have used the MSLQ either in part or as a whole. The MSLQ is considered to be one of the most reliable and useful tools for evaluating student motivation for learning (Duncan & McKeachie) and, as such, is a practical choice for use in this study. For a complete list of scales, scale items, and internal consistency measures, see Appendix C.

#### *PALS*

This study used three scales from the PALS collection: mastery goal orientation, performance approach goal orientation, and performance avoid goal orientation. The PALS (1997) were originally validated by Midgley and her colleagues (1998) with a sample of elementary and middle school students and have since been found to provide valid measures of achievement goal orientations among college students (Ross, Shannon, Salisbury-Glennon, & Guarino, 2002). Based on a sample of 184 college juniors and seniors, Ross and her colleagues reported internal consistency scores that were similar to values originally reported by Midgley and her colleagues (1998) for the elementary and middle school populations (see Table 2 in Appendix B). With respect to construct validity, confirmatory

factor analysis yielded a high comparative fit index (0.985) and a root mean square error of approximation of 0.048. All of the indices indicated a good fit for the proposed structure of the scales.

In recent years, Ross et al. (2005) provided additional support for the use of the PALS (1998) instrument by using reliability generalization to analyze 276 PALS studies. Their analysis showed that the development of the PALS over the years has improved consistency scores which provides additional support for inferences that are made from the most recent versions of the instrument (Ross et al.).

The most recent version of the PALS instrument was published in 2000 (Midgley et al., 2000). The 1997 scales were revised by “removing items that assess intrinsic value and removing references to specific behaviors” (Midgley et al., p. 3). Removing these items shifted the focus of the scales away from the specific behaviors or interests that students exhibit to “goals as orienting frameworks within which students function” (Midgley et al., p. 3). These scales were validated using elementary, middle, and high school students (Midgley et al.).

While the Ross et al. (2002, 2005) studies provide support for using the PALS to assess college student achievement goals, they are limited by the fact that they are based on an out-of-date version of the PALS instrument. In addition, the sample used in the 2002 study included only junior and senior college students. Therefore, the validity of the revised version of the PALS instrument using a population of first-year college students needs to be established. In addition, as recommended by Ross et al. (2002), the content and wording of the PALS instrument needs to be changed to more accurately reflect the college context (i.e., changing “teacher” to “instructor” and “class” to “course”). For a complete list of scales, scale items, and internal consistency measures see Appendix C.

#### *SGOS*

The SGOS is a 12-item questionnaire that was developed by Ryan and Shim (2006) as a tool for measuring three types of social achievement goals: social development goals, social demonstration approach goals, and social demonstration avoid goals.

Several steps were taken to establish the instrument's reliability and validity. The 12-items were initially derived from 52 college students' responses to a series of open-ended questions in which they were asked describe and evaluate their own social goals and perceived level of social competence. Coding of the students' responses revealed three distinct social goal orientations. Ryan and Shim (2006) used the descriptions provided by the students to construct scales designed to measure each of these orientations. The three scales, consisting of four items each, were then validated using a sample of 200 upper-level college students. Principal axis factor analysis was used to confirm the predicted three-factor structure of the social goal variables. Together, the three factors accounted for 65.90% of the total variance. With respect to construct validity, confirmatory factor analysis yielded a high comparative fit index of 0.98 and a root mean square error of approximation of 0.05. Internal consistency was determined to be very high, ranging from 0.80 to 0.85.

To further establish the validity of the social goal scales, Ryan and Shim (2006) conducted an additional study of 347 college students. This study was designed to explore whether social achievement goals and academic achievement goals could be considered as distinct constructs. Principal axis factor analysis was used to confirm the predicted six-factor structure of the goal variables. Together the six factors accounted for 68.91% of the variance. This study provided additional evidence to support Ryan and Shim's proposed structure of the social achievement goal model. For a complete list of scales, scale items, and internal consistency measures, see Appendix C.

#### *PACES-2*

The PACES-2 is the first part of a two-part questionnaire that was developed by Finelli, Szwalek, Carpenter, and Harding (2005) as a tool for exploring factors that influence engineering students' decisions to cheat at the undergraduate level. PACES-2 was specifically designed to examine the use of Ajzen's (1991, 2002) theory of planned behavior as a model for predicting student cheating (Finelli et al.). As such, PACES-2 scales are designed to measure the following variables in Ajzen's theory of planned behavior: attitudes toward cheating, perceived subjective norms about cheating, perceived behavioral control of

cheating, intention to cheat, and cheating behavior. Finelli and her colleagues extended Ajzen's original model by including moral obligation in the model as a possible predictor of student cheating (Harding et al., 2007). The PACES-2 instrument also included several items that assessed student demographic variables (i.e., program of study, class level, etc.) and a scale designed to measure socially desirable responding. It is important to note that the PACES-2 instrument was designed to assess cheating on two types of tasks: tests/exams and homework. The instrument therefore allows for the assessment of differences in motivation to cheat across tasks.

Several steps were taken to assess the reliability of the PACES-2 instrument. A pilot test was conducted with 14 students to check the instrument for readability and to assess the clarity of the survey questions. In an effort to establish temporal stability and internal consistency of the survey scales, the PACES-2 was subjected to test/retest reliability over the course of a two-week period (Finelli et al., 2005). Seventy students participated in the first administration of the test and 58 students participated in both the first and the second administrations (Finelli et al.). Overall, the authors found that the instrument demonstrated good temporal stability reporting that the correlation between responses for the two test administrations was greater than 0.50 on most items (Finelli et al.).

The survey was next administered to 527 undergraduate students enrolled in Engineering and Humanities courses across three institutions (a large Doctoral research extensive public institution, a small private Baccalaureate institution, and a mid-sized private Masters I institution). Confirmatory factor analysis was used to determine the internal consistency of the survey scales. The internal consistency was determined to be strong for all of the PACES-2 scales with values ranging from 0.67 to 0.94. For a complete list of scales, scale items, and internal consistency measures, see Appendix C.

#### *Neutralization*

The neutralization scale consists of 11-items developed by Haines et al. (1986) (adapted from Ball (1966)) as a tool for exploring how Sykes and Matza's (1957) theory of neutralization relates to student cheating. This scale was designed to measure five types of

neutralization: denial of responsibility, denial of the victim, denial of injury, condemnation of the condemners, and appeal to higher loyalties. Haines et al. (1986) validated this scale using a population of 380 undergraduate students and found that the scale demonstrated moderately high internal consistency (item-total correlations  $> 0.64$ ) and very high reliability ( $\alpha = 0.93$ ). Since that time, this scale has been used extensively (Pulvers & Diekhoff, 1999; Diekhoff et al., 1996; Diekhoff, LaBeff, Shinohara, & Yasukawa, 1999; Haines et al., 1986; May & Loyd, 1993) in the cheating literature. For a complete list of scale items, see Appendix C.

#### *MCSDSX1*

The MCSDSX1 was developed by Strahan and Gerbasi (1972) in an effort to develop a valid and reliable short version of the Marlowe-Crowne Social Desirability Scale. In contrast to the full Marlowe-Crowne scale, which consists of 33 items, the MCSDSX1 consists of only 10. Strahan and Gerbasi explored the scale's reliability using a population of 500 undergraduate students. Results showed that the reliability of the scale ranged from 0.59 and 0.70 among college males and females. Results also showed that the scale was very strongly correlated ( $>0.90$ ) with the 33-item Marlowe-Crowne scale.

Fischer and Fick (1993) later validated MCSDSX1 with a class of 390 introductory psychology students and also found it have a high internal consistency ( $\alpha = 0.88$ ) in addition to being highly correlated with the 33-item Marlowe-Crowne scale. Leite and Beretvas (2005) used confirmatory factor analysis to explore the factor structure of the MCSDSX1 and found that one factor emerged with a comparative fit index of 0.918 and a root mean square error of approximation of 0.039. For a complete list of scale items, see Appendix C.

#### Variables of Interest

##### *Criterion Variable*

##### *Cheating Behavior*

Ajzen's (1991, 2002) theory of planned behavior states that behaviors should be measured with respect to target, action, context, and time. The behavior (action) of interest in this study was self-reported cheating. Unlike most studies of student cheating, in this study,



respondents were allowed to define cheating for themselves. This decision was made to avoid the difficulty and confusion associated with defining what exactly constitutes cheating (Harding et al., 2007).

While this study did not define cheating for the respondent, it did put parameters on the target, context, and time. This study assessed the student's self-reported frequency of cheating across two targets (homework and test cheating), one context (the student's most challenging course during the spring 2008 semester) and at one point in time (during their second semester of college).

To assess cheating behavior, students were asked to respond to questions such as: "During the spring 2008 semester (time), how frequently did you cheat (action) on homework assignments/in-class tests or exams (target) while in your most challenging course (context)?" Responses to these questions were measured on a 5-point scale ranging from 1 (never), 2 (a few of the times I worked on a homework assignment/ took an test or exam), 3 (about half the times I worked on a homework assignment/ took a test or exam), 4 (almost every time I worked on a homework assignment/ took a test or exam), to 5 (every time I worked on a homework assignment/ took a test or exam) (Harding et al., 2007).

In addition to cheating frequency, students were also asked to self-report the actual number of times that they cheated on homework and tests in their most challenging course. In an effort to provide support for the validity of the frequency items, the number and frequency items were then assessed for correlation (Harding et al., 2007).

#### *Predictor Variables*

##### *Motivation*

Achievement motivation was measured using the following subscales from the Motivated Strategies for Learning Questionnaire (MSLQ): intrinsic goal orientation and extrinsic goal orientation. The intrinsic goal orientation scale consisted of 4 items designed to measure the "extent to which students perceive themselves to be engaged in academic tasks to pursue internal rewards like mastery or seeking to be challenged" (Paulsen & Feldman, 2005, p. 738). An example of an item from this scale is "When I have the opportunity in this

class, I choose course assignments that I can learn from even if they don't guarantee a good grade.”

The extrinsic goal orientation scale also consisted of 4 items. These items were designed to measure “the extent to which students perceive themselves to be engaged in academic tasks to pursue external rewards like approval from others or getting good grades” (Paulsen & Feldman, p. 738). An example of an item from this scale is “If I can, I want to get better grades than most of the other students in this course.”

Both of these scales were measured using 7-point scale ranging from (1) not at all true of me to (7) very true of me. These scales have acceptable established levels of internal consistency ( $\alpha = 0.74$  and  $\alpha = 0.62$  for intrinsic and extrinsic motivation, respectively) (Duncan & McKeachie, 2005). For a complete list of scale items, see Appendix C.

#### *Achievement Goal Orientation*

Achievement goal orientation was measured using the following subscales from the Patterns of Adaptive Learning Scales (PALS): mastery goals, performance approach goals, and performance avoid goals. The mastery goal scale consisted of 5 items designed to measure the extent to which students endorsed goals related to developing competence in an achievement setting. An example of an item from this scale is “One of my goals in this class is to learn as much as I can.”

The performance approach goal scale consisted of 5 items designed to measure the extent to which students endorsed goals related to demonstrating competence in an achievement setting. An example of an item from this scale is “One of my goals is to show others that class work is easy for me.”

The performance avoid goal scale consisted of 4 items designed to measure the extent to which students endorsed goals related to avoiding the demonstration of incompetence. An example of an item from this scale is “One of my goals in class is to avoid looking like I have trouble doing the work.”

Each of these scales was measured using a 7-point scale ranging from (1) not at all

true of me to (7) very true of me. These scales have been shown to have acceptable established levels of internal consistency ( $\alpha = 0.78$ ,  $\alpha = 0.83$ , and  $\alpha = 0.86$  for mastery, performance-approach, and performance-avoid, respectively) (Ross et al., 2002). For a complete list of scale items, see Appendix C.

### *Social Goals*

Social goals were measured using the following scales from the Social Goal Orientation Scales (SOGOS): social development goals, social demonstration approach goals, and social demonstration avoid goals. The social development goal scale consisted of 4 items designed to measure an individual's endorsement of goals related to developing social competence and/or meaningful relationships. An example of an item from this scale is "It is important to me to work on improving the quality of my relationships with my friends."

The social demonstration approach goal scale consisted of 4 items designed to measure an individual's endorsement of goals related to demonstrating social competence or gaining approval from others. An example of an item from this scale is "It is important to me that others think of me as popular."

The social demonstration avoid goal scale consisted of 4 items designed to measure an individual's endorsement of goals related to avoiding the appearance of social incompetence or avoiding disapproval from others. An example of an item from this scale is "I would be successful if I could avoid being socially awkward."

Each of these three scales was measured using a 7-point scale ranging from (1) not at all true of me to (7) very true of me. These scales have previously been shown to have a high level of internal consistency ( $\alpha = 0.80$ ,  $\alpha = 0.85$ , and  $\alpha = 0.81$  for social development, social demonstration approach, and social demonstration avoid, respectively) (Ryan & Shim). For a complete list of scale items see, Appendix C.

### *Academic Self-Efficacy*

Academic self-efficacy was measured using the self-efficacy for learning and performance scale from the MSLQ. This scale consisted of 8 items designed to measure the

extent to which students' believed that they have the competence and skills necessary for successful academic performance. An example of an item from this scale is "I am confident I can understand the most complex material presented by the instructor in this course."

This scale was measured using a 7-point scale ranging from (1) not at all true of me to (7) very true of me. This scale has been previously shown to have high internal consistency ( $\alpha = 0.93$ ) (Duncan & McKeachie, 2005). For a complete list of scale items see Appendix B.

#### *Outcome Expectations*

Outcome expectations were measured using the control of learning beliefs scale from the MSLQ. This scale consisted of 4 items designed to measure the extent to which students' believed that their performance was dependent on factors that were within their control. An example of an item from this scale is "If I study in appropriate ways, then I will be able to learn the material in this course."

This scale was measured using a 7-point scale ranging from (1) not at all true of me to (7) very true of me. This scale has been previously shown to have moderate to high internal consistency ( $\alpha = 0.68$ ) (Duncan & McKeachie, 2005). For a complete list of scale items, see Appendix C.

#### *Moral Obligation Not To Cheat*

Moral obligation not to cheat was measured using the moral obligation scale from the PACES-2 instrument. This scale consisted of 3 items designed to measure respondents' perceptions personal feelings of responsibility to cheat or not to cheat. An example of a reverse coded item from this scale is "I would feel guilty if I cheated on an in-class test or exam." Responses were measured using a 5-point scale from (1) strongly disagree to (5) strongly agree. This scale has been previously shown to have high internal consistency ( $\alpha = 0.85$  and  $\alpha = 0.86$  for test and homework cheating, respectively) (Harding et al., 2007). For a complete list of scale items, see Appendix C.

#### *Attitudes Toward Cheating*

Attitudes toward cheating were measured using the attitudes toward cheating scale

from the PACES-2 instrument. This scale consisted of 5 semantic differential scale items designed to measure respondents' overall attitudes and feelings about cheating. Respondents were asked indicate their feelings associated with cheating along the following continuums: positive/negative, good/bad, pleasant/unpleasant, superior/inferior, and thrilling/boring. Internal consistency values for this scale have been shown to be high ( $\alpha = 0.77$  and  $\alpha = 0.84$  for test and homework cheating, respectively) (Harding et al., 2007). For a complete list of scale items see, Appendix C.

#### *Subjective Norms*

Subjective norms about cheating were measured using the subjective norms scale from the PACES-2 instrument. This scale consisted of 8 items designed to measure respondents' perceptions of the social pressures to either cheat or not to cheat. Respondents were asked to indicate their level of agreement with statements such as "If I cheated on an in-class test or exam, most of the people who are important to me (e.g., my family, friends, colleagues, teachers, etc.) would approve of my behavior." Responses were measured using a 5-point scale from (1) strongly disagree to (5) strongly agree. Internal consistency values for this scale have previously been shown to be high ( $\alpha = 0.86$  and  $\alpha = 0.92$  for test and homework cheating, respectively) (Harding et al., 2007). For a complete list of scale items, see Appendix C.

#### *Perceived Behavioral Control*

Perceived behavioral control of cheating was measured using the perceived behavioral control scale from the PACES-2 instrument. This scale consisted of 4 items designed to measure the extent to which students feel that they can control their ability to successfully cheat. Respondents were asked to indicate their level of agreement with statements such as "I believe that I would have a great deal of control over whether I get caught attempting to cheat on an in-class test or exam." Responses were measured using a 5-point scale from (1) strongly disagree to (5) strongly agree. Internal consistency values for this scale have previously been shown to be acceptable to high ( $\alpha = 0.67$  and  $\alpha = 0.76$  for

test and homework cheating, respectively) (Harding et al., 2007). For a complete list of scale items, see Appendix C.

### *Moderating and Mediating Variables*

#### *Neutralization*

Neutralization was measured using the neutralization scale developed by Haines et al. (1986). This scale consisted of 11 items designed to measure respondents' tendency to neutralize cheating. Respondents were asked to indicate their level of agreement with items such as "It is ok to cheat when everyone else in the room seems to be cheating." Responses were measured using a 5-point scale ranging from (1) strongly disagree to (5) strongly agree. Internal consistency values for this scale have previously been shown to be very high ( $\alpha = 0.93$ ) (Haines et al., 1986). For a complete list of scale items, see Appendix C.

#### *Intention*

Intention to cheat was measured using the intention to cheat scale from the PACES-2 instrument. This scale consisted of 5 items designed to measure respondents' intention to cheat in the future. Respondents were asked to indicate their level of agreement with items such as "I intend to cheat on an in-class test or exam in my most challenging course or in a course like my most challenging course in the future." Responses were measured using a 5-point scale ranging from (1) strongly disagree to (5) strongly agree. Internal consistency values for this scale have previously been shown to be very high ( $\alpha = 0.92$  and  $\alpha = 0.94$  for test and homework cheating, respectively) (Harding et al., 2007). For a complete list of scale items, see Appendix C.

### *Control Variables*

#### *Demographic Variables*

In an effort to determine the representativeness of the respondent group and to make comparisons across groups, a number of demographic questions were included at the end of the survey instrument. These variables are presented in Table 1.

Table 1

*Demographic Variables, Response Options, Reference Group, and Coding Categories*

Variable	Response Options	Reference Group	Coding Categories
Gender	Male	Male	1 = Female
	Female		0 = Male
Race	African American/Black	Caucasian/White	1 = Person of color
	Asian American		0 = White
	Caucasian/White		
	Hispanic/Mexican American		
	Native American		
	International		
Age	Self-reported	Age	Continuous
Home Residence	In-state	In-state & out of state	Dummy coded
	Out-of-state		1 = International
	International		0 = In-state & out of state
School Residence	On-campus residence hall	On-campus	Dummy coded
	On-campus Greek house		1 = Off-campus
	Off-campus Greek house		0 = On-campus
	Off-campus apartment		
	Off-campus other		
Program of Study	Ag & Life Sciences		Dummy Coded
	Design		1 = Business
	Education		Management
	Engineering		2 = Applied Sciences
	Natural Resources		Design
	Humanities & Social Sci.		Engineering
	Physical & Math Sci.		Textiles
	Textiles		3 = Natural Sciences
	Management		Ag & Life Sciences
	Undergrad Acad. Programs		Natural Resources
	None of the above		Physical and Math Sci
		4 = Social Sciences	
		Education	
		Humanities & Social Sci	
		5 = Undecided	
		UAP	
		None of the above	

### *Social Desirability*

Social desirability was measured using the short version of the Marlowe-Crowne social desirability scale (MCSDSX1) (Strahan & Gerbasi, 1972). This scale consisted of 10 items designed to measure respondents' tendency to respond to survey items in a socially desirable way. For each item, respondents were asked to indicate whether the statement was true or false. Half of the items were coded as false (false = 1) while the other half of the items were coded as true (true = 1). Items were coded so that higher scores indicated socially desirable responding. An example of one of the false items is "There have been occasions when I took advantage of someone." This scale has previously been shown to have a high level of internal consistency ( $\alpha = 0.88$ ) (Fischer & Fick, 1993). For a complete list of scale items, see Appendix C.

For ease of summary and presentation, two tables were created to summarize the variables in the proposed model. These tables, which are presented in Appendix D, include the variable definitions, measurements, and quantifications.

### Web-Based Survey Design

This study used a self-administered web-based survey instrument. Web-based survey design is a relatively new mode of survey research (Thompson, Surface, Martin, & Sanders, 2003). This mode was selected over the traditional pencil and paper mode for several reasons. First, web-based surveys have not been used extensively to study cheating among college students. Most studies of cheating use paper and pencil surveys that are completed either in class or at an unspecified location (i.e., home, residence hall room, etc.). Web-based technology was incorporated into this study to further our knowledge of whether web-based designs are useful tools for collecting information related to cheating among college students.

Second, college students are an ideal population for a web-based study (Daley, McDermott, McCormack Brown, & Kittleson, 2003). Most college students are computer literate and have nearly universal access to the Internet via the use of personal computers, cell phones, and/or personal digital assistant (PDA) devices. Today, most colleges and



universities, including the institution of interest, provide Internet access to all students, 24-hours per day, via residence hall network connections, campus computer labs, and wireless hotspots. In addition, the institution of interest provides all students with a university email account, which made gaining access to accurate student email addresses a manageable task.

Third, web-based surveys have been shown to be less expensive than paper-based surveys because the costs associated with printing and distributing the survey are significantly reduced (Couper, 2000; Dillman, 2007; Thompson et al., 2003; Umbach, 2004). With web surveys, the cost of survey production is the same whether the survey is distributed to one student or to several thousand, the latter of which was the case in the present study.

Fourth, when compared to in-class and mail surveys, web surveys are more efficient because the total time required to distribute, complete, return, and enter the responses as usable data is significantly reduced (Couper, 2000; Dillman, 2007; Thompson et al., 2003; Umbach, 2004). With web surveys, a participant can access, complete, and return a survey to the researcher at his or her convenience. This not only allowed for a quick turnaround time but also provided timely indicators of survey response, which were then used to determine appropriate follow-up strategies (Sax, Gilmartin, & Bryant, 2003).

A fifth advantage of web-based surveys was related to the ease of data entry (Davis, 1999; Umbach, 2004). Web surveys can be set up to automatically enter participants' responses into a usable spreadsheet. This saved time and reduced the chances of data entry error. Data was also easily imported into a statistical software package for editing and coding.

Finally, self-administered web-based surveys are thought to have a social advantage over traditional paper and pencil methods (Umbach, 2004). Specifically, research has shown that self-administered modes of data collection perform better overall than in-person modes of data collection when sensitive questions are asked (De Leeuw, 1992). A web-based survey provides the opportunity for increased social distance between the researcher and the respondent; therefore reducing the likelihood of social desirability bias (Daley et al., 2003; Davis, 1999; Tourangeau, Couper, & Steiger, 2001; Umbach). Because of the sensitive

nature of the survey questions in the present study, using a web-based survey design was particularly appealing.

### *Identifying and Reducing Survey Error*

Error is a major concern for all survey designs and was of particular concern for the present study because of its reliance on a web-based instrument. Web-based research is prone to sampling, coverage, non-response, and measurement errors (Dillman & Smyth, 2007). During the research design process, each decision that was made had to be evaluated with respect to costs in terms of error, time, and other resources (Dillman & Smyth).

#### *Sampling Error*

The only way to eliminate sampling error is to conduct a census study. A census study collects information from the entire population of interest, therefore eliminating the need for sampling procedures. For this reason, the present study relied on a census approach. The survey instrument was administered to the entire first-year student population at the institution of interest. All eligible members of the population were contacted and asked to participate.

#### *Coverage Error*

Another concern with web-based research was coverage error, or the error that results when the sampling frame is different from the sample population (Couper, Traugott, & Lamias, 2001; Umbach, 2004). The target population in this study was all first-year, full-time, non-transfer students. The sampling frame in this study was produced from a list of email addresses provided by the Dean of Undergraduate Academic Programs. Coverage error may have occurred from students who did not have accurate and up-to-date contact information in the directory used by the Dean's office. The extent of coverage error that resulted from inaccurate directory information was assessed based on returned emails, which were few. Because Deans' offices typically take extra care to maintain up-to-date and accurate information, this type of coverage error was not considered to be a primary concern.

Another source of coverage error may have occurred among students who did not have active email accounts or students who did not check their email accounts on a regular

basis. This concern again was perceived to be minimal because the institution of interest provided students with university-sponsored email accounts and encouraged them to use their accounts on a regular basis. Also, the institution in this study allowed students the opportunity to replace their university-sponsored email address with another email address that they planned to use and check more frequently. This study made the assumption that most students had and maintained an active email account and kept their current email address information up-to-date and on file with the university.

#### *Measurement Error*

Measurement error occurs when responses vary due to questionnaire design, question wording, and presentation (Couper et al., 2001; Dillman, 2007; Umbach, 2004; Dillman & Smyth, 2007). The web environment is complex and varies based on respondents' computer configurations and software (i.e., web browsers, connection speeds, resolution, screen size, etc.). Technological variations may cause respondents to experience the survey in different ways, which may have negative implications for measurement error (Dillman & Smyth). For this study, the survey software program that was selected for use (surveygizmo.com) was intentionally chosen because it was designed to minimize variations in the way that respondents accessed and viewed the survey instrument.

Question wording and presentation are additional factors needed to be considered related to measurement error. Every effort was made to ensure that questions were concise, easy to read, and easy to understand (Dillman & Smyth). Questions were presented in a clear and visually appealing way and design elements were consistent throughout the survey (Dillman & Smyth).

#### *Non-Response Error*

Finally, non-response error was also considered as it related to the web-based survey design (Couper et al., 2001; Crawford, Couper, & Lamias, 2001; Dillman, 2007; Dillman & Smyth, 2007; Umbach, 2004). Non-response error occurs when individuals included in the sampling frame are not willing or able to complete the survey. Non-response due to inability to participate (i.e., lack of Internet access; not checking one's email box) was not perceived

to be a major concern in this study because most, if not all, students were believed to have had Internet access and were assumed to be accustomed to checking their email on a regular basis.

A greater concern in this study was non-response due to unwillingness to participate. Respondents may have chosen not to participate in the survey for a variety of reasons. The topic of the survey may not have been of interest, the survey may have been perceived to be too long, or incentives may not have been sufficient enough to encourage participation (Dillman, 2007; Manfreda, Batagelj, & Vehovar, 2002; Manfreda & Vehovar, 2002). Appropriate steps were taken to reduce the perceived burden of survey participation and therefore reduce the number of non-respondents and likelihood of non-response bias.

A third source of non-response may have occurred from survey break-off or abandonment (Crawford et al., 2001). The interactive web-based survey design that was used in this study collected data as each page was submitted. This allowed for evaluation of this type of non-response (Crawford et al.).

#### *Ethical Considerations*

Umbach (2004) and Sax et al. (2003) note that there are several important ethical considerations that must be taken into account when using web-based surveys. These issues are related to respondent privacy, confidentiality, and data security (Umbach; Sax et al.). Researchers have hypothesized that a mistrust of web-based survey techniques and protocols may lead to decreased response rates (Crawford, McCabe, & Pope, 2005). For this study, every effort was made to respect the privacy of the sample population, protect the confidentiality of the participants, and ensure the security of survey responses (Umbach).

Another factor that was considered was the fact that the actual data collection environment could not be controlled or monitored. Therefore, the impact of random factors and events that may influence the respondents was unknown. Because of the web-based survey environment, it was difficult to ensure that intended survey recipient was the person who actually completed the survey (Daley et al., 2003). In order to control for this factor, responses were limited based on computer I.P. addresses (i.e., no two survey responses could

be submitted from the same I.P. address).

### *Design and Layout*

With today's technology, the possibilities for designing and presenting survey items were extensive. However, each decision in the design process had implications for survey response and data quality that needed to be considered (Dillman, 2007). Survey design decisions were made based on best practices identified in the web-based survey design literature (Crawford et al., 2005; Daley et al., 2003; Dillman, 2007; Dillman & Smyth, 2007; Manfreda et al., 2002; Umbach, 2004).

The first decision in the design process was whether to design and develop the instrument locally or purchase services and software provided by a professional online survey development company. The latter of these two options was selected in an effort to save time and improve efficiency.

Ten online survey software programs were examined and considered for use in this study. Software programs were evaluated based on available features, cost, and level of service provided. Out of the programs reviewed, surveygizmo.com was chosen as the best tool for this study. This decision was made for several reasons. First, the features provided by the survey met the needs of this study. Second, the survey generator was relatively easy to use and allowed for sufficient customization of survey questions and layout. Third, the cost of the program was minimal compared to other comparable programs.

In designing the survey and entering the parameters into the surveygizmo.com survey generator, several factors related to survey design were considered. These factors included whether to use a one-page or multi-page design, whether to use graphics, how long the survey needed to be, and how to incorporate incentives.

#### *One-page versus multi-page design*

One of the most commonly discussed issues in web-based survey design whether one should use a one-page or multiple page design (Manfreda et al., 2002; Manfreda & Vehovar, 2002). In a one-page design, survey questions are presented one after another and respondents are required to scroll down to view questions that are not initially presented on

the screen. The advantage of this design is that respondents can view the entire survey at one time and can scroll up to identify and complete skipped questions. Because there are no breaks, this design can become monotonous and boring when a respondent is asked to complete a lengthy questionnaire, as was the case in this study.

The multi-page design addresses this concern by breaking the survey up into several different screens. Multi-page designs are also more flexible and can utilize tools such as automatic skip patterns, randomization of question and response items, and automatic checking for skipped questions. Also, multi-page designs allow for the use of the piping feature. Piping involves taking a respondents' answer from one survey question and automatically feeding that answer into the text of another question. Piping the student's self-identified most challenging course name into each survey question was an essential feature needed in the present study. Because of these strengths, a multi-page design was chosen for use in this study.

In a multi-page design there are many options for question presentation. One approach is to present each question on a separate page. This approach, however, is not generally recommended because it strips the survey of context and can cause the respondent to "lose the big picture" (Manfreda et al., 2002). Another approach is to place several items on a single page. This approach, however, can cause respondents to view the items as related, therefore increasing correlations between items that are presented together (Manfreda et al.). Since there is no ideal approach, these factors needed to be considered and their challenges needed to be weighed in light of other costs that needed to be considered (i.e., survey length, presentation, etc.).

Non-response was also a concern that needed to be considered with a multi-page survey design. Research suggests that the possibility that respondents may abandon a survey is higher when multiple-page designs are used if respondents perceive that the survey is taking longer than expected or if they do not have a good sense of the amount of time required to complete the remaining portions of the survey (Manfreda et al., 2002). In the present study, this effect was mediated by including a progress indicator in the survey design

which indicated to respondents the percentage of the survey that was completed (Manfreda et al.).

### *Graphics*

Another debate in the survey research is centered on the use of logos and graphics. One researcher suggests that embedding graphics and images into a survey design can be detrimental to survey response (Manfreda et al., 2002). Graphics can also be very distracting. Taking these factors into consideration, the decision was made to keep the design and layout of the survey instrument as simple as possible. The format of the survey was created in such a way that it resembled the format typically used in paper and pencil questionnaires. Every effort was made to ensure that the survey was readable, easy to navigate, and kept as succinct as possible.

### *Survey Length*

Prior research on survey methodology has shown that the lengthy surveys can have negative implications for response rates (Crawford et al., 2001; Umbach, 2004). While there is no established gold standard, every effort was made to keep the survey completion time to less than 20 minutes. This was significantly longer than typically recommended survey length of 10 minutes (Crawford et al.). Therefore, incentives were used to encourage participation.

### *Incentives*

Two major distinctions have been made with respect to incentives in the survey methodology literature: pre-paid versus post-paid incentives, and monetary vs. non-monetary incentives (Bosnjak & Tuten, 2003; Dillman, 2007; Heerwegh, 2006). Pre-paid incentives are included with requests for survey participation. These incentives typically have minimal monetary value and may include things like cash (i.e., a \$2 bill), a coupon (i.e., for cookie), or some other useful item (i.e., a pen) (Kypri & Gallagher, 2003). Pre-paid incentives are distributed on the hope that they will encourage a commitment on the part of the respondent to participate in the survey (Dillman; Heerwegh).

Post-paid incentives are distributed after survey completion. Like pre-paid incentives,

post-paid incentives exist in a variety of forms but typically hold more monetary value than pre-paid incentives (Dillman). In a meta-analysis of 38 mail-based studies, Church (1993) found that pre-paid incentives were much more effective in increasing response rate than post-paid incentives (Church). In the same study, monetary incentives were found to be equally effective as non-monetary for increasing response rate (Church). While non-monetary incentives are considered to be effective tools for improving response rates, Dillman recommends using monetary incentives because respondents view them more favorably.

Based on prior mail survey research, pre-paid monetary incentives appear to be a useful tool for increasing survey response. Unfortunately, this strategy is not easily implemented into web-based survey design because, unlike mail, monetary incentives are not easily distributed through email (Bosnjak & Tuten, 2003; Heerwegh, 2006). In order to explore the effectiveness of pre-paid and post-paid incentives in web-based survey designs, Bosnjak and Tuten compared response rates among sales professionals for four experimental conditions: a pre-paid group (received \$2 via PayPal during the first contact), a post-paid group (promised \$2 via PayPal upon completion), a lottery group (given a chance, upon completion, to enter a lottery drawing for one of four cash prizes, two \$25 dollar prizes and two \$50 dollar prizes), and a no incentive group. They found that the only incentive that made a difference with respect to survey participation was the lottery incentive.

In studies of college students, lotteries have also been shown to be an effective tool for increasing web-survey participation (Heerwegh, 2006). In a study of 1,425 first-year Belgian college students Heerwegh divided his sample into two groups: a no-incentive group and a lottery incentive group where students were given the opportunity to enter a drawing for one of 10 gift certificates each worth approximately \$25. He found that there was a significant increase (5%) in overall response rate from the lottery incentive group compared to the no-incentive group.

Because of the difficulty associated with distributing pre-paid cash incentives when using a web-based design and because of proven past positive performance, a lottery



incentive was selected for use in this study. The exact nature and value of the incentive was determined based on feedback the dissertation committee and from the pilot-testing phase described later in this chapter.

## Procedures

### *IRB*

The research plan and materials for this study will be submitted to the Institutional Review Board (IRB) at North Carolina State University for approval (Appendix F). Revisions will be made, as needed, based on the feedback of IRB members. Every effort was made to uphold all ethical standards for reporting and publishing scientific information as outlined in the Publication Manual of the American Psychological Association (2001).

### *Pilot Test*

While the instrument used in this study (see Appendix E) was developed based on a combination of previously published valid and reliable scales and the design and layout of the instrument was based on best practices in the field, it was still necessary and prudent to pilot test the instrument to determine how well it would perform with the population of interest in the study. Pilot testing was used to determine the feasibility of the research design, assess the likely success of the proposed participant recruitment strategies, identify errors in the survey format and presentation, determine ease of use and the amount of time required to complete the survey instrument, and assess the appeal of the proposed incentives for survey participation (Litwin, 2003; van Teijlingen & Hundley, 2002).

### *Pre-Pilot*

A pre-pilot was conducted with approximately 10 first-year undergraduate students known to the researcher who volunteered to help test the survey instrument. Participants were asked to test the web-based survey for ease of use, readability, and design appeal. Participants were also asked to explore the use of the instrument with various operating systems (e.g., Windows and Macintosh OSX) and web browsers (e.g., Firefox, Internet Explorer, and Safari). This information was essential in determining the usability of the survey instrument across various platforms (Daley et al., 2003). Feedback from pre-pilot

participants was included into the survey design prior to the main pilot study.

### *Main Pilot*

The main pilot study was conducted using students from the institution of interest. Participants were volunteers from select classes of undergraduate students. The pilot study was conducted in the University computer lab on a weeknight. In total, 12 students agreed to participate in the pilot study. All participants were compensated with \$15.00 in cash and were given the opportunity to enter a drawing to receive a \$50.00 Amazon.com gift card. Only one individual who participated in the pilot study was eligible for participation in the main study. That individual was excluded from participation in the main study.

Upon arrival at the University computer lab, pilot participants were asked to provide the researcher with an email address where the survey instrument and survey materials could be sent. Participants provided a variety of email addresses with most providing their university sponsored email address. The survey and survey materials were then sent to each of the participants at the address provided. The survey arrived within seconds to all pilot participants who provided university sponsored email addresses. Survey delivery was a problem for the two students who provided hotmail.com accounts. After 10 minutes, the two students with problematic email addresses were asked to provide the researcher with their university sponsored email address. Both students indicated that they had set up their university account to forward to their hotmail.com account. When the survey was sent again to the students in question via their university sponsored email address, both received the survey within seconds in their hotmail.com account. This finding provided further support for use of university sponsored email addresses for the main study.

Upon completion of the instrument, participants were asked to provide written feedback by responding to a series of open-ended questions that focused on the time required to complete the survey instrument, the language used in the contact letters and informed consent, the survey instructions, and the individual survey items. Participants were asked to identify areas of ambiguity and identify any survey items that they perceived to be unclear or difficult to answer. If a participant was determined to have skipped a question, he or she was

asked why the question was skipped. Participants were also asked to provide feedback on a list of proposed incentives for survey participation.

A few minor changes were made based on the feedback of the participants. With respect to the contact materials, many of the students commented that they would be more likely to complete the survey if the email invites were personalized with their names and if they knew that the survey would help a fellow student complete his or her degree requirements. The students also suggested that the invite emails were too long and that students would not read through all of the materials. They suggested presenting the survey length as early as possible in the email and bolding the incentives so that they stand out on first glance.

With respect to the survey instrument, several useful suggestions were made. First, several of the students suggested that the questions needed to be broken into smaller groups because it was difficult to remember response items when they were no longer visible on the screen. Several students also noted that their classes were graded on a pass/fail scale as opposed to the traditional A through F scale. Another concern was that many of the questions seemed repetitive, which indicated that items from similar scales needed to be separated to the extent possible.

With respect to incentives, students were very supportive of the idea suggested by the dissertation committee to raffle off a Nintendo Wii Entertainment system. The students suggested raffling off more than one system would provide extra incentive for participation. In addition to the Wii, the students unanimously agreed that cash prizes were the best incentive. In general the consensus was that the greater the value, the better the incentive. In discussion, most agreed that 15 to 25 dollars would be sufficient enough to encourage participation.

Based on the feedback of the pilot participants, the survey was revised for clarity and shortened, where possible. Incentives were also identified based on pilot participant feedback. Together, these steps were used to increase the internal validity of the survey instrument and to maximize participation (Presser et al., 2004; van Teijlingen & Hundley,

2002).

### *Data Collection*

After the survey was pilot tested it was administered to the target population. Specific attention was given to the timing of survey administration and the nature and number of contacts with survey participants.

### *Timing*

This survey was administered during a one-month period at the end of the spring 2008 semester. The timing of survey administration was important to consider because of its potential impact on survey response (Porter, Whitcomb, & Weitzer, 2004). The survey was sent out April 16, 2008, which was two weeks prior to the beginning of the final exam period. The survey closed on May 16, 2008, which was one week after the final exam period. Every effort was made to ensure that the survey did not overlap or occur back-to-back with the administration of another survey using the same population and to ensure that the students were not bothered during the actual final exam period (Porter et al.).

### *Number and Nature of Contacts*

As recommended by Dillman's (2007) tailored design method, all members of the target population received multiple contacts including a pre-notice, delivery of the questionnaire and study materials, and reminder messages. Most of these contacts occurred via email. Previous research has shown that making all contacts by email results in higher response rates than making paper contacts for the pre-notice and thank you/reminder phases (Dillman).

### *Personalization*

It has been well-documented that personalization of correspondence is related to increased response rates in mail surveys (Dillman, 2007). However, this aspect of survey design is just beginning to be explored in the web-based survey literature (Cook, Heath, & Thompson, 2000; Heerwegh, Vanhove, Matthijs, & Loosveldt, 2005). Heerwegh and his colleagues found that personalized correspondence (e.g. Dear John Doe) for web-based surveys led to an 8.6% increase in response rate when compared to non-personalized

correspondence (e.g., Dear Student), however, the authors acknowledged that this approach may present concerns for data quality when sensitive questions are asked because respondents may be more likely to respond in a socially desirable way. The choice was made to personalize all emails because students in the pilot study indicated that a personalized email would make them more likely to respond to the survey. Additionally, only one student in the pilot expressed concerns about the nature of the survey questions suggesting that their personal nature would make her more hesitant to respond.

#### *Postcards and Posters*

To ensure that students would know to check their university sponsored email accounts a personalized postcard containing information about the survey administration timeline was sent to each student at his or her local mailing address. Additionally, posters containing the same information were posted throughout campus in prominent locations (i.e., first-year residence halls, dining halls, and classroom buildings). Examples of the postcards and posters are included in Appendix F.

#### *Pre-Notice Email*

The pre-notice email was sent to all members of the target population on April 14, 2008, two days prior to survey administration. This email was used to let members know that they would be receiving a request to participate in an important study. Pre-notice have been shown to positively influence response rate in web-based surveys (Cook et al., 2000). A copy of the pre-notice email that was used for this study is included in Appendix F.

#### *Survey and Survey Materials*

The next point of contact with the target population was via an email sent on April 16, 2008. This email contained specific instructions for how to immediately link to the live web-based survey instrument (Appendix F). Once participants clicked on the link provided in the email, they were directed to the first page of the survey instrument. The first page of the survey included an overview of the research process and a message about informed consent. Respondents were asked to check a box indicating their informed consent. Respondents who provided their consent were then redirected to the survey instrument. The link to the survey

instrument included an embedded survey password that was unique to each individual participant. This method was chosen over the alternative of requiring respondents to enter a password in order to reduce perceived survey burden and the likelihood of access failure if an incorrect password was entered (Crawford et al., 2001). This step was also intended to improve coverage and limit participation to those individuals who were included in the target population (Umbach, 2004).

Participants were given one month to complete the survey. Research suggests that with web-based surveys individuals who are going to complete the survey will do so in the first few hours or days (Crawford et al., 2001; Dillman, 2007). However, because the survey was being administered at the end of the semester around the final exam period, it was important to provide students with ample time to complete the survey. It was expected and observed that survey participation dropped off entirely during the final exam period.

#### *Follow-Up Emails*

Follow-up emails have been shown to play an important role in increasing survey response. In a meta-analysis of 68 web-based surveys, Cook and his colleagues (2000) found that surveys distributed with no reminders reported response rates around 30% whereas surveys that were distributed with reminders reported response rates that were nearly double. In order to maximize survey response and survey completion, multiple reminder emails were used in this study (see Appendix F) (Crawford et al., 2001). The first follow-up was sent three days after the survey was administered. This reminder email served the same purpose as the postcard reminder/thank you in step three of Dillman's (2007) total design method. A second follow-up email was sent 10 days after the survey was initially administered. This email served the same purpose as the replacement questionnaire and follow-up contact described in step four of Dillman's total design method. In this reminder email, participants were reminded that they have not yet completed the survey and were provided again with the link to access the survey instrument. Two additional follow-up emails were sent, the first on May 7, 2008 after the final exam period closed and the last on May 15, 2008, which reminded students that the survey was closing in less than 24 hours. At each stage, two types

of reminder emails were sent. A generic reminder was sent to all students who had not yet started the survey and a specific reminder was sent to all students who had started but not yet completed the survey. As participants completed the survey they were removed from the reminder email list.

#### *Thank You and Lottery*

Participants were thanked for their participation automatically when they submitted their survey instrument. At that time they were also given an opportunity to enter a lottery for a chance to win one of the identified prizes. The lottery drawing occurred approximately one week after the designated end of the survey period. Lottery winners were notified of their prize via email and the prizes were distributed via email and US Mail.

#### Data Analysis

This section provides an overview of the analytic techniques that were used to answer the study's research questions.

#### *Descriptive Analysis*

First, the response rate and the demographic profile of the respondent group were assessed. The respondents were compared to the non-respondents using chi-square tests for independence. Additional demographic characteristics were obtained for the respondent group via the survey instrument. These demographics are analyzed and reported.

The two criterion variables of interest in this study were self-reported homework and test cheating frequency in the respondent's most difficult course during the spring of 2008. For context, characteristics of the respondents' most challenging courses were collected via the survey instrument and are reported. Based on their self-reported test and homework cheating frequencies, respondents were divided into the following subgroups: non-cheaters, those who cheated on homework but not on tests (hereinafter "homework cheaters"), those who cheated on tests but not homework (hereinafter "test cheaters"), and those who cheated on homework and tests (hereinafter "both"). Chi-square tests for independence were used to explore differences between groups.

Descriptive analysis was also conducted for each of the proposed model variables.

Measures of central tendency were computed and all data were checked for outliers, assessed for multicollinearity, and checked for normality, linearity, homoscedasticity, and independence of residuals. Skewed variables were transformed as needed. Independent samples t-tests were used to explore differences in the mean scores across respondent subgroups.

#### *Scale Analysis*

Principal axis factor analysis was used to confirm the underlying structure of the study scales. Based on Kaiser's criterion, only factors with an eigenvalue of 1.0 were retained for investigation (Pallant, 2005). Catell's scree test and Parallel Analysis were used to identify which factors should be retained (Pallant). Once the number of factors for each scale were identified, the factors were rotated using the direct Oblimin method (Thompson, 2004; Pallant). Factor scores were computed using the Anderson-Rubin method (Anderson & Rubin, 1956). The Anderson-Rubin method was chosen over the alternative regression and Bartlett methods because of its ability to produce mutually orthogonal (uncorrelated) factor scores (Kim & Mueller, 1978; McDonald & Burr, 1967). However, as with any procedure used to compute factor scores, scores computed through the Anderson-Rubin method are only at best least squared approximations of the true factor scores (McDonald & Burr, 1967). Once the factor scores were computed, skewed factor scores were transformed as needed. Reliability measures for the scaled variables were computed and reported using Chronbach's alpha.

#### *Regression Analysis*

Two types of regression analysis were used to answer the first two research questions: multiple regression and hierarchical regression. Prior to conducting either of these analyses the data were checked to make sure that the necessary regression assumptions were met. The first step required confirming that a sufficient sample size was obtained. Regression analysis is not appropriate to use with small samples (Pallant, 2005). Second, the predictor variables were checked for multicollinearity (Pallant). Regression models are not appropriate to use when predictor variables highly correlated with one another. Third, outliers were identified



and removed to avoid negative effects on regression equations (Pallant). Finally, the residual scatter plots were analyzed for normality, linearity, and homoscedasticity (Pallant).

Standard multiple regression was used to answer the first research question, which explored goals and expectations as possible predictors of attitudes toward cheating. The purpose of standard multiple regression is to analyze the collective and separate effects of multiple predictor variables on a single criterion variable (Pedhazur, 1997). In multiple regression, the predictor variables are entered into the regression equation simultaneously and then each is evaluated for its predictive ability above and beyond that of the other variables (Pallant, 2005).  $R^2$  values were computed to measure of how much of the variance in the criterion variable (attitudes toward cheating) was explained by the designated predictor variables (goals and expectations).

Standardized  $\beta$  coefficients were explored and examined for significance to determine the unique contribution of the each of the predictor variables to the regression equation. Significant  $\beta$  coefficients ( $p < 0.05$ ) indicate that the variable makes a unique contribution to the regression equation. Partial correlation coefficients were examined to explore how much of the total variance in the students' attitudes toward cheating was explained by goals and expectations.

Multiple regression and hierarchical regression were used to answer the second research question, which explored the cost variables as possible predictors of intention to cheat on homework and tests and actual cheating on homework and tests before and after controlling for the effects of select demographic variables and past cheating behavior. The purpose of hierarchical regression is to determine how well predictor variables predict the criterion variable after controlling for other predictor variables (Pallant, 2005). In hierarchical regression, predictor variables are entered into the regression equation in blocks with each predictor being assessed in terms of what it adds to the criterion variable, after the previously entered variables have been controlled for (Pallant). Once all of the variables are entered, the overall model and relative contribution of each block is assessed in terms of its

ability to predict the criterion variable (Pallant).

Demographic variables including past cheating behavior were entered in block one to control for the effect of these variables on other variables in the prediction equation (Pallant). The second block consisted of the predictor variables identified for the regression equation. As with the standard regression analysis, the  $R^2$  values for each block were computed, interpreted, and examined for significance. The  $R^2$  change value was evaluated and examined for significance to determine how much of the overall variance in student cheating is explained by the predictor variables (goals and expectations) after demographics and past cheating are controlled for. Standardized  $\beta$  coefficients of block two were explored and examined for significance to determine how well each of the variables (predictor and control) contributed to the prediction of the criterion variable. Significant  $\beta$  coefficients ( $p < 0.05$ ) indicated that the variable makes a unique contribution to the regression equation.

#### *General Linear Modeling*

General linear modeling analysis was used to answer the third research question. This question explored the moderating and mediating effects of neutralization and intention, respectively. Neutralization was explored as a possible moderator of the relationship between the cost variables and intention to cheat on homework and tests and intention was explored as a possible mediator of the effects that select demographic variables including past cheating behavior had on homework and test cheating frequency.

To test the moderating effect of neutralization, the main effects and interaction effects were computed and examined for the relationships between neutralization and each of the cost variables. Significant interaction effects indicated that neutralization moderated the relationship between the cost variables and intention to cheat.

To test whether intention mediated the relationship between demographics (including past cheating behavior) and cheating frequency, the direct and interaction effects between the variables were explored in a multi-step process. The first step involved establishing which of the demographic variables (including past cheating behavior) significantly predicted cheating

frequency. Variables that were found to be significant predictors were retained and analyzed further to determine whether they were also significant predictors of cheating intention. Variables that were significant predictors of cheating intention and cheating frequency were retained for the final step of the analysis. In the final step, the main and interaction effects between the significant demographic predictors and the intention variable were computed and examined as predictors of cheating frequency. Variables that were found to be significant predictors of cheating frequency (after interacting with intention) were determined to be mediated by the intention variable.

#### *Structural Equation Modeling*

Structural equation modeling was used to answer the fourth research question. This question explored the overall fit of the proposed model for the observed data. Structural equation modeling is a statistical technique that relies on confirmatory factor analysis and a series of regression equations to compute goodness of fit indices, which are then used to determine “the degree to which the model as a whole is consistent with the empirical data at hand” (Diamantopoulos & Siguaw, 2000, p. 82). For the present study, goodness of fit was assessed using the root mean square error of approximation (RMSEA) and the comparative fit index (CFI). In general RMSEA “values less than 0.05 are indicative of good fit, between 0.05 and 0.08 of reasonable fit, between 0.08 and 0.10 of mediocre fit, and less than 0.10 of poor fit” (Diamantopoulos & Siguaw, p. 85). CFI values of 0.90 and higher are also evidence of a good fitting model (Byrne, 2001).

#### Summary

This chapter presented methods that were used to test the proposed model of academic cheating. The next chapter presents the results of these methods.

## CHAPTER FOUR: RESULTS

As stated in previous chapters, the study reported here was a quantitative examination of the motivational predictors of homework and test cheating among first-year college students. Data were collected using a web-based survey administered at the end of the spring 2008 semester to all 4,462 full-time, second-semester, freshmen attending a large, public, land grant institution located on the east coast of the United States. This chapter presents the results of this study and is divided into five sections.

The first section describes the response rate and the demographic profile of the respondent group. To assess non-response bias, the demographic characteristics of the respondents and non-respondents, which were obtained from institutional data, were compared using chi-square tests for independence. Significant differences between groups are reported. Additional demographic information was collected via the survey instrument and is reported for the respondent group.

Respondents were assessed on two criterion variables of interest: self-reported homework cheating frequency and self-reported test cheating frequency in their most challenging course during the spring 2008 semester. For context, the characteristics of the respondents' self-identified most challenging courses are presented. For ease of summary and interpretation, the demographic characteristics of the respondent group were analyzed and presented for the following subgroups of the criterion variables: non-cheaters, those who cheated on homework but not on tests (hereinafter "homework cheaters"), those who cheated on tests but not homework (hereinafter "test cheaters"), and those who cheated on homework and tests (hereinafter "both"). Chi-square tests for independence were used to explore differences between groups. Significant differences are reported.

The second section presents descriptive information for each of the proposed model variables. Measures of central tendency were computed and the variables were checked for violations of the assumptions underlying the statistical techniques used to address the study's research questions. All data were checked for outliers, assessed for multicollinearity, and

checked for normality, linearity, homoscedasticity, and independence of residuals. Independent samples t-tests were conducted to explore differences in the mean scores of the model variables across respondent subgroups. Reliability measures for the scaled variables were computed and are reported using Chronbach's alpha. Principal axis factor analysis with direct oblimin rotation was used to confirm the underlying structure of the study scales and the Anderson-Rubin method (Anderson & Rubin, 1956) was used to compute latent variables scores.

The third section presents the results of the regression analyses used to answer the first two research questions. Multiple regression analysis was used to answer the first research question, which explored goals and expectations as possible predictors of attitudes toward cheating. Multiple regression and hierarchical regression were used to answer the second research question, which explored the cost variables as possible predictors of intention to cheat on homework and tests and actual cheating on homework and tests before and after controlling for the effects of select demographic variables and past cheating behavior.

The fourth section presents the results of the general linear modeling analysis used to answer the third research question. This question explored the moderating and mediating effects of neutralization and intention, respectively. In the proposed model, neutralization was explored as a possible moderator of the relationship between the cost variables and intention to cheat on homework and tests. Intention was explored as a possible mediator of the effects that select demographic variables including past cheating behavior have on homework and test cheating frequency.

The fifth section presents the results of the structural equation modeling used to answer the fourth research question. This question explored the overall fit of the proposed model for the observed data.

#### Response Rate and Respondent Profile

The survey used in this study was administered via email by surveygizmo.com's web-based survey generator to all 4,462 full-time, second semester, freshmen at the institution of

interest. A full demographic profile of this population is presented in Table G1.

*Response Rate*

At the end of the data collection period, there were 1,388 submitted surveys, 508 partial/saved surveys, and 345 abandoned surveys. In total, 2,221 (49.76%) students failed to click the survey link. Upon review of the survey generator output, 28 surveys were identified as undeliverable, reducing the total possible population of survey participants to 4,434. Of the students that received the survey, 1,692 provided usable responses on at least one of the proposed model variables, resulting in an overall response rate of 38.16%. For data analysis purposes, a more conservative estimate of survey response was calculated by eliminating the 3,122 students that did not receive the survey, did not respond, or did not provide usable data for the criterion variables of interest. This resulted in a total of 1,340 usable responses and a final usable response rate of 30.22%.

*Respondent Profile*

Institutional data were used to determine the demographic characteristics of the respondent (N=1,340) and non-respondent (N=3,122) groups. The results of the cross-tabulation analyses are presented in Table 2.

Table 2

*Cross-Tabulation of Respondent and Non-Respondent Demographic Characteristics*

Variable	Respondent			
	Yes		No	
	Frequency <sup>a</sup>	Percent	Frequency <sup>b</sup>	Percent
Gender				
Female	623	46.5	1400	44.8
Male	717	53.5	1722	55.2
Age				
18	11	0.8	22	0.7
19	934	69.7	2251	72.1
20	388	29.0	833	26.7
21	3	0.2	13	0.4
22	2	0.1	2	0.1

Table 2 Continued

Variable	Respondent			
	Yes		No	
	Frequency <sup>a</sup>	Variable	Frequency <sup>a</sup>	Variable
23	1	0.1	1	0.0
24	1	0.1	0	0.0
Race				
African American	93	6.9	300	9.6
American Native	7	0.5	20	0.6
Asian	61	4.6	158	5.1
Hispanic	37	2.8	79	2.5
International	10	0.7	15	0.5
White	1093	81.6	2472	79.2
Unknown	39	2.9	78	2.5
Home Residence				
In state	1222	91.2	2828	90.6
Out of state	108	8.1	279	8.9
International	10	0.7	15	0.5
School Residence				
On-campus	1085	81.0	2931	93.9
On-campus private	12	0.9	12	0.4
Off-campus	154	11.5	125	4.0
No address	89	6.6	54	1.7
College				
Agriculture & Life Sciences	219	16.3	581	18.6
Education	45	3.4	94	3.0
Humanities & Social Sciences	159	11.9	402	12.9
Natural Resources	36	2.7	102	3.3
Engineering	439	32.8	838	26.8
Management	88	6.6	266	8.5
Design	17	1.3	52	1.7
Undergrad Academic Programs	209	15.6	541	17.3
Physical & Math Science	79	5.9	105	3.4
Textiles	49	3.7	141	4.5
Academic Discipline				
Business	88	6.6	266	8.5
Applied sciences	505	37.7	1031	33.0
Natural sciences	334	24.9	788	25.2
Social sciences	204	15.2	496	15.9
Undecided	209	15.6	541	17.3

Note. <sup>a</sup> N = 1,340. <sup>b</sup> N = 3,122.

Table 2 shows that over half of the respondents were male (53.5%) who were 19 years of age (69.7%). The most frequent race was White (81.6%) followed by African American (6.9%). A majority of the students resided in the same state as the institution of interest (91.2%) and, during the academic year, most students lived in an on-campus residence hall (81.0%). The largest group of respondents was enrolled in the College of Engineering (32.8%), followed by the College of Agriculture and Life Sciences (16.3%) and the Department of Undergraduate Academic Programs (15.6%). When the colleges were grouped together according to academic discipline, the largest group included students studying in Applied Science fields (37.7%) followed by those who were studying in the Natural Sciences (24.9%). Together, these findings show that the respondent group was very similar demographically to the population of interest which was 54.7% male, 71.4% 19 years of age, 79.9% White, 8.8% African American, 90.8% in-state residents, 90.0% on-campus residents, 28.6% Engineering, 17.9% Agriculture and Life Sciences, 16.8% Undergraduate Academic Programs, 34.4% applied science majors, and 25.1% natural science majors (for the full demographic profile of the population, see Table G1).

To assess whether statistical differences existed between the respondent and non-respondent groups, chi-square tests for independence were conducted. The results of these analyses are presented in Table 3.

Table 3

*Chi-Square Analysis of Demographic Differences between Respondents and Non-Respondents*

Variable	<i>df</i>	$\chi^2$	Continuity correlation <sup>a</sup>	<i>p</i>
Gender	1		0.964 <sup>b</sup>	0.326
Age	6	7.136 <sup>c</sup>		0.304
Race	6	10.944 <sup>b</sup>		0.090
Home residence	2	2.052 <sup>b</sup>		0.358
School residence	3	176.602 <sup>b</sup>		0.000***



Table 3 Continued

College	9	39.654 <sup>b</sup>	0.000***
Academic discipline	4	12.402 <sup>b</sup>	0.015*

Note. N = 4,462. \*p < 0.05. \*\*\*p < 0.001. <sup>a</sup> Used instead of  $\chi^2$  for 2 x 2 tables. <sup>b</sup> 0 cells (0.0%) have expected count less than 5. <sup>c</sup> 7 cells (50.0%) have expected count less than 5.

Table 3 shows that the respondent and non-respondent groups differed significantly ( $p < 0.05$ ) on the following demographic variables: school residence, college, and academic discipline. The respondent group was underrepresented by on-campus students (expected count = 1206) and over represented by the following majors: Education (expected count = 41.7), Engineering (expected count = 383.5), and Physical and Mathematical Sciences (expected count = 55.3). Also, as a result of the large differences between the actual and expected count of engineering students, the respondent group was overrepresented by students in the applied sciences.

Additional demographic information was obtained for the respondent group via the survey instrument, including the type of high school the respondent attended, the respondent's high school GPA and first semester college GPA, the types of extracurricular activities the respondent participated in during college, and the respondent's past cheating behavior during high school and the first semester of college. A descriptive summary of these variables is presented in Table 4.

Table 4

*Descriptive Statistics for Additional Demographic Characteristics of Respondents*

Variable	Frequency	Valid percent
High School Type <sup>a</sup>		
Public, non-residential	1024	76.8
Private, non-residential	122	9.2
Public, residential	154	11.5
Private, residential	10	0.7
Home school	9	0.7
Other	15	1.1

Table 4 Continued

Variable	Frequency	Valid percent
High School GPA <sup>b</sup>		
A+	500	37.5
A- to A	605	45.4
B- to B+	214	16.1
C- to C+	5	0.4
Unsure	8	0.6
First Semester College GPA <sup>a</sup>		
4.0 or greater	184	13.8
At least 3.5 but less than 4.0	380	28.5
At least 3.0 but less than 3.5	376	28.2
At least 2.5 but less than 3.0	209	15.7
At least 2.0 but less than 2.5	97	7.3
At least 1.5 but less than 2.0	51	3.8
Less than 1.5	25	1.9
Unsure	12	0.9
Extracurricular Involvement (Yes) <sup>c</sup>		
Student government	47	3.5
Student judicial board	12	0.9
Student media	48	3.6
ROTC	33	2.5
Intercollegiate athletics	197	14.7
Greek	112	8.4
Did not participate	928	69.5
Past High School HW Cheating <sup>d</sup>		
Never	329	24.6
A few of the times	803	60.1
About half of the times	145	10.9
Almost every time	49	3.7
Every time	9	0.7
Past High School Test Cheating <sup>e</sup>		
Never	596	44.6
A few of the times	675	50.5
About half of the times	41	3.1
Almost every time	19	1.4
Every time	6	0.4

Table 4 Continued

Variable	Frequency	Valid percent
Past College HW Cheating (Fall 2007) <sup>f</sup>		
Never	684	51.3
A few of the times	544	40.8
About half of the times	68	5.1
Almost every time	34	2.6
Every time	3	0.2
Past College Test Cheating (Fall 2007) <sup>g</sup>		
Never	1102	82.9
A few of the times	208	15.6
About half of the times	12	0.9
Almost every time	6	0.5
Every time	2	0.2

Note. N = 1,340. <sup>a</sup> Missing = 6 (0.4%). <sup>b</sup> Missing = 8 (0.6%). <sup>c</sup> Missing = 4 (0.3%). <sup>d</sup> Missing = 5 (0.4%). <sup>e</sup> Missing = 3 (0.2%). <sup>f</sup> Missing = 7 (0.5%). <sup>g</sup> Missing = 10 (0.7%).

Table 4 shows that the respondent group primarily attended public, non-residential high schools (76.8%) where they performed well academically with over 80% achieving a GPA of A- or higher. A majority of respondents reported cheating at least a few times on homework (75.4%) and tests (55.4%) while in high school.

In college, a majority (70.5%) of the respondents achieved GPAs of B (3.0) or higher. Overall, the respondents were not heavily involved in the selected extracurricular activities (69.5% reporting no involvement). Of those that were involved, the largest number participated in intercollegiate athletics (14.7%) followed by greek life (8.4%). Cheating decreased among respondents from high school to the first semester of college with less than half of the respondents reporting cheating on homework (48.9%) and tests (17.1%) during the first semester of college.

The criterion variables were formed by asking the respondents to report how frequently they cheated on homework and tests in their self-identified most challenging course during the spring of 2008. For context, descriptive information about the courses that the respondents classified as most challenging is presented in Table 5.

Table 5

*Descriptive Statistics for Respondents' Self-Identified Most Challenging Course*

Variable	Frequency	Valid percent
Current Credit Hours <sup>a</sup>		
9 to 11	1	0.1
12 to 14	377	28.2
15 to 17	833	62.3
18 to 20	124	9.3
More than 20	3	0.2
Course Credit Hours <sup>b</sup>		
1.0	1	0.1
2.0	6	0.4
3.0	787	58.9
More than 3.0	542	40.6
Course Teacher <sup>b</sup>		
Graduate student/ teaching assistant	135	10.1
Faculty member/ professor	1157	86.6
Other (e.g., lecturer)	21	1.6
Not sure	23	1.7
Course Size <sup>c</sup>		
Less than 20	147	11.0
20 to 50	300	22.4
51 to 100	345	25.8
101 to 200	236	17.7
Over 200	309	23.1
Hours of Work/Week <sup>b</sup>		
None	12	0.9
Less than 1	82	6.1
At least 1 but less than 3	379	28.4
At least 3 but less than 5	451	33.8
At least 5 but less than 7	268	0.1
At least 7 but less than 9	94	7.0
9 or more	50	3.7
Reasons for Taking Course (Yes) <sup>a</sup>		
Interesting content	268	20.0
Elective	294	22.0
Instructor	139	10.4
Heard it was easy	53	4.0
To improve skills	202	15.1
To improve career prospects	288	21.5

Table 5 Continued

Variable	Frequency	Valid percent
Useful content	274	20.5
Required for my major	1125	84.1
Recommended by a friend	52	3.9
Recommended by an advisor/teacher	242	18.1
Recommended by parents	27	2.0
Offered on/at a convenient day/time	154	11.5
Friends also enrolled	87	6.5
Course Grade <sup>c</sup>		
A+	28	2.1
A- to A+	225	16.8
B- to B+	564	42.2
C- to C+	353	26.4
D- to D+	59	4.4
F	39	2.9
Pass	7	0.5
Fail	15	1.1
Unsure	47	3.5

Note. N = 1,340. <sup>a</sup> Missing = 2 (0.1%). <sup>b</sup> Missing = 4 (0.3%). <sup>c</sup> Missing = 3 (0.2%).

Table 5 shows that during the spring of 2008, a majority of the respondent group (62.3%) was carrying a full academic course load of 15 to 17 credit hours. The respondents' most challenging courses were generally taught by a faculty member or professor (86.6%), worth 3.0 (58.9%) or more (40.6%) credit hours, and required one to five hours of outside of class work per week. Class size was not determined to be a distinguishing characteristic. The most common reason respondents enrolled in their most challenging course was because it was required for their academic major (84.1%). At the time of the survey, most respondents reported that they were earning grades ranging from C- (C- to C+ = 26.4%) to B+ (B- to B+ = 42.2%) in their most challenging course.

With respect to the criterion variable, 39.3% of respondents reported cheating on homework and 13.9% reported cheating on tests in their most challenging course. Of those that cheated on homework, 79.5% reported cheating a few of the times, 12.0% reported cheating about half of the times, 7.0% reported cheating almost every time, and 1.5%

reported cheating every time they were given a homework assignment. Of those that cheated on tests, 89.3% reported cheating a few of the times, 5.9% reported cheating about half of the times, 3.2% reported cheating almost every time, and 1.6% reported cheating every time they were given a test.

For ease of analysis and interpretation, the respondents were divided into the following four subgroups of the criterion variables: non-cheaters, homework cheaters, test cheaters and both homework and test cheaters. Demographic variables were analyzed for each subgroup. The results of the cross-tabulation analyses are presented in Table 6.

Table 6

*Cross-Tabulation of Demographic Characteristics of Respondents by Subgroup*

Variable	Percent within variable			
	Non-cheater	HW cheater	Test cheater	Both
Criterion				
Overall	58.4	27.7	2.3	11.6
Gender				
Female	58.1	30.5	2.6	8.8
Male	58.6	25.2	2.1	14.1
Age				
18	54.5	45.5	0.0	0.0
19	60.0	26.4	2.5	11.1
20	54.1	30.7	2.1	13.1
21	66.7	0.0	0.0	33.3
22	100.0	0.0	0.0	0.0
23	100.0	0.0	0.0	0.0
24	100.0	0.0	0.0	0.0
Race				
African American	60.2	26.9	5.4	7.5
American Native	42.9	42.9	0.0	14.3
Asian	60.7	26.2	1.6	11.5
Hispanic	62.2	27.0	0.0	10.8
International	70.0	0.0	0.0	30.0
White	57.8	28.1	2.1	12.0
Unknown	61.5	25.6	5.1	7.7

Table 6 Continued

Variable	Percent within variable			
	Non-cheater	Variable	Non-cheater	Variable
Home Residence				
In state	58.3	28.7	2.1	10.9
Out of state	58.3	18.5	4.6	18.5
International	70.0	0.0	0.0	30.0
School Residence				
On-campus	59.3	27.4	2.2	11.2
On-campus private	16.7	58.3	0.0	25.0
Off-campus	57.8	28.6	1.9	11.7
No Address	53.9	25.8	4.5	15.7
College				
Agriculture & Life Sciences	54.8	35.6	1.8	7.8
Education	44.4	35.6	0.0	20.0
Humanities & Social Sciences	69.8	15.1	6.3	8.8
Natural Resources	52.8	33.3	2.8	11.1
Engineering	54.4	31.4	1.6	12.5
Management	65.9	19.3	2.3	12.5
Design	82.4	5.9	0.0	11.8
Undergrad Acad. Programs	59.3	22.5	2.4	15.8
Physical & Math Sciences	69.6	24.1	1.3	5.1
Textiles	44.9	38.8	2.0	14.3
Academic Discipline				
Business	65.9	19.3	2.3	12.5
Applied sciences	54.5	31.3	1.6	12.7
Natural sciences	58.1	32.6	1.8	7.5
Social sciences	64.2	19.6	4.9	11.3
Undecided	59.3	22.5	2.4	15.8
High School Type				
Public, non-residential	58.7	28.6	2.5	10.2
Private, non-residential	58.2	23.8	3.3	14.8
Public, residential	53.2	27.3	0.0	19.5
Private, residential	80.0	10.0	0.0	10.0
Home schooled	100.0	0.0	0.0	0.0
Other	60.0	20.0	0.0	20.0

Table 6 Continued

Variable	Percent within variable			
	Non-cheater	Variable	Non-cheater	Variable
<b>High School Achievement</b>				
A+	62.6	26.2	1.6	9.6
A- to A	55.7	30.2	2.1	11.9
B- to B+	56.1	24.8	3.7	15.4
C- to C+	60.0	20.0	0.0	20.0
Unsure	75.0	12.5	0.0	12.5
<b>College Achievement</b>				
4.0 or greater	69.6	22.8	1.1	6.5
At least 3.5 but less than 4.0	57.1	30.5	3.2	9.2
At least 3.0 but less than 3.5	55.9	30.1	1.9	12.2
At least 2.5 but less than 3.0	58.9	26.8	1.4	12.9
At least 2.0 but less than 2.5	49.5	24.7	1.0	24.7
At least 1.5 but less than 2.0	54.9	21.6	5.9	17.6
Less than 1.5	56.0	24.0	8.0	12.0
Unsure	91.7	8.3	0.0	0.0
<b>Extracurricular Participation (Yes)</b>				
Student government	44.7	38.3	2.1	14.9
Student judicial board	66.7	8.3	0.0	25.0
Student media publications	50.0	22.9	8.3	18.8
ROTC	66.7	9.1	6.1	18.2
Intercollegiate athletics	53.8	26.4	4.1	15.7
Greek	47.3	25.9	0.9	25.9
No participation	60.0	28.8	1.6	9.1
<b>Past Cheating Behavior</b>				
High school HW cheaters	47.9	34.7	2.6	14.8
High school test cheaters	45.6	31.6	3.8	19.0
Past college HW cheaters	26.5	48.2	2.6	22.7
Past college test cheaters	18.4	20.6	7.9	53.1

Note. N = 1,340.

Table 6 shows that the respondent group consisted primarily of non-cheaters (58.4%). Of those that reported cheating, 66.5% reported cheating only on homework, 5.5% reported cheating only on tests, and 28.0% reported cheating on both homework and tests. Chi-square tests for independence were conducted to explore whether statistical differences existed between subgroups of the criterion variables based on the demographic characteristics of the



respondent group. Many of the variables were excluded from analysis because they failed to meet the minimum criteria of at least 80% of cells with five observations per cell (Pallant, 2005). The excluded variables included: age, race, home residence, school residence, college, high school type, high school achievement, college achievement, judicial board participation and ROTC participation. The results of the chi-square analyses for the variables that met the minimum criteria are included in Table 7.

Table 7

*Chi-Square Analysis of Demographic Differences between Subgroups of Criterion Variable*

Variable	df	$\chi^2$	p
Gender	3	11.579 <sup>a</sup>	0.009**
Academic discipline	12	33.856 <sup>b</sup>	0.001**
Student government	3	3.883 <sup>c</sup>	0.274
Student media publications	3	11.359 <sup>c</sup>	0.010*
Intercollegiate athletics	3	7.633 <sup>c</sup>	0.054
Greek	3	24.881 <sup>c</sup>	0.000***
Extracurricular participation	3	27.044 <sup>a</sup>	0.000***
Past high school HW cheater	3	179.567 <sup>a</sup>	0.000***
Past high school test cheater	3	148.631 <sup>a</sup>	0.000***
Past college HW cheater	3	546.248 <sup>a</sup>	0.000***
Past college test cheater	3	526.072 <sup>a</sup>	0.000***

*Note.* N = 1,340. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001. <sup>a</sup> 0 cells (0.0%) have expected count less than 5. <sup>b</sup> 3 cells (15.0%) have expected count less than 5. <sup>c</sup> 1 cell (12.5%) has expected count less than 5.

Based on the results presented in Table 7, the respondents differed significantly across subgroups of the criterion variables for the following demographic characteristics: gender, academic discipline, extracurricular participation, past high school homework and test cheating, and past college homework and test cheating.

*Gender.* Findings showed that men (14.1%) were more likely than women (8.8%) to cheat on both homework and tests. No differences were noted between men and women for each of the other subgroups.

*Academic discipline.* When compared to all other academic disciplines, students studying in the applied sciences and natural sciences fields were more likely to cheat on homework (31.3% and 32.6%, respectively). Students in the natural sciences, however, were less likely to cheat on both homework and tests than students in other academic disciplines (7.5% vs. 13.0%). Students in the social sciences were more likely than students in other academic disciplines to report not cheating on either homework or tests (64.2% vs. 57.3%).

*Extracurricular activities.* Students who participated in extracurricular activities were more likely than students who did not participate in extracurricular activities to cheat on both homework and tests (19.9% vs. 9.1%). When specific extracurricular activities were examined, students who participated in student media publications and greek life (18.8% and 25.9%, respectively) were more likely to cheat on both homework and tests than students who did not participate in these activities (11.4% and 10.4%, respectively).

*Past high school cheating.* Past high school homework cheaters were more likely to cheat on homework and both homework and tests (34.7% and 14.8%, respectively) than their non-high school homework cheating counterparts (6.7% and 2.1%, respectively). Past high school test cheaters were more likely to cheat on homework, tests, and both homework and tests (31.6%, 3.8%, 19.0%, respectively) when compared with their non-high school test cheating counterparts (22.7%, 0.5%, and 2.5%, respectively).

*Past college cheating.* Students who cheated on homework during their first semester of college were more likely to cheat on homework and both homework and tests (27.8% and 11.6%, respectively) than their non-first semester college homework cheating counterparts (8.3% and 1.0%, respectively). Students who cheated on tests during their first semester of college were more likely to cheat on tests and both homework and tests (7.9% and 53.1%) than their non-first semester college test cheating counterparts (1.2% and 3.0%, respectively).

*Past overall cheating.* Students who cheated at any point in high school or the first semester of college on homework or tests were more likely to cheat on homework (34.4%), tests (3.0%), and homework and tests (14.7%) than students who had not previously cheated in high school and/or their first semester of college (2.5%, 0.0%, and 0.0%, respectively).

This section presented descriptive information about the respondent subgroups. The next section presents descriptive information about the proposed model variables.

### Description of Model Variables

The model used in this study included three categories of predictor variables: goals, expectations, and costs. The goal variables included intrinsic motivation, extrinsic motivation, task value, mastery goals, performance approach and avoid goals, social development goals, and social demonstration approach and avoid goals. The expectation variables included self-efficacy and control of learning. The cost variables included attitudes, subjective norms, perceived behavioral control, and moral obligation not to cheat, all of which were measured across two contexts: homework cheating and test cheating.

Neutralization was proposed as a moderator of the relationship between the cost variables and intention to cheat on homework and tests. Intention was proposed as a mediator of the relationship between demographic variables (including past cheating behavior) and cheating frequency. For reference, a definition of each of the model variables is included in Appendix D. A diagram of the proposed model is presented in Figure 6.

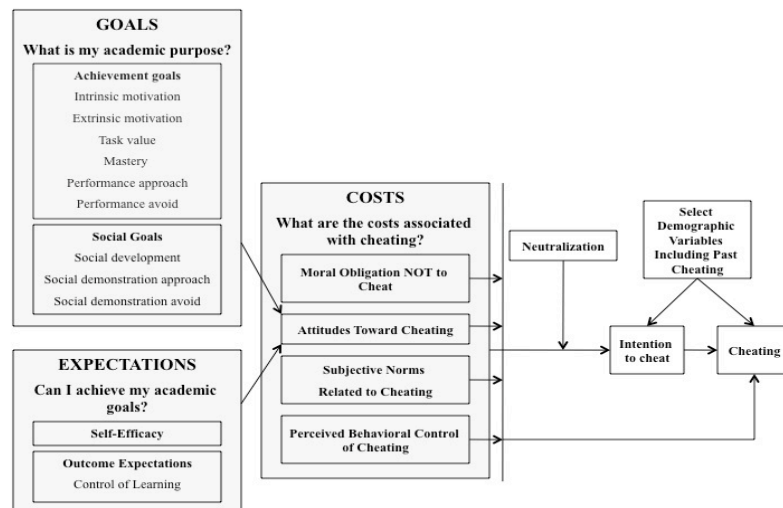


Figure 6. Proposed model of academic cheating.

For each of the model variables, measures of central tendency were computed and the distribution of scores was examined. Independent samples t-tests were conducted to explore differences between subgroups of the criterion variables. Internal consistency was examined through reliability analysis. Scale structures were determined through principal axis factoring and scale scores were computed using SPSS's Anderson-Rubin method (Anderson & Rubin, 1956).

### *Descriptive Analysis*

The measures of central tendency, including the mean, standard deviation, skewness, and kurtosis for the total scores of the model variables are presented in the appendix in Table H1. Although, most of the variables did not appear to be skewed, six variables had a significant positive skew (i.e., skewness statistic is greater than |1|). This skew was also confirmed visually by examining the histograms for each of the variables. Since a strong positive skew indicates that variables need to be transformed prior to analysis, the skewed variables were transformed using the natural log transformation. The new measures of central tendency for the transformed variables are presented in Table 8.

Table 8

#### *Measures of Central Tendency for Transformed Variables*

Variable	N	Min	Max	M	SD	Skewness	Kurtosis
Test attitudes LOG	1434	0.00	1.95	0.60	0.49	0.26	-1.05
Test moral obligation LOG	1416	0.00	1.61	0.39	0.47	0.74	-0.92
HW frequency LOG	1348	0.00	1.61	0.32	0.42	0.91	-0.31
Test frequency LOG	1343	0.00	1.61	0.11	0.27	2.51	5.75
Neutralization LOG	1299	2.40	4.01	2.83	0.45	0.52	-1.16
Test intention LOG	1418	0.00	1.61	0.30	0.41	1.05	-0.31

Based on the results in Table 8, log transformation resulted in a decrease in skew for all of the transformed variables. After the six variables were log transformed, a correlation analysis was conducted to explore the possibility of multicollinearity between predictor

variables. The results of the analysis are presented in the appendix in Table I1.

It was found that there were several significant relationships between the predictor variables in the study. The strongest correlation was found between the performance avoid goals and the performance approach goals ( $r = 0.853, p < 0.001$ ). None of the correlations were observed to be greater than 0.90, which suggested that multicollinearity between the study variables was not a major concern.

Correlation analysis was also used to examine the validity of the two criterion variables (homework and test cheating frequency in the respondent's most challenging course). Respondents were asked to report their cheating frequency using a 5-point scale ranging from (1) never to (5) every time. In order to assess the reliability of the measure, respondents were asked at a separate point in the survey to report the actual number of times they cheated on homework and tests in their most challenging course.

Similar to the homework and tests frequency variables, the homework and test number variables were positively skewed. Respondents reported homework frequency numbers ranging from 0 to 9999 and test frequency numbers ranging from 0 to 100. These variables were transformed using a square root transformation because several observations were equal to zero. After transforming these variables, it was found that there was an outlier for the homework number variable. The outlier was the respondent who provided a response of 9999. This observation was removed as well as all other observations with a value that exceeded 10 after being square root transformed.

In order to compute an accurate correlation coefficient, the homework and test frequency numbers were recoded so that "never" equaled zero and "every time" equaled four. As expected, the recoded frequency variables were positively skewed because they contained a large number of zero values. Therefore, for the correlation analysis the homework\_frequency\_zero and test\_frequency\_zero variables were transformed using the square root transformation. Table 9 presents the correlation analysis of the square root transformed cheating frequency and the square root transformed cheating number variables for the homework and test contexts, respectively.

Table 9

*Correlation Analysis between Cheating Frequency SQRT and Cheating Number SQRT Variables*

Variable	Frequency SQRT	Number SQRT
Homework		
Frequency SQRT	1.000	
Number SQRT	0.733**	1.000
Test		
Frequency SQRT	1.000	
Number SQRT	0.626**	1.000

*Note.* \*\*Correlation is significant at the 0.01 level (2-tailed).

The results in Table 9 show that there was a significant positive correlation between the homework and test frequency and number measures ( $r = 0.733$ ,  $p < 0.001$  for homework and  $r = 0.626$ ,  $p < 0.001$  for tests). This finding provides additional support for the validity of the frequency items (Harding et al., 2007).

Next, the model variables were examined for each of the criterion subgroups. The mean scores for the variables for each subgroup are presented in Table I2. Independent samples t-tests were conducted in order to determine whether there were significant differences between the groups. Prior to examining the results of the independent samples t-test, the results from Levene's tests for equality of variances were examined (see Table I3). Levene's test is used to determine whether or not one can assume equal variances between groups. When Levene's test is found to be significant ( $p < 0.05$ ) one must assume that the variances between groups are not equal. The results from Levene's test were used to interpret the results from the independent samples t-tests. The results from the independent samples t-tests are presented in Table I4.

Based on the results presented in Table 14, significant differences were found between the following scores for non-cheaters versus homework cheaters: intrinsic goal

orientation,  $t(776.096) = 2.20, p = 0.028$ , task value,  $t(1134) = 2.45, p = 0.014$ , social development goals,  $t(771.312) = -3.12, p = 0.002$ , self-efficacy,  $t(1129) = 3.91, p = 0.000$ , homework attitudes,  $t(1109) = -15.77, p = 0.000$ , homework subjective norms,  $t(1097) = -12.76, p = 0.000$ , homework perceived behavioral control,  $t(824.975) = -9.87, p = 0.000$ , homework moral obligation,  $t(1110) = -15.15, p = 0.000$ , test attitudes log,  $t(1128) = -6.00, p = 0.000$ , test perceived control,  $t(1127) = -2.14, p = 0.033$ , test moral obligation log,  $t(667.590) = -3.30, p = 0.001$ , neutralization log,  $t(644.571) = -11.71, p = 0.000$ , homework intention,  $t(571.752) = -16.85, p = 0.000$ , and test intention log,  $t(689.645) = -4.03, p = 0.000$ .

Significant differences were found between the following scores for non-cheaters versus test cheaters: extrinsic goal orientation,  $t(34.70) = -3.62, p = 0.001$ , homework attitudes,  $t(779) = -3.46, p = 0.001$ , homework subjective norms,  $t(763) = -2.47, p = 0.014$ , homework moral obligation,  $t(30.985) = -4.52, p = 0.000$ , test attitude log,  $t(798) = -5.11, p = 0.000$ , test moral obligation log,  $t(790) = -3.99, p = 0.000$ , neutralization log,  $t(776) = -4.47, p = 0.000$ , homework intention,  $t(783), p = 0.001$ , and test intention log,  $t(786) = -5.39, p = 0.000$ .

For non-cheaters versus respondents who cheated on both homework and tests, significant differences were found for all scores except extrinsic goal orientation and social development goals. For homework cheaters versus test cheaters, significant differences were found for extrinsic goal orientation,  $t(396) = -2.12, p = 0.035$ , test attitudes log,  $t(390) = -3.01, p = 0.003$ , test moral obligation log,  $t(392) = -2.54, p = 0.011$ , homework intention,  $t(389) = 2.65, p = 0.008$ , and test intention log,  $t(396) = -3.66, p = 0.000$ .

Significant differences were found between homework cheaters and test cheaters on extrinsic goal orientation  $t(396) = -2.12, p = 0.035$ ; test attitudes log,  $t(399) = -3.01, p = 0.003$ ; test moral obligations log,  $t(392) = -2.54, p = 0.011$ , homework intentions  $t(389) = 2.65, p = 0.008$  and test intentions log  $t(396) = -3.66, p = 0.000$ . For homework cheaters versus those who cheated on both homework and tests, significant differences were found on all variables except performance approach goal orientation, performance avoid goal

orientation, perceived behavioral control over homework cheating, and social desirability.

For test cheaters versus those who cheated on both homework and tests, significant differences were found for extrinsic goal orientation,  $t(61.142) = 3.97, p = 0.000$ , social development goals,  $t(178) = 2.18, p = 0.030$ , homework attitudes,  $t(179) = -3.29, p = 0.001$ , homework subjective norms,  $t(178) = -3.46, p = 0.001$ , homework moral obligation,  $t(178) = -2.83, p = 0.005$ , test subjective norms,  $t(52.433) = -4.41, p = 0.000$ , test moral obligation log,  $t(178) = -1.46, p = 0.015$ , neutralization log,  $t(177) = -2.70, p = 0.008$ , homework intention,  $t(176) = -4.58, p = 0.000$ , test intention log,  $t(181) = -2.99, p = 0.003$ ,  $t(790) = -3.99, p = 0.000$ .

#### *Reliability Analysis*

This study included 23 scaled predictor variables and two scaled criterion variables. Each of these scales was chosen, in part, for its performance in previous studies as a valid and reliable measure the variable of interest. However, the reliability of a scaled variable can vary across studies depending on the population that is used (Pallant, 2005). To determine the reliability of the scaled variables for this study's population, reliability analysis was used to compute Chronbach's alphas for each of the scaled variables. Results for the non-context specific and context specific scales are presented in Table 10 and 11, respectively.

Table 10

#### *Chronbach's Alpha for Non-Context Specific Scales*

Instrument and Scales	Previous alpha	Present alpha
<i>MSLQ<sup>a</sup></i>		
Intrinsic motivation	0.74	0.81
Extrinsic motivation	0.62	0.70
Task value	0.90	0.91
<i>PALS<sup>b</sup></i>		
Mastery	0.78	0.94
Performance approach	0.83	0.90
Performance avoid	0.86	0.86



Table 10 Continued

Instrument and Scales	Previous alpha	Present alpha
SGOS <sup>c</sup>		
Social development	0.80	0.80
Social demonstration approach	0.85	0.91
Social demonstration avoid	0.81	0.76
MSLQ <sup>a</sup>		
Self-efficacy	0.93	0.94
Control of learning	0.68	0.83
Neutralization <sup>d</sup>		
Neutralization	0.93	0.96
MSCDX1 <sup>e</sup>		
Social desirability	0.59	0.57

Note. <sup>a</sup> Scales developed and tested by Pintrich et al. (1993). <sup>b</sup> Scales tested by Ross et al. (2002). <sup>c</sup> Scales developed and tested by Ryan and Shim (2006). <sup>d</sup> Scales developed and tested by Haines et al. (1986). <sup>e</sup> Scales developed and tested by Strahan and Gerbasi (1972).

Table 11

*Chronbach's Alpha for Context Specific Scales*

Instrument and Scales	Previous alpha		Present alpha	
	HW	Test	HW	Test
PACES-2 <sup>a</sup>				
Attitudes	0.84	0.77	0.91	0.84
Subjective norms	0.89	0.86	0.90	0.83
Perceived behavioral control	0.77	0.67	0.77	0.64
Moral obligation	0.86	0.85	0.84	0.74
Intention	0.84	0.92	0.92	0.87

Note. <sup>a</sup> Scales developed and tested by Harding et al. (2007).

The results from Tables 10 and 11 indicate that all of the study scales, with the exception of social desirability, have good levels of internal consistency (alpha > 0.70). These findings suggest that the scales, with the exception of social desirability, are reliable measures this study's population (first year college students).

### Factor Analysis

Exploratory factor analysis with Principal Axis Factoring (PAF) was used to “identify common factors that account for the structure of the correlations among measured variables” (Fabrigar, Wegener, MacCallum, & Strahan, 1999, p. 276). PAF was conducted for each of the predictor variable categories: goals, expectations, and costs.

#### Goals

Two types of goals were assessed in this study: achievement goals and social goals (see Figure 7).



Figure 7. Goal variables.

*Achievement goal factor analysis.* Achievement goals were the first group to be factor analyzed. Achievement goals were assessed using the following scales: intrinsic motivation (intrinsic items 1 through 4), extrinsic motivation (extrinsic items 1 through 4), task value (task value items 1 through 6), mastery goal orientation (mastery items 1 through 5), performance approach goal orientation (performance approach items 1 through 5), and performance avoid goal orientation (performance avoid items 1 through 5).

Prior to performing PAF, the suitability of the data for factor analysis was assessed. The correlation matrix was inspected to ensure that there were a number of items with

correlations of 0.30 or higher (Pallant, 2005). The Kaiser-Myer-Oklin value was assessed at 0.96, which exceeds the recommended value of 0.6 (Pallant) and Bartlett’s test of sphericity was significant ( $p = 0.00$ ). Together, these measures provided support for the use of factor analysis with the achievement goal variables.

Initial extraction through PAF produced four factors with eigenvalues of 1.0 or higher. Together these factors explained 67.30% of the variance in achievement goals (see Table J1). Analysis of the scree plot (see Figure J1) revealed breaks between the second and third factors and between the third and fourth factors, which indicated that either two or three factors could be extracted. Parallel Analysis (PA) (Pallant, 2005) was conducted to determine the number of factors to retain. Based on the results of the PA (see Table J2), three factors were retained for further investigation.

The three factors were extracted and rotated using PAF and oblimin rotation, which allowed the factors to be correlated with each other. The correlation matrix (see Table J3) confirmed that the factors were related. The structure matrix provides additional information about the correlation between factors and is presented in Table J4. The pattern matrix resulting from the oblimin rotation of the three-factor solution is presented in Table 12.

Table 12

*Pattern Matrix for the Oblimin Rotation of the Three-Factor Solution for the Achievement Goal Variables*

Variable	Factor		
	1	2	3
Task value 3	0.885		
Task value 5	0.850		
Task value 4	0.848		
Mastery 3	0.790		
Task value 6	0.779		
Mastery 1	0.776		

Table 12 Continued

Variable	Factor		
	1	2	3
Mastery 2	0.764		
Task value 1	0.721		
Mastery 5	0.697		
Intrinsic motivation 1	0.697		
Intrinsic motivation 3	0.692		
Mastery 4	0.688		
Intrinsic motivation 4	0.687		
Intrinsic motivation 2	0.675		
Task value 2	0.619		0.329
Performance approach 5		0.882	
Performance approach 3		0.866	
Performance avoid 3		0.794	
Performance avoid 4		0.792	
Performance approach 2		0.784	
Performance avoid 1		0.778	
Performance approach 4		0.774	
Performance avoid 2		0.747	
Performance approach 1		0.601	
Extrinsic motivation 1			0.549
Extrinsic motivation 2			0.547
Extrinsic motivation 4			0.466
Extrinsic motivation 3			0.395

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 6 iterations.

Results from Table 12 show that the first factor was comprised of task value, mastery, and intrinsic motivation items. The second factor was comprised of performance avoid and performance approach items. The third factor was comprised of extrinsic motivation items and one weakly loaded task-value item. The three-factor solution explained a total of 58.96%

of the variance in achievement goals with the first factor explaining 39.15%, the second factor explaining 15.62%, and the third factor explaining 4.19% of the variance. Composite scores for each factor were computed using SPSS's Anderson-Rubin method (Anderson & Rubin, 1956). Descriptive information for the Anderson-Rubin factor scores is presented in Table 13.

Table 13

*Descriptive Information for the Anderson-Rubin Achievement Goal Factor Scores*

Factor	N	Min.	Max.	M	SD	Skewness	Kurtosis
Mastery	1414	-2.40	2.42	0.01	1.00	0.01	-0.57
Performance	1414	-1.96	2.88	-0.01	1.00	0.32	-0.53
Extrinsic	1414	-3.61	4.080	-0.02	1.00	0.24	0.59

*Social goal factor analysis.* The social goal variables were the next group to be factor analyzed. Social goals were assessed using the following scales: social development goals (social development items 1 through 4), social demonstration approach goals (social demonstration approach items 1 through 4), and social demonstration avoid goals (social demonstration avoid items 1 through 4).

Prior to conducting PAF, the suitability of the data for factor analysis was assessed. The correlation matrix was inspected to ensure that there were a number of items with correlations of 0.30 or higher (Pallant, 2005). The Kaiser-Myer-Okin value was assessed at 0.89, which exceeds the recommended value of 0.6 (Pallant) and Bartlett's test of sphericity was significant ( $p = 0.00$ ). Together, these measures provide support for the use of factor analysis with the social goal variables.

Initial extraction through PAF produced two factors with eigenvalues of 1.0 or higher. Together, the two factors explained 61.21% of the variance in social goals (see Table K1). Analysis of the scree plot (see Figure K1) revealed breaks between the first and second factors and between the second and third factors, which indicated that either one or two factors could be extracted. Parallel Analysis (PA) (Pallant, 2005) was conducted to determine

the number of factors to retain. Based on the results of the PA (see Table K2) two factors were retained for further investigation.

The two factors were extracted and rotated using PAF and oblimin rotation, which allowed the factors to be correlated with each another. The correlation matrix (see Table K3) confirmed that the factors were related. The structure matrix provides additional information about the correlation between factors and is presented in Table K4. The pattern matrix resulting from the oblimin rotation of the two-factor solution is presented in Table 14.

Table 14

*Pattern Matrix for the Oblimin Rotation of the Two-Factor Solution for the Social Goal Variables*

Variable	Factor	
	1	2
Social demonstration approach 3	0.881	
Social demonstration approach 2	0.871	
Social demonstration approach 4	0.838	
Social demonstration avoid 3	0.757	
Social demonstration approach 1	0.721	
Social demonstration avoid 4	0.703	
Social demonstration avoid 2	0.636	
Social development 3		0.764
Social development 1		0.715
Social development 2		0.683
Social development 4		0.673
Social demonstration Avoid 1		0.307

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 4 iterations.

Results from Table 14 show that the first factor was comprised of social demonstration items. The second factor was comprised of social development items. The two-factor solution explained a total of 53.78% of the variance in social goals with the first

factor explaining 39.30% of the variance and the second factor explaining 14.48% of the variance. Composite scores for each factor were computed using SPSS's Anderson-Rubin method (Anderson & Rubin, 1956). Descriptive information for the Anderson-Rubin factor scores is presented in Table 15.

Table 15

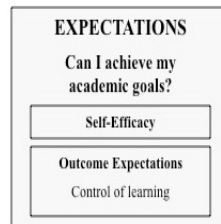
*Descriptive Information for the Anderson-Rubin Social Goal Factor Scores*

Factor	N	Min.	Max.	M	SD	Skewness	Kurtosis
Social demonstration	1463	-1.54	3.13	-0.00	1.00	0.53	-0.32
Social development	1463	-3.52	2.42	-0.00	1.00	-0.01	-0.18

Based on the analyses presented in this section, the 41 goal items were reduced to the following five composite factors: mastery, performance, extrinsic, social demonstration, and social development.

*Expectations*

Expectations were measured using two variables: self-efficacy and outcome expectations (measured by the control of learning scale) (See Figure 8).



*Figure 8.* Expectation variables.

Expectation variable scales included the self-efficacy scale (self-efficacy items 1 through 8) and control of learning (control of learning items 1 through 4). In total, 12 items were subjected to PAF.

Prior to conducting PAF, the suitability of the data for factor analysis was assessed. The correlation matrix was inspected to ensure that there were many coefficients of at least 0.30 or higher. The Kaiser-Myer-Oklin value was 0.94, which exceeds the recommended value of 0.6 (Pallant, 2005) and Bartlett’s test of sphericity was significant ( $p = 0.000$ ). Together, these measures provided support for the use of factor analysis for the expectation variables.

Initial extraction using PAF produced two factors with eigenvalues of 1.0 or higher. Together these factors explained 71.85% of the variance in expectations (see Table L1). Analysis of the scree plot (see Figure L1) revealed a break between the first and second factors and between the second and third factors, which indicated that either one or two factors could be extracted. Parallel analysis (see Table L2) revealed that two factors should be retained for further investigation.

The two factors were extracted and rotated using PAF and oblimin rotation, which allowed the factors to be correlated with each another. The correlation matrix (see Table L3) confirmed that the factors were related. The structure matrix provides additional information about the correlation between factors and is presented in Table L4. The pattern matrix resulting from the oblimin rotation of the two-factor solution is presented in Table 16.

Table 16

*Pattern Matrix for the Oblimin Rotation of the Two-Factor Solution for the Expectation Variables*

Variable	Factor	
	1	2
Self-efficacy 6	0.956	
Self-efficacy 8	0.915	
Self-efficacy 1	0.899	
Self-efficacy 5	0.698	
Self-efficacy 2	0.524	0.357



Table 16 Continued

Variable	Factor	
	1	2
Self-efficacy 7	0.520	0.434
Self-efficacy 4	0.509	0.412
Control of learning 4		0.769
Control of learning 2		0.751
Control of learning 3		0.671
Control of learning 1		0.564
Self-efficacy 3	0.375	0.452

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 11 iterations.

The rotated solution revealed the presence of a two-factor structure, which explained a total of 66.16% of the variance. The first factor consisted entirely of self-efficacy items while the second factor was comprised of both control of learning and self-efficacy items. Moderate cross-loading of the items was apparent. In an effort to find a more optimal solution, a one-factor solution was also explored. The result of the one factor solution for the expectation items is presented in Table 17.

Table 17

*Factor Matrix for the One-Factor Solution for Expectation Variables*

Variable	Factor
	1
Self-efficacy 5	0.865
Self-efficacy 7	0.857
Self-efficacy 4	0.828
Self-efficacy 8	0.823
Control of learning 3	0.803
Self-efficacy 2	0.795

Table 17 Continued

Variable	Factor
	1
Self-efficacy 6	0.792
Self-efficacy 1	0.745
Self-efficacy 3	0.735
Control of learning 1	0.684
Control of learning 2	0.553
Control of learning 4	0.545

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 4 iterations.

The results presented in Table 17 show that both self-efficacy and control of learning load strongly on one factor. This suggests that the two expectation variables should be examined as a single expectation construct. Therefore, a new expectation composite variable was computed using SPSS's Anderson-Rubin method (Anderson & Rubin, 1956). This analysis was conducted using 1655 cases and the resulting variable was found to have a minimum score of -2.38, a maximum score of 2.06, a mean of 0.00, and a standard deviation of 1.00. The skewness value for the score was -0.02 and the kurtosis value was -0.66.

#### *Costs*

Costs were the third group of variables to be factor analyzed. Cost variable scales included moral obligation not to cheat (moral obligation items 1 through 3), attitudes toward cheating (attitude items 1 through 5), subjective norms (subjective norm items 1 through 8), and perceived behavioral control (perceived behavioral control items 1 through 4) (see Figure 9).

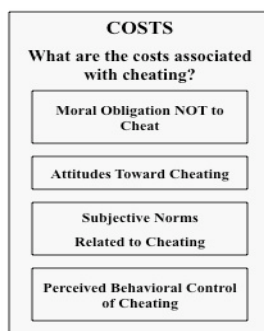


Figure 9. Cost variables.

The cost variables were examined across two contexts: homework cheating and test cheating. For each context, a total of 20 items were subjected to PAF. As with the goal and expectation factor analyses, the correlation matrix was inspected to confirm that there were many coefficients exceeding 0.30.

*Homework context.* For the homework context, the Kaiser-Myer-Okin value was 0.943, which exceeds the recommended value of 0.6 (Pallant, 2005), and Bartlett’s test of sphericity was significant ( $p = 0.00$ ). Initial extraction with PAF identified four factors with eigenvalues of 1.0 or higher. Together, these factors explained 69.8% of the variance in costs for the homework context (see Table M1). Analysis of the scree plot (see Figure M1) revealed breaks between the first and second factors and the fourth and fifth factors, which indicates that either one or four factors could be extracted. Parallel Analysis (PA) (Pallant, 2005) was conducted to gather additional information about the number of factors that should be retained. Results from the PA (see Table M2) indicated that three factors should be retained.

All of the available indicators differed in their suggestions for the number of factors that should be retained. Drawing from theory (the theory of planned behavior) and prior research (Harding et al., 2007) one would expect four factors to emerge. Therefore, four factors were extracted and rotated using PAF and oblimin rotation, which allowed the factors to be correlated. The correlation matrix (see Table M3) confirmed that the factors were

related. The structure matrix provides additional information about the correlation between factors and is presented in Table M4. The pattern matrix resulting from the oblimin rotation of the four-factor solution for the cost variables in the homework context is presented in Table 18.

Table 18

*Pattern Matrix for the Oblimin Rotation of the Four-Factor Solution for the Homework Cost Variables*

Variable	Factor			
	1	2	3	4
Attitudes 1	0.934			
Attitudes 3	0.926			
Attitudes 4	0.915			
Attitudes 2	0.905			
Attitudes 5	0.456			
Perceived behavioral control 4		0.747		
Perceived behavioral control 2		0.734		
Perceived behavioral control 1		0.720		
Perceived behavioral control 3		0.391		0.384
Subjective norms 6			0.738	
Subjective norms 4			0.729	
Subjective norms 7			0.704	
Subjective norms 2			0.584	
Moral obligation 1			0.497	
Subjective norms 5				0.628
Subjective norms 1				0.608
Subjective norms 3				0.600
Moral obligation 3	0.331			0.550
Subjective norms 8				0.548
Moral obligation 2	0.377			0.460

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 11 iterations.

The rotated solution revealed the presence of a four-factor structure, which explained a total of 62.35% of the variance. The first factor consisted primarily of attitude items and two weakly loaded moral obligation items. This factor explained 45.32% of the variance. The second factor consisted of perceived behavioral control items and explained 8.02% of the variance. The third factor consisted of subjective norms and one weakly loaded moral obligation item and explained 5.9% of the variance. The fourth factor consisted of a combination of subjective norms, moral obligation, and perceived behavioral control items and explained 3.04% of the variance. Due to the cross-loadings of items in the four-factor solution, the three-factor solution for the homework cost variables was explored using PAF and oblimin rotation. The pattern matrix for the rotated three-factor solution is presented in Table 19. The correlation matrix and structure matrix are presented in Tables M5 and M6, respectively.

Table 19

*Pattern Matrix for the Oblimin Rotation of the Three-Factor Solution for the Homework Cost Variables*

Variable	Factor		
	1	2	3
Attitudes 1	0.933		
Attitudes 3	0.901		
Attitudes 4	0.877		
Attitudes 2	0.864		
Moral obligation 2	0.614		
Moral obligation 3	0.605		0.307
Attitudes 5	0.481		
Subjective norms 8	0.362		0.316
Perceived behavioral control 4		0.749	
Perceived behavioral control 2		0.736	
Perceived behavioral control 1		0.731	

Table 19 Continued

Variable	Factor		
	1	2	3
Perceived behavioral control 3		0.414	
Subjective norms 7			0.807
Subjective norms 6			0.798
Subjective norms 4			0.755
Subjective norms 2			0.709
Moral obligation 1			0.548
Subjective norms 5	0.345		0.532
Subjective norms 3	0.358		0.443
Subjective norms 1	0.399		0.403

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 11 iterations.

The rotated solution revealed the presence of a cleaner three-factor structure, which explained a total of 58.90% of the variance. The first factor consisted primarily of attitude and moral obligation items and explained 45.14% of the variance. The second factor consisted of perceived behavioral control items and explained 7.95% of the variance. The third factor consisted of primarily of subjective norm items and explained 5.81% of the variance. Based on the results from the factor analysis, three homework cost factors were constructed using SPSS's Anderson-Rubin method (Anderson & Rubin, 1956). Descriptive statistics for the Anderson-Rubin factor scores are presented in Table 20.

Table 20

*Descriptive Information for the Anderson-Rubin Homework Cost Factor Scores*

Factor	N	Min.	Max.	M	SD	Skewness	Kurtosis
Attitudes	1229	-2.37	4.15	0.01	1.00	0.51	-0.25
Subjective norms	1229	-2.94	2.03	0.02	1.00	-0.10	-0.72
Perceived behavioral control	1229	-2.60	3.57	0.01	1.00	0.73	0.31

*Test context.* For the test context, the Kaiser-Myer-Oklin value was 0.916, which exceeds the recommended value of 0.6 (Pallant, 2005) and Bartlett’s test of sphericity was significant ( $p = 0.00$ ). Initial extraction with PAF identified four factors with eigenvalues of 1.0 or higher. Together, these factors explained 59.36% of the variance (see Table N1). Analysis of the scree plot (see Figure N1) revealed breaks between the first and second, second and third, third and fourth, and fourth and fifth factors. Parallel Analysis (see Table N2) indicated that three factors should be retained, which was similar to findings in the homework context.

Again, the indicators of which factors to retain were mixed. In order to be consistent with the analysis done in the homework context, four factors were extracted using PAF and rotated using oblimin rotation. The correlation matrix (see Table N3) confirmed that the factors were related. The structure matrix provided additional information about the correlation between factors and is presented in Table N4. The pattern matrix resulting from the oblimin rotation of the four-factor solution for the cost variables in the test context is presented in Table 21.

Table 21

*Pattern Matrix for the Oblimin Rotation of the Four-Factor Solution for the Homework Cost Variables*

Variable	Factor			
	1	2	3	4
Attitudes 1	0.879			
Attitudes 3	0.879			
Attitudes 4	0.815			
Attitudes 2	0.779			
Attitudes 5	0.407			
Subjective norms 7		-0.749		
Subjective norms 4		-0.742		

Table 21 Continued

Variable	Factor			
	1	2	3	4
Subjective norms 6		-0.732		
Subjective norms 2		-0.554		
Moral obligation 1		-0.483		
Perceived behavioral control 1			0.610	
Perceived behavioral control 4			0.604	
Perceived behavioral control 2			0.520	
Perceived behavioral control 3			0.424	0.322
Subjective norms 5				0.548
Moral obligation 2	0.323			0.496
Moral obligation 3	0.393			0.472
Subjective norms 3				0.443
Subjective norms 8				0.414
Subjective norms 1		-0.326		0.390

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 11 iterations.

The rotated solution revealed the presence of a four-factor structure, which explained a total of 49.36% of the variance. The first factor consisted primarily of attitude items and a two weakly loaded moral obligation items and explained 33.24% of the variance. The second factor consisted of subjective norm items and one weakly loaded moral obligation item and explained 7.37% of the variance. The third factor consisted of perceived behavioral control items and explained 5.79% of the variance. The fourth factor consisted primarily of subjective norm items and two moral obligation items and explained 2.96% of the variance.

Subjective norms and moral obligation cross-loaded on multiple factors. In order to better identify the factor structure, a three-factor solution was tested using PAF and oblimin rotation. The pattern matrix for this solution is presented in Table 22. The correlation matrix and structure matrix are presented in Tables N5 and N6, respectively.



Table 22

*Pattern Matrix for the Oblimin Rotation of the Three-Factor Solution for the Test Cost Variables*

Variable	1	2	3
Attitudes 1	0.861		
Attitudes 3	0.854		
Attitudes 4	0.794		
Attitudes 2	0.771		
Moral obligation 3	0.637		
Moral obligation 2	0.585		
Attitudes 5	0.424		
Subjective norms 8	0.359		
Subjective norms 4		-0.771	
Subjective norms 7		-0.761	
Subjective norms 6		-0.753	
Subjective norms 2		-0.582	
Moral obligation 1		-0.521	
Subjective norms 1	0.305	-0.463	
Subjective norms 5		-0.457	
Subjective norms 3		-0.414	
Perceived behavioral control 4			0.621
Perceived behavioral control 1			0.596
Perceived behavioral control 2			0.535
Perceived behavioral control 3			0.343

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization. Rotation converged in 11 iterations.

The rotated solution revealed the presence of a cleaner three-factor structure, which explained a total of 45.99% of the variance. The first factor consisted of attitude and two moral obligation items and explained 33.05% of the variance. The second factor consisted of subjective norm items and one moderately loaded moral obligation item and explained 7.22% of the variance. The third factor consisted of perceived behavioral control items and

explained 5.73% of the variance. Based on the results from the factor analysis, three factors were constructed using SPSS's Anderson-Rubin method (Anderson & Rubin, 1956). Descriptive statistics for the Anderson-Rubin factor scores are presented in Table 23.

Table 23

*Descriptive Information for the Anderson-Rubin Test Cost Factor Scores*

Factor	N	Min.	Max.	M	SD	Skewness	Kurtosis
Attitudes	1354	-2.30	5.25	0.00	1.01	1.40	1.79
Subjective norms	1354	-4.87	2.01	0.00	1.01	-1.72	3.24
Perceived behavioral control	1354	-3.14	2.68	0.02	0.98	0.27	-0.35

The results presented in this section suggest that, for both the homework and test contexts, the four cost variables can be reduced to three underlying factors: attitudes, subjective norms, and perceived behavioral control.

*Summary*

Factor analysis was used in this study as a data reduction technique. The original model consisted of 23 scaled predictor variables. The reduced model (see Figure 10) consisted of 15 scaled predictor variables (the cost variables and intention variable are measured across two contexts and count twice). The reduced factor model will be used in all of the subsequent analyses.

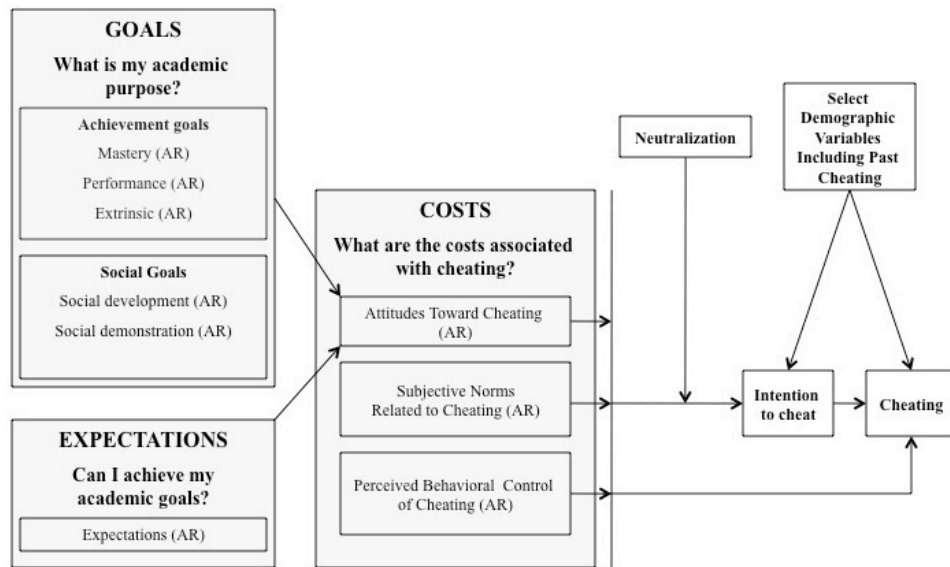


Figure 10. Proposed reduced-factor model of academic cheating.

### Regression Analyses

This section presents the results of the regression analyses used to answer the study’s first two research questions. Standard multiple regression was used to answer the first research question. This question explored the extent to which goals and expectations predicted respondents’ attitudes towards cheating on homework and tests. Standard multiple regression and hierarchical multiple regression were used to answer the second research question which explored the extent to which the cost variables predicted intention to cheat on homework and tests and actual self-reported cheating on homework and tests before and after controlling for the effects of demographics.

For each regression analysis, data were assessed for multicollinearity, outliers, normality, linearity, homoscedasticity, and independence of residuals prior to interpretation of the findings. To ensure that the data did not suffer from multicollinearity, the collinearity statistics were examined. Tolerance scores were confirmed to be greater than 0.10 and VIF (Variance Inflation Factor) scores were confirmed to be less than 10 (Pallant, 2005). The residuals scatter plot and the normal probability plot of the regression standardized residuals were used to assess outliers, normality, linearity, homoscedasticity, and independence of

residuals. Outliers were determined by inspecting the casewise diagnostics table for cases with standardized residuals greater than  $|3|$  and by examining the residuals statistics table for Cook's Distance values greater than one (Pallant, 2005). All of the data were found to be suitable for regression analyses.

Models were assessed by using  $R^2$  values to determine the amount of variance in the criterion variable that could be explained by the predictor variables. Beta weights and uniqueness indices were examined to determine the relative importance of each of the predictor variables in predicting the criterion variable. Beta weights were also used to determine the contribution that each predictor variable made to the prediction equation. The uniqueness index (the square of the part correlation coefficient) was used to calculate the percentage of the variance in the criterion variable that was accounted for by each individual predictor beyond that which was accounted for by other predictors (O'Rourke Hatcher, & Stepanski, 2005). This value also provided an indication of how much  $R^2$  would decrease if the predictor variable were not included in the model. The unstandardized regression coefficient was used to determine the number of standard deviations that scores in the criterion variable would change with one standard deviation unit change in the predictor variable. This information was also used to determine if the relationships between the predictor variables and criterion variables were in the expected direction.

#### *Research Question 1: Attitude Regression*

##### *Homework Attitudes Regression*

The first research question explored how well goals and expectations predicted attitudes toward cheating on homework and tests. The previous section of this chapter provided a reduced factor model consisting of three achievement goal predictors (mastery, performance, and extrinsic orientation), two social goal predictors (social development goals and social demonstration goals), and one expectation predictor (a composite of self-efficacy and outcome expectations) (see Figure 11).



Figure 11. Reduced factor model of goals and expectations predicting attitudes toward cheating.

Standard multiple regression analysis was used to explore how well achievement goals, social goals, and expectations predicted respondents' attitudes toward cheating on homework. An examination of the correlation matrix revealed that the predictor variables were weakly correlated with the criterion variable ( $|r|$  ranged from 0.01 to 0.25). This suggested that the variables were not ideal for regression analysis and, as a result, were not likely to predict a large percentage of the variance in the respondents' attitudes toward cheating on homework. However, because a low correlation between the predictor variables and criterion variable does not directly violate an assumption of regression analysis, the analysis could still be performed. The results of the analysis are presented in Table 24.

Table 24 shows that the model containing mastery goals, performance goals, extrinsic goals, social demonstration goals, social development goals, and expectations accounted for approximately 7.5% of the observed variance in respondents' attitudes toward cheating on homework ( $F(6, 1139) = 15.316, p < 0.001, R^2 = 0.075$ ).

Table 24

*Summary of Multiple Regression Analysis for Goal and Expectation Variables Predicting Attitude toward Cheating on Homework*

Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.015	0.029		0.512	0.609
Achievement goals					
Mastery (AR)	-0.185	0.042	-0.185	-4.425	0.000***
Performance (AR)	-0.044	0.041	-0.044	-1.076	0.282
Extrinsic (AR)	0.048	0.030	0.048	1.614	0.107
Social goals					
Social demonstration (AR)	0.094	0.041	0.093	2.315	0.021*
Social development (AR)	-0.016	0.033	-0.016	-0.481	0.631
Expectations					
Expectations (AR)	-0.089	0.041	-0.089	-2.177	0.030*

*Note.* N = 1,229. Criterion variable: Homework attitudes.  $R^2 = 0.075$ . \* $p < 0.05$ . \*\*\* $p < 0.001$ .

Beta weights and uniqueness indices were reviewed to assess the relative importance of the six variables in predicting attitudes toward cheating on homework. Table 26 shows that mastery goals, social demonstration goals, and expectations displayed significant Beta weights. Mastery goals made the strongest significant unique contribution to explaining respondents' attitudes toward cheating on homework ( $\beta = -0.185$ ,  $p < 0.001$ ). Other significant unique contributions were from social demonstration goals ( $\beta = 0.093$ ,  $p < 0.05$ ) and expectations ( $\beta = -0.089$ ,  $p < 0.05$ ). Uniqueness indices show that mastery goals, social demonstration goals, and expectations uniquely account for 1.6%, 0.5%, and 0.04% of the variance in respondents' attitudes toward cheating on homework, respectively.

A review of the unstandardized regression coefficients shows that the significant relationships were in the predicted direction. Results suggest that one standard deviation increase in mastery goal orientation and expectations would result in a 0.185 and 0.089

standard deviation decrease, respectively, in favorable attitudes toward cheating on homework. A one standard deviation increase in social demonstration goals would result in a 0.094 standard deviation increase in favorable attitudes towards cheating on homework.

*Test Attitudes Regression*

The next regression analysis explored how well achievement goals, social goals, and expectations predicted attitudes toward cheating on tests. Again, upon examination of the correlation matrix, it was revealed that the goal predictor variables were weakly correlated with the criterion attitude variable ( $|r|$  ranged from 0.04 to 0.23). Therefore these variables were not likely to predict a large percentage of the variance in respondents' attitudes toward cheating on tests. The results of the analysis are presented in Table 25.

Table 25

*Summary of Multiple Regression Analysis for Goal and Expectation Variables Predicting the Attitudes Toward Cheating on Tests*

Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-0.000	0.027		-0.033	0.974
Achievement goals					
Mastery (AR)	-0.165	0.040	-0.164	-4.171	0.000***
Performance (AR)	-0.087	0.039	-0.086	-2.235	0.026*
Extrinsic (AR)	-0.048	0.028	-0.048	-1.715	0.087
Social goals					
Social demonstration (AR)	0.204	0.038	0.202	5.315	0.000***
Social development (AR)	-0.111	0.031	-0.111	-3.555	0.000***
Expectations					
Expectations (AR)	-0.029	0.039	-0.029	-0.751	0.453

*Note.* N = 1,354. Criterion variable: Test attitudes (AR).  $R^2 = 0.095$ . \* $p < 0.05$ . \*\*\* $p < 0.001$ .

The results presented in Table 25 show that the model containing mastery goals, performance goals, extrinsic goals, social demonstration goals, social development goals, and expectations accounted for approximately 9.5% of the observed variance in respondents' attitudes toward cheating on tests ( $F(6, 1255) = 21.970, p < 0.001, R^2 = 0.095$ ).

Beta weights and uniqueness indices were reviewed to assess the relative importance of the six variables in predicting attitudes toward cheating on tests. Table 25 shows that mastery, performance, social demonstration, and social development goals displayed significant Beta weights. Social demonstration goals made the strongest unique contribution to explaining respondents' attitudes toward cheating on tests ( $\beta = 0.202, p < 0.001$ ). The next strongest unique contribution was by mastery goals ( $\beta = -0.164, p < 0.001$ ) followed closely by social development goals ( $\beta = -0.111, p < 0.001$ ). Performance goals demonstrated a slightly weaker significant unique contribution ( $\beta = -0.086, p < 0.05$ ). Uniqueness indices show that social demonstration goals uniquely accounted for 2.0% of the variance in respondents' test cheating attitudes while mastery, social development, and performance goals uniquely accounted for 1.3%, 0.9%, and 0.04% of the variance, respectively.

A review of the unstandardized regression coefficients shows that the significant relationships were in the predicted direction, with the exception of performance goal orientation and extrinsic motivation. Results suggest that one standard deviation increase in mastery orientation and social development goals would result in a 0.165 and 0.111 standard deviation decrease, respectively, in favorable attitudes toward cheating on tests. Results also show that one standard deviation increase in social demonstration goals would result in a 0.204 standard deviation increase in attitudes toward cheating on tests. What was surprising was that an increase in performance goals and extrinsic motivation was found to be associated with a decrease in favorable attitudes toward cheating on tests.

Results presented in this section suggest that the goal and expectation variables used in this study were small but significant predictors of respondents' attitudes toward cheating on both homework and tests. Social goals emerged as stronger predictors of respondents'



attitudes toward cheating than achievement goals. A contributed in significant way to the prediction of students' attitudes toward cheating only in the homework context.

*Goals and Expectations as Predictors of Other Cost Variables*

Because goals and expectations were found to be weak predictors of students' attitudes toward cheating, additional regression analyses were conducted to explore whether goals and expectations could serve as better predictors of the other cost variables in the proposed model. The results these analyses are presented in Table 26. Detailed summaries of the results for homework and test contexts are presented in Tables O1 through O4.

Table 26

*Summary of Multiple Regression Analysis for Goal and Expectation Variables Predicting Other Model Predictor Variables*

Criterion variables	N	R <sup>2</sup>	ANOVA
<b>Homework</b>			
Subjective norms (AR)	1229	0.074	F(6, 1139) = 15.224, p < 0.001
Perceived behavioral control (AR)	1229	0.062	F(6, 1139) = 12.613, p < 0.001
Intention	1312	0.096	F(6, 1215) = 21.627, p < 0.001
Frequency LOG	1348	0.043	F(6, 1242) = 9.195, p < 0.001
<b>Test</b>			
Subjective norms (AR)	1354	0.129	F(6, 1255) = 31.048, p < 0.001
Perceived behavioral control (AR)	1354	0.041	F(6, 1255) = 8.963, p < 0.001
Intention LOG	1418	0.183	F(6, 1311) = 48.812, p < 0.001
Frequency LOG	1343	0.044	F(6, 1237) = 9.432, p < 0.001

*Note.* Predictors: Mastery, Performance, Extrinsic, Social Development, Social Demonstration, and Expectation.

Results presented in Table 26 show that goals and expectations were weak predictors of all study variables in the homework context. Goals and expectations had their strongest predictive power when regressed on homework intention where they were found to predict 9.6 % of the variance. Goals and expectations were able to predict 7.4% of the variance in homework subjective norms. Overall, goals and expectations accounted for 4.3% of the variance in homework cheating frequency.

Goals and expectations served as better predictors in the test context where they predicted 18.3% of the variance in test intention. Goals and expectations were also found to predict 12.9% of the variance in test subjective norms. Overall, goals were able to account for 4.4% of the variance in test cheating frequency.

The results presented in this section show that goals and expectations serve as significant, yet small, predictors of all of the proposed cost variables. Goals and expectations were found to have their strongest predictive power when regressed on subjective norms.

*Research Question 2: Intention and Cheating Frequency Regressions*

The second research question explored the extent to which the cost variables predicted intention to cheat and actual cheating on homework and tests before and after controlling for the effects of select demographic variables, including past cheating behavior. For reference, these variables are and their proposed relationships are depicted in Figure 12.

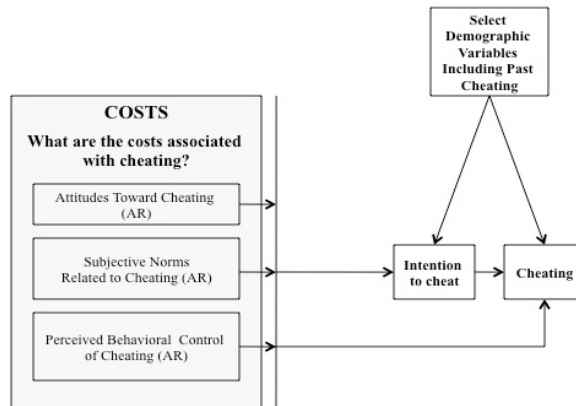


Figure 12. Costs as predictors of intention and cheating frequency.

To answer the second research question, the analyses were conducted in three steps. In the first step, standard multiple regression was used to examine how well demographic variables predict intention to cheat and actual self-reported cheating on homework and tests. In the second step, in an effort to replicate the work of Harding et al. (2007), standard multiple regression was used to explore how well the theory of planned behavior variables

predict intention to cheat and actual self-reported cheating on homework and tests. In the third step, hierarchical regression was used to explore how well the cost variables predicted cheating frequency after controlling for the effect of select demographic variables and past cheating behavior.

As explained in section two of this chapter, the homework intention variable was not skewed, but the test intention variable was skewed (skewness statistic  $> |1|$ ). For this reason, the homework intention variable in its original form (no transformation) and the natural-log-transformed test intention variable are used as criterion variables in the subsequent intention regression analyses. Similarly, because the test frequency and homework frequency variables were skewed (skewness statistic  $> |1|$ ), the natural log transformations of these variables were used for the subsequent cheating frequency regression analyses.

#### *Demographic Variables as Predictors of Intention to Cheat and Cheating Frequency*

The demographic variables of interest in this study were gender, age, race, home residence, school residence, college, academic discipline, high school type, high school grades, first semester college grades, and extracurricular involvement. Past cheating behavior was also assessed for the following categories: high school homework cheaters/non-cheaters, high school test cheaters/non-cheaters, first semester college homework cheaters/non-cheaters, and first semester college test cheaters/non-cheaters.

In section one of this chapter, differences were found between subgroups of the criterion variable (non-cheaters, homework cheaters, test cheaters, and both homework and test cheaters) for gender, academic discipline, extracurricular participation (student media publications, greek, and no participation), and past high school and first semester of college cheating frequency. Therefore, these were the only variables retained as demographic predictors in the proposed model. Multiple regression analysis was used to explore the extent to which these variables predicted intention to cheat and actual cheating on both homework and tests. The results of the homework intention and cheating frequency regressions are presented in Table 27.

Table 27

*Summary of Multiple Regression Analysis for Demographic Variables Predicting Intention to Cheat and Actual Cheating on Homework*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
<b>Intention<sup>a, b, c</sup></b>					
Constant	1.360	0.103		13.193	0.000***
Female	-0.114	0.055	-0.054	-2.065	0.039*
Business	-0.079	0.114	-0.020	-0.694	0.488
Applied science	0.224	0.083	0.100	2.689	0.007**
Natural science	0.193	0.084	0.079	2.296	0.022*
Undecided	0.285	0.092	0.101	3.105	0.002**
Student media	0.083	0.146	0.015	0.569	0.570
Greek	0.175	0.106	0.046	1.648	0.100
No participation	0.069	0.066	0.030	1.038	0.300
High school HW cheater	0.100	0.076	0.041	1.310	0.191
High school test cheater	0.063	0.065	0.030	0.968	0.333
College HW cheater	0.736	0.063	0.347	11.764	0.000**
College test cheater	0.441	0.078	0.156	5.660	0.000**
<b>Cheating Frequency<sup>d, e, f</sup></b>					
Constant	-0.069	0.035		-1.949	0.052
Female	0.019	0.019	0.023	0.992	0.321
Business	0.034	0.039	0.022	0.859	0.390
Applied science	0.130	0.029	0.147	4.526	0.000***
Natural science	0.092	0.029	0.095	3.163	0.002**
Undecided	0.057	0.032	0.051	1.813	0.070
Student media	-0.055	0.050	-0.025	-1.099	0.272

Table 27 Continued

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Greek	0.034	0.037	0.022	0.921	0.357
No participation	0.009	0.023	0.010	0.393	0.695
High school HW cheater	0.075	0.026	0.077	2.846	0.004**
High school test cheater	-0.009	0.023	-0.010	-0.390	0.697
College HW cheater	0.424	0.022	0.506	19.674	0.000***
College test cheater	0.185	0.027	0.166	6.899	0.000***

Note. <sup>a</sup> N = 1,312. <sup>b</sup> R<sup>2</sup> = 0.239. <sup>c</sup> F(12, 1,285) = 33.563, p < 0.001. <sup>d</sup> N = 1,341. <sup>e</sup> R<sup>2</sup> = 0.403. <sup>f</sup> F(12, 1322) = 74.298, p < 0.001. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001.

The results presented in Table 27 show that the demographic variables in the proposed model account for approximately 23.9% of the observed variance in respondents' intention to cheat on homework and 40.3% of the variance in actual cheating on homework.

*Demographic homework intention regression.* Beta weights and uniqueness indices were reviewed to assess the relative importance of the twelve variables in the prediction of respondents' intention to cheat on homework. A review of Table 27 shows that gender (female), applied science majors, natural science majors, undecided majors and past college homework and test cheating displayed significant beta weights. Past college homework cheating displayed the strongest significant unique contribution for explaining the variance in respondents' intentions to cheat on homework ( $\beta = 0.347$ ,  $p < 0.001$ ) followed by past college test cheating ( $\beta = 0.156$ ,  $p < 0.001$ ). Uniqueness indices showed that past college homework cheating and past college test cheating account for 8.2% and 1.9% of the variance in respondents' intention to cheat on homework, respectively. All significant relationships were in the predicted direction. The next section presents the results of the analysis used to explore the extent to which demographic variables predict intention to cheat and actual cheating on tests.

*Demographic homework frequency regression.* Beta weights and uniqueness indices were reviewed to assess the relative importance of the twelve variables in the prediction of respondents' homework cheating frequency. A review of Table 27 shows that gender and undecided majors were no longer significant demographic predictors. Applied science majors, natural science majors, past college homework cheating, and past college test cheating were still found to be significant predictors. Unlike in the intention regression, past high school homework cheating was found to be a significant predictor in the regression equation. Of the significant predictors, past college homework and test cheating again displayed the strongest significant unique contributions for explaining respondents' homework cheating frequency ( $\beta = 0.506$ ,  $p < 0.001$ ) followed by past college test cheating ( $\beta = 0.166$ ,  $p < 0.001$ ). Uniqueness indices showed that past college homework cheating and past college test cheating account for 17.5% and 3.5% of the variance in respondents' intention to cheat on homework, respectively. All significant relationships were in the predicted direction.

The next table presents the results of the regression analysis used to explore the extent to which demographic variables, including past cheating behavior, predict intention to cheat and actual cheating on tests.

Table 28

*Summary of Multiple Regression Analysis for Demographic Variables Predicting Intention to Cheat and Actual Cheating on Tests*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Intention <sup>a, b, c</sup>					
Constant	0.248	0.040		6.224	0.000***
Female	-0.125	0.021	-0.151	-5.832	0.000***
Business	0.012	0.044	0.008	0.275	0.783

Table 28 Continued

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Applied science	-0.009	0.032	-0.011	-0.294	0.769
Natural science	-0.018	0.032	-0.019	-0.555	0.579
Undecided	0.097	0.035	0.089	2.747	0.006**
Student media	0.063	0.056	0.029	1.119	0.263
Greek	0.059	0.041	0.040	1.441	0.150
No participation	-0.024	0.026	-0.027	-0.957	0.339
High school HW cheater	-0.037	0.029	-0.038	-1.238	0.216
High school test cheater	0.051	0.025	0.062	2.028	0.043*
College HW cheater	0.095	0.024	0.116	3.939	0.000***
College test cheater	0.393	0.030	0.359	13.075	0.000***
Cheating Frequency <sup>a, d, e</sup>					
Constant	0.040	0.023		1.722	0.085
Female	-0.027	0.012	-0.050	-2.158	0.031*
Business	0.000	0.026	0.000	0.001	0.999
Applied science	0.005	0.019	0.009	0.273	0.785
Natural science	-0.025	0.019	-0.041	-1.333	0.183
Undecided	0.027	0.021	0.038	1.308	0.191
Student media	0.085	0.033	0.059	2.592	0.010*
Greek	0.039	0.024	0.040	1.641	0.101
No participation	-0.029	0.015	-0.049	-1.919	0.055
High school HW cheater	-0.007	0.017	-0.011	-0.414	0.679
High school test cheater	0.007	0.015	0.013	0.495	0.621
College HW cheater	0.052	0.014	0.096	3.685	0.000***
College test cheater	0.392	0.018	0.546	22.321	0.000***

Note. <sup>a</sup> N = 1,341. <sup>b</sup> R<sup>2</sup> = 0.240. <sup>c</sup> F(12,1285) = 33.563, p < 0.001. <sup>d</sup> R<sup>2</sup> = 0.386.

<sup>e</sup> F(12,1320) = 69.230, p < 0.001. \* p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001.

Table 28 shows that the demographic variables in the proposed model account for approximately 24.0% of the observed variance in respondents' intention to cheat on tests and

38.6% of the observed variance in respondents' actual cheating on tests.

*Demographic test intention regression.* Beta weights and uniqueness indices were reviewed to assess the relative importance of the twelve variables in the prediction of respondents' intention to cheat on tests. A review of Table 28 shows that gender (female), undecided majors, past high school test cheating, and past college homework and test cheating displayed significant beta weights. Similar to the homework context, past college test cheating displayed the strongest significant unique contribution for explaining respondents' intention to cheat on tests ( $\beta = 0.359$ ,  $p < 0.001$ ). The next strongest predictor was being female ( $\beta = 0.151$ ,  $p < 0.001$ ) followed by past college homework cheating ( $\beta = 0.116$ ,  $p < 0.001$ ). Uniqueness indices show that past college test cheating accounted for 11.8% of the variance while being female and past college homework cheating accounted for 2.0% and 1.0% of the variance in respondents' intention to cheat on tests, respectively. All significant relationships were in the predicted direction.

*Demographic test frequency regression.* Beta weights and uniqueness indices were reviewed to assess the relative importance of the twelve variables in the prediction of respondents' test cheating frequency. A review of Table 28 shows that being an undecided major was no longer a significant demographic predictor. Gender, past college homework cheating, and past college test cheating were again found to be significant predictors in the regression equation. Unlike the intention regression, participation in student media publication was found to be a significant predictor of actual cheating on tests. Of the significant predictors, past college test cheating frequency ( $\beta = 0.546$ ,  $p < 0.001$ ) and homework cheating frequency ( $\beta = 0.096$ ,  $p < 0.001$ ) displayed the strongest significant unique contributions for explaining respondents' test cheating frequency followed by past college test cheating. Uniqueness indices showed that past college test cheating and past college homework cheating account for 23.1% and 1.0% of the variance in respondents' intention to cheat on homework, respectively. All significant relationships were in the predicted direction.



Together, the results from Tables 27 and 28 suggest that past cheating behavior, specifically during the first semester of college, is a strong predictor of intention to cheat and actual cheating on both homework and tests. Gender was also found to be a consistent predictor of intention to cheat across both contexts.

*Cost Variables as Predictors of Intention to Cheat and Cheating Frequency*

Multiple regression analysis was used to explore the extent to which the proposed cost variables (attitudes, subjective norms, and perceived behavior control) predict intention to cheat and actual cheating on homework and tests. The results of the homework intention and cheating frequency regressions are presented in Table 29.

Table 29

*Summary of Multiple Regression Analysis for the Cost Variables Predicting Intention to Cheat and Actual Cheating on Homework*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
<b>Intention <sup>a, b, c</sup></b>					
Constant	2.070	0.016		128.249	0.000***
Attitudes (AR)	0.670	0.016	0.633	41.598	0.000***
Subjective norms (AR)	0.584	0.016	0.553	36.336	0.000***
Perceived behavioral control (AR)	0.123	0.016	0.115	7.580	0.000***
<b>Cheating Frequency <sup>a, d, e</sup></b>					
Constant	0.312	0.010		31.199	0.000***
Attitudes (AR)	0.200	0.010	0.480	20.081	0.000***
Subjective norms (AR)	0.099	0.010	0.238	9.975	0.000***
Perceived behavioral control (AR)	0.054	0.010	0.129	5.420	0.000***

Note. <sup>a</sup> N = 1,229. <sup>b</sup> R<sup>2</sup> = 0.719. <sup>c</sup> F(3, 1214) = 1035.465, p < 0.001. <sup>d</sup> R<sup>2</sup> = 0.304. <sup>e</sup> F(3, 1220) = 177.343, p < 0.001. \*\*\*p < 0.001.

The results presented in Table 29 show that the cost variables account for approximately 71.9% of the observed variance in intention to cheat on homework and 30.4% of the variance in actual cheating on homework. Beta weights and uniqueness indices were reviewed to assess the relative importance of the three variables in predicting intention to cheat and actual cheating on homework.

*Homework intention regression.* Table 29 shows that all of the cost variables displayed significant beta weights. Attitudes displayed the strongest significant unique contribution for explaining respondents' intention to cheat on homework ( $\beta = 0.633$ ,  $p < 0.001$ ) followed by subjective norms ( $\beta = 0.553$ ,  $p < 0.001$ ) and perceived behavioral control ( $\beta = 0.553$ ,  $p < 0.001$ ). Uniqueness indices showed that attitudes, subjective norms, and perceived behavioral control account for 40.1%, 30.6%, and 1.3% of the variance in respondents' intention to cheat on homework, respectively. All significant relationships were in the predicted direction.

*Homework frequency regression.* Table 29 shows that all variables were significant predictors of homework cheating frequency. As in the intention regression, attitudes displayed the strongest significant unique contribution for explaining respondents' homework cheating frequency ( $\beta = 0.480$ ,  $p < 0.001$ ) followed by subjective norms ( $\beta = 0.238$ ,  $p < 0.001$ ) and perceived behavioral control ( $\beta = 0.129$ ,  $p < 0.001$ ). Uniqueness indices showed that attitudes, subjective norms, and perceived behavioral control accounted for 23.0%, 5.7%, and 1.7% of the variance in respondents' actual homework cheating frequency. All of the relationships were in the predicted direction.

The next table presents the results of the analysis used to explore the extent to which the cost variables predict intention to cheat and actual cheating on tests.

Table 30

*Summary of Multiple Regression Analysis for the Cost Variables Predicting Intention to Cheat and Actual Cheating on Tests*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Intention <sup>a, b, c</sup>					
Constant	0.305	0.007		46.097	0.000***
Attitudes (AR)	0.232	0.007	0.569	35.360	0.000***
Subjective norms (AR)	-0.236	0.007	-0.579	-36.005	0.000***
Perceived behavioral control (AR)	0.021	0.007	0.051	3.185	0.001***
Cheating Frequency <sup>a, d, e</sup>					
Constant	0.105	0.007		15.038	0.000***
Attitudes (AR)	0.094	0.007	0.351	13.557	0.000***
Subjective norms (AR)	-0.055	0.007	-0.207	-8.001	0.000***
Perceived behavioral control (AR)	0.010	0.007	0.037	1.418	0.156

Note. <sup>a</sup> N = 1,354. <sup>b</sup> R<sup>2</sup> = 0.654. <sup>c</sup> F(3, 1337) = 843.662, p < 0.001. <sup>d</sup> R<sup>2</sup> = 0.166. <sup>e</sup> F(3, 1248) = 82.521, p < 0.001. \*\*\*p < 0.001.

Results from Table 30 show that the cost variables account for approximately 65.4% of the observed variance in intention to cheat on tests and 16.6% of the variance in actual cheating on tests. Beta weights and uniqueness indices were reviewed to assess the relative importance of the three variables in predicting intention to cheat and actual cheating on tests.

*Test intention regression.* Table 30 shows that all of the cost variables displayed significant beta weights. Subjective norms displayed the strongest significant beta weight ( $\beta = -0.579$ ,  $p < 0.001$ ) followed closely by attitudes toward cheating ( $\beta = 0.569$ ,  $p < 0.001$ ). Perceived behavioral control displayed the weakest beta weight ( $\beta = 0.051$ ,  $p < 0.001$ ). Uniqueness indices show that subjective norms, attitudes, and perceived behavioral control account for 33.5%, 32.4%, and 0.3% of the variance in respondents' intention to cheat on

homework, respectively. It was surprising to find that the relationship between subjective norms and intention to cheat was not in the expected direction.

*Test frequency regression.* Beta weights and uniqueness indices were reviewed to assess the relative importance of the three variables in predicting respondents' test cheating frequency. Table 30 shows that only attitudes and subjective norms were significant predictors of test cheating frequency. Unlike in the intention regression, attitudes displayed a stronger standardized beta coefficient ( $\beta = 0.351$ ,  $p < 0.001$ ) than subjective norms ( $\beta = -0.207$ ,  $p < 0.001$ ). Uniqueness indices showed that attitudes and subjective norms accounted for 12.3% and 4.3% of the variance in respondents' test cheating frequency. As was the case in the intention regression, the relationship between subjective norms and cheating frequency was negative, which was unexpected.

Together, these results show that attitudes, subjective norms, and perceived behavioral control are all important predictors of intention to cheat and actual cheating on homework. When these variables were used to predict intention to cheat and actual cheating on tests, perceived behavioral control was no longer found to be a significant predictor. Additionally, results show that across contexts, attitudes appear to have the strongest influence on actual cheating behavior.

#### *Hierarchical Regression Analysis of Demographic and Cost Variables*

Next, hierarchical regression analysis was used to explore how well the cost variables predict intention to cheat and actual cheating on homework and tests after controlling for the effects of select demographic variables including gender, academic discipline, participation in student media publications, participation in greek life, no participation, and past cheating behavior, including past high school cheating on homework and tests and past college cheating on homework and tests. The demographic variables and past cheating behavior were entered into the first block of the regression analysis. The cost variables were entered in the second block.

*Homework intention hierarchical regression.* The results of the homework intention hierarchical regression are presented in Table 31.

Table 31

*Summary of Hierarchical Regression Analysis for Cost Variables Predicting Intention to Cheat on Homework After Controlling for Demographics and Past Cheating*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
<b>Block 1</b>					
Constant	1.360	0.106		12.771	0.000***
Female	-0.114	0.057	-0.054	-1.999	0.046*
Business	-0.079	0.118	-0.020	-0.672	0.502
Applied science	0.224	0.086	0.100	2.603	0.009**
Natural science	0.193	0.087	0.079	2.223	0.026*
Undecided	0.285	0.095	0.101	3.005	0.003**
Student media participation	0.083	0.151	0.015	0.550	0.582
Greek participation	0.175	0.110	0.046	1.595	0.111
No participation	0.069	0.068	0.030	1.005	0.315
High school HW cheater	0.100	0.079	0.041	1.268	0.205
High school test cheater	0.063	0.068	0.030	0.937	0.349
College HW cheater	0.736	0.065	0.347	11.387	0.000***
College test cheater	0.441	0.081	0.156	5.479	0.000***
<b>Block 2</b>					
Constant	1.918	0.064		29.743	0.000***
Female	-0.006	0.034	-0.003	-0.162	0.872
Business	-0.093	0.070	-0.024	-1.327	0.185
Applied science	0.056	0.051	0.025	1.091	0.275
Natural science	0.084	0.052	0.034	1.632	0.103
Undecided	0.161	0.056	0.057	2.844	0.005**

Table 31 Continued

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Student media participation	-0.011	0.089	-0.002	-0.120	0.904
Greek participation	-0.037	0.065	-0.010	-0.560	0.575
No participation	0.033	0.041	0.014	0.806	0.420
High school HW cheater	-0.056	0.047	-0.023	-1.184	0.237
High school test cheater	0.008	0.040	0.004	0.187	0.852
College HW cheater	0.178	0.040	0.084	4.420	0.000***
College test cheater	0.162	0.048	0.057	3.353	0.001**
Attitudes (AR)	0.622	0.018	0.588	35.090	0.000***
Subjective norms (AR)	0.561	0.016	0.531	34.599	0.000***
Perceived behavioral control (AR)	0.112	0.016	0.105	6.786	0.000***

Note. N = 1,229.  $R^2 = 0.239$  for Step 1.  $\Delta R^2 = 0.494$  for Step 2. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

The results presented in Table 31 show that after the variables in Block 1 were entered, the overall model explained 23.9% of the variance in homework cheating intention ( $F(12, 1204) = 31.448, p < 0.001, R^2 = 0.239$ ). After the Block 2 variables were included, the overall model explained 73.3% of the variance in homework cheating intention ( $F(15, 1201) = 219.738, p < 0.001, R^2 = 0.733$ ). The cost variables, therefore, explained 49.4% of the variance in homework cheating intention after controlling for the effects of demographics and past cheating behavior ( $\Delta R^2 = 0.494, p < 0.001$ ).

Beta weights and uniqueness indices were reviewed to assess the relative importance of the fifteen model variables for predicting homework cheating intention. Table 31 shows that undecided major, past college homework and test cheating, and all of the cost variables make a statistically significant contribution to the prediction of homework cheating intention. Attitudes made the strongest significant unique contribution ( $\beta = 0.588, p < 0.001$ ) followed by subjective norms ( $\beta = 0.531, p < 0.001$ ), perceived behavioral control ( $\beta = 0.105, p <$

0.001), and past college homework cheating ( $\beta = 0.084$ ,  $p < 0.001$ ). Past college test cheating ( $\beta = 0.057$ ,  $p = 0.000$ ) and being an undecided major ( $\beta = 0.057$ ,  $p = 0.000$ ) also made significant contributions.

Uniqueness indices show that attitudes, subjective norms, and perceived behavioral control uniquely account for 27.4%, 26.6%, and 1% of the variance in homework cheating intention, respectively. All significant relationships were in the predicted direction.

*Homework frequency hierarchical regression.* The next table presents the results of the hierarchical regression analysis for cost variables predicting homework cheating frequency after controlling for demographics and past cheating behavior.

Table 32

*Summary of Hierarchical Regression Analysis for Cost Variables Predicting Homework Cheating Frequency after Controlling for Demographics and Past Cheating*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Block 1					
Constant	-0.069	0.037		-1.860	-0.069
Female	0.019	0.020	0.023	0.947	0.019*
Business	0.034	0.041	0.022	0.820	0.034*
Applied science	0.130	0.030	0.147	4.319	0.130
Natural science	0.092	0.030	0.095	3.018	0.092
Undecided	0.057	0.033	0.051	1.730	0.057
Student media participation	-0.055	0.053	-0.025	-1.049	-0.055
Greek participation	0.034	0.038	0.022	0.879	0.034*
No participation	0.009	0.024	0.010	0.375	0.009**
High school HW cheater	0.075	0.028	0.077	2.716	0.075
High school test cheater	-0.009	0.024	-0.010	-0.372	-0.009**
College HW cheater	0.424	0.023	0.506	18.776	0.424
College test cheater	0.185	0.028	0.166	6.584	0.185

Table 32 Continued

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Block 2					
Constant	0.025	0.036		0.706	0.480
Female	0.038	0.019	0.045	1.995	0.046*
Business	0.034	0.039	0.022	0.872	0.383
Applied science	0.104	0.028	0.118	3.677	0.000***
Natural science	0.073	0.028	0.076	2.577	0.010*
Undecided	0.043	0.031	0.038	1.369	0.171
Student media participation	-0.069	0.049	-0.031	-1.403	0.161
Greek participation	0.006	0.036	0.004	0.170	0.865
No participation	0.004	0.022	0.004	0.165	0.869
High school HW cheater	0.041	0.026	0.042	1.581	0.114
High school test cheater	-0.017	0.022	-0.020	-0.776	0.438
College HW cheater	0.333	0.022	0.397	14.987	0.000***
College test cheater	0.139	0.027	0.125	5.213	0.000***
Attitudes (AR)	0.116	0.010	0.277	11.835	0.000***
Subjective norms (AR)	0.063	0.009	0.150	7.015	0.000***
Perceived behavioral control (AR)	0.026	0.009	0.062	2.896	0.004**

Note. N = 1,229.  $R^2 = 0.403$  for Step 1.  $\Delta R^2 = 0.077$  for Step 2. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

The results presented in Table 32 show that after the variables in Block 1 were entered the overall model explained 40.3% of the variance in homework cheating frequency ( $F(12, 1204) = 67.666, p < 0.001, R^2 = 0.403$ ). After the Block 2 variables were included, the overall model explained 48.0% of the variance in homework cheating frequency ( $F(15, 1201) = 73.858, p < 0.001, R^2 = 0.480$ ). The cost variables, therefore, explained 7.7% of the variance in homework cheating frequency after controlling for the effects of demographics and past cheating behavior ( $\Delta R^2 = 0.077, p < 0.001$ ).



Beta weights and uniqueness indices were reviewed to assess the relative importance of the fifteen model variables for predicting homework cheating frequency. Table 32 shows that gender, academic discipline (applied sciences and natural sciences), past college cheating on homework and tests, and all of the cost variables (attitudes, subjective norms, and perceived behavioral control) made statistically significant contributions to the prediction of homework cheating frequency. Past college homework cheating ( $\beta = 0.397$ ,  $p < 0.001$ ) made the strongest significant unique contribution to the prediction of cheating frequency followed by attitudes ( $\beta = 0.227$ ,  $p < 0.001$ ), subjective norms ( $\beta = 0.150$ ,  $p < 0.001$ ), past college test cheating ( $\beta = 0.125$ ,  $p < 0.001$ ), being an applied sciences major ( $\beta = 0.118$ ,  $p < 0.001$ ), being a natural sciences major ( $\beta = 0.076$ ,  $p < 0.05$ ), perceived behavioral control ( $\beta = 0.062$ ,  $p < 0.01$ ), and being female ( $\beta = 0.045$ ,  $p < 0.05$ ). Uniqueness indices show that past college homework cheating, attitudes, subjective norms, and past college test cheating uniquely account for 9.7%, 6.1%, 2.1% and 1.2% of the variance in homework cheating frequency, respectively.

*Test intention hierarchical regression.* The results of the test intention hierarchical regression are presented in Table 33.

Table 33

*Summary of Hierarchical Regression Analysis for Cost Variables Predicting Intention to Cheat on Tests after Controlling for Demographics and Past Cheating*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Block 1					
Constant	0.248	0.041		6.085	0.000***
Female	-0.125	0.022	-0.151	-5.702	0.000***
Business	0.012	0.045	0.008	0.269	0.788
Applied science	-0.009	0.033	-0.011	-0.287	0.774

Table 33 Continued

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Natural science	-0.018	0.033	-0.019	-0.543	0.588
Undecided	0.097	0.036	0.089	2.686	0.007**
Student media participation	0.063	0.058	0.029	1.094	0.274
Greek participation	0.059	0.042	0.040	1.409	0.159
No participation	-0.024	0.026	-0.027	-0.936	0.350
High school HW cheater	-0.037	0.030	-0.038	-1.211	0.226
High school test cheater	0.051	0.026	0.062	1.983	0.048*
College HW cheater	0.095	0.025	0.116	3.851	0.000***
College test cheater	0.393	0.031	0.359	12.784	0.000***
Block 2					
Constant	0.270	0.026		10.211	0.000***
Female	-0.008	0.015	-0.009	-0.528	0.598
Business	0.004	0.029	0.003	0.136	0.891
Applied science	-0.002	0.021	-0.002	-0.093	0.926
Natural science	0.001	0.021	0.001	0.047	0.962
Undecided	0.042	0.023	0.038	1.805	0.071
Student media participation	-0.019	0.037	-0.009	-0.522	0.602
Greek participation	0.025	0.027	0.017	0.919	0.358
No participation	-0.006	0.017	-0.007	-0.353	0.724
High school HW cheater	-0.010	0.020	-0.011	-0.534	0.594
High school test cheater	-0.014	0.017	-0.017	-0.850	0.396
College HW cheater	0.040	0.016	0.049	2.492	0.013*
College test cheater	0.182	0.021	0.166	8.833	0.000***
Attitudes (AR)	0.206	0.007	0.503	28.250	0.000***
Subjective norms (AR)	-0.222	0.007	-0.545	-33.062	0.000***
Perceived behavioral control (AR)	0.017	0.007	0.041	2.460	0.014*

Note. N = 1,341.  $R^2 = 0.240$  for Step 1.  $\Delta R^2 = 0.444$  for Step 2. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

The results presented in Table 33 show that after the variables in Block 1 were entered the overall model explained 24.0% of the variance in test cheating intention ( $F(12, 1237) = 32.610, p < 0.001, R^2=0.240$ ). After the Block 2 variables were included, the overall model explained 68.4% of the variance in test cheating intention ( $F(15, 1234) = 178.242, p < 0.001, R^2=0.684$ ). The cost variables, therefore, explained 44.4% of the variance in test cheating intention after controlling for the effects of demographics and past cheating behavior ( $\Delta R^2 = 0.444, p < 0.001$ ).

Beta weights and uniqueness indices were reviewed to assess the relative importance of the fifteen model variables for predicting intention to cheat on tests. Table 33 shows that only past college cheating on homework and tests, attitudes, and subjective norms make a statistically significant contribution to the prediction of intention to cheat on tests. Subjective norms make the strongest significant unique contribution ( $\beta = -0.545, p < 0.001$ ) followed by attitudes ( $\beta = 0.503, p < 0.001$ ), past college test cheating ( $\beta = 0.166, p < 0.001$ ), and past college homework cheating ( $\beta = 0.049, p < 0.05$ ), and perceived behavioral control ( $\beta = 0.041, p < 0.05$ ). Uniqueness indices show that subjective norms, attitudes, and past college test cheating uniquely account for 30.0%, 20.4%, and 2.0% of the variance in test cheating intention, respectively. All significant relationships were in the predicted direction with the exception of subjective norms.

*Test frequency hierarchical regression.* The next table presents the results of the hierarchical regression analysis for cost variables predicting the frequency of cheating on tests after controlling for demographics and past cheating behavior.

Table 34

*Summary of Hierarchical Regression Analysis for Cost Variables Predicting Test Cheating Frequency after Controlling for Demographics and Past Cheating*

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
Block 1					
Constant	0.040	0.024		1.667	0.096
Female	-0.027	0.013	-0.050	-2.089	0.037*
Business	0.000	0.027	0.000	0.001	0.999
Applied science	0.005	0.019	0.009	0.265	0.791
Natural science	-0.025	0.020	-0.041	-1.290	0.197
Undecided	0.027	0.021	0.038	1.266	0.206
Student media participation	0.085	0.034	0.059	2.509	0.012*
Greek participation	0.039	0.025	0.040	1.588	0.112
No participation	-0.029	0.015	-0.049	-1.858	0.063
High school HW cheater	-0.007	0.018	-0.011	-0.401	0.689
High school test cheater	0.007	0.015	0.013	0.479	0.632
College HW cheater	0.052	0.015	0.096	3.567	0.000***
College test cheater	0.392	0.018	0.546	21.608	0.000***
Block 2					
Constant	0.047	0.024		1.998	0.046*
Female	-0.007	0.013	-0.014	-0.566	0.572
Business	0.000	0.026	0.000	-0.018	0.986
Applied science	0.005	0.019	0.009	0.281	0.779
Natural science	-0.023	0.019	-0.038	-1.218	0.224
Undecided	0.018	0.021	0.026	0.878	0.380
Student media participation	0.069	0.033	0.047	2.056	0.040*
Greek participation	0.032	0.024	0.033	1.337	0.182
No participation	-0.027	0.015	-0.045	-1.753	0.080
High school HW cheater	-0.003	0.018	-0.005	-0.196	0.845
High school test cheater	-0.005	0.015	-0.009	-0.340	0.734

Table 34 Continued

Model	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
College HW cheater	0.042	0.014	0.077	2.897	0.004**
College test cheater	0.356	0.018	0.495	19.354	0.000***
Attitudes (AR)	0.041	0.007	0.152	6.286	0.000***
Subjective norms (AR)	-0.030	0.006	-0.111	-4.957	0.000***
Perceive beh. control (AR)	0.001	0.006	0.005	0.205	0.838

*Note.* N = 1,341.  $R^2 = 0.386$  for Step 1.  $\Delta R^2 = 0.028$  for Step 2. \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

The results presented in Table 34 show that after the variables in Block 1 were entered the overall model explained 38.6% of the variance in test cheating frequency ( $F(12, 1237) = 64.877, p < 0.001, R^2 = 0.386$ ). After the Block 2 variables were included, the overall model explained 41.4% of the variance in test cheating frequency ( $F(15, 1234) = 58.187, p < 0.001, R^2 = 0.414$ ). The cost variables, therefore, explained 2.8% of the variance in test cheating frequency after controlling for the effects of demographics and past cheating behavior ( $\Delta R^2 = 0.028, p < 0.001$ ).

Beta weights and uniqueness indices were reviewed to assess the relative importance of the fifteen model variables for predicting test cheating. Table 34 shows that student media participation, past college homework and test cheating, attitudes, and subjective norms made a statistically significant contribution to the prediction of test cheating frequency. Past college test cheating ( $\beta = 0.495, p < 0.001$ ) makes the strongest significant unique contribution to the prediction of test cheating frequency followed by attitudes ( $\beta = 0.152, p < 0.001$ ), subjective norms ( $\beta = -0.111, p < 0.001$ ), past college homework cheating ( $\beta = 0.077, p < 0.01$ ), and participation in student media publications ( $\beta = 0.047, p < 0.05$ ). Uniqueness indices show that past college test cheating, attitudes, and subjective norms uniquely account for 17.8%, 1.9%, and 1.2% of the variance in test cheating frequency,

respectively. Again, with the exception of subjective norms, all predicted relationships were in the expected direction.

### General Linear Modeling

#### *Research Question 3: Moderating and Mediating Effects*

The third research question explored the moderating and mediating effects of neutralization and intention, respectively, in the proposed model. The first set of analyses explored the extent to which neutralization moderated the relationship between the cost variables (attitudes, subjective norms, and perceived behavioral control) and respondents' intentions to cheat on homework and tests. The second set of analyses explored the extent to which intention mediated the relationship between select demographic factors (including past cheating behavior) and respondents' homework and test cheating frequency. Both sets of analysis were conducted using general linear modeling (GLM). This procedure allows for the exploration of main and interaction effects of two or more continuous independent variables on one dependent variable (Pallant, 2005).

#### *Moderating Effects of Neutralization*

The first set of analyses explored the moderating effects of neutralization on the relationship between respondents' attitudes toward cheating and respondents' intention to cheat on homework and tests. The results of the analyses are presented in Table 35.

Table 35

*Parameter Estimates for the Moderating Effect of Neutralization on the Relationship between Attitudes toward Cheating and Intention to Cheat*

Parameter	B	Std. Error	t	Sig.	Partial Eta Squared
Homework Context <sup>a</sup>					
Intercept	-0.234	0.172	-1.357	0.175	0.002
Attitudes (AR)	0.537	0.151	3.557	0.000***	0.011

Table 35 Continued

Parameter	B	Std. Error	t	Sig.	Partial Eta Squared
Neutralization LOG	0.823	0.061	13.494	0.000***	0.134
Attitudes (AR) * Neutralization LOG	-0.026	0.051	-0.503	0.615	0.000
Test Context <sup>b</sup>					
Intercept	-0.379	0.071	-5.358	0.000***	0.023
Attitudes (AR)	0.148	0.065	2.275	0.023*	0.004
Neutralization LOG	0.239	0.025	9.702	0.000***	0.073
Attitudes (AR) * Neutralization LOG	0.007	0.020	0.356	0.722	0.000

Note. Dependent variable: Intention. <sup>a</sup>  $R^2 = 0.481$ . <sup>b</sup>  $R^2 = 0.372$ . \* $p < 0.05$ . \*\*\* $p < 0.001$ .

Table 35 shows that, in both contexts, the interaction between attitudes and neutralization was not statistically significant ( $p > 0.05$ ). This means that neutralization does not moderate the relationship between attitudes and intention.

Because there was not a significant interaction effect between attitudes and neutralization, the main effects for each of these variables was examined. In the homework context, results showed that there was a statistically significant main for attitudes ( $p < 0.001$ ) and for neutralization ( $p < 0.001$ ); however, the effect sizes for both were determined to be small (partial eta squared = 0.011 for attitudes and 0.134 for neutralization). Regression analysis revealed that the model explained 48.1% of the variation in intention to cheat on homework.

In the test context, results showed that there was a statistically significant main effect for attitudes ( $p < 0.05$ ) and for neutralization ( $p < 0.001$ ); again, both of these main effects were determined to be small (partial eta squared = 0.023 for attitudes and 0.073 for neutralization). Overall, regression analysis revealed that the model explained 37.2% of the variance in intention to cheat on tests.

The next set of analyses explored the extent to which neutralization moderated the relationship between subjective norms and respondents' intention to cheat on homework and tests. The results of the analyses are presented in Table 36.

Table 36

*Parameter Estimates for the Moderating Effect of Neutralization on the Relationship between Subjective Norms and Intention to Cheat*

Parameter	B	Std. Error	t	Sig.	Partial Eta Squared
<b>Homework Context <sup>a</sup></b>					
Intercept	-1.135	0.147	-7.709	0.000***	0.048
Subjective norms (AR)	1.290	0.134	9.626	0.000***	0.073
Neutralization LOG	1.156	0.052	22.297	0.000***	0.298
Subjective norms (AR) * Neutralization LOG	-0.305	0.047	-6.546	0.000***	0.035
<b>Test Context <sup>b</sup></b>					
Intercept	-0.684	0.057	-12.063	0.000***	0.108
Subjective norms (AR)	-0.304	0.051	-5.979	0.000***	0.029
Neutralization LOG	0.349	0.020	17.622	0.000***	0.205
Subjective norms (AR) * Neutralization LOG	0.038	0.017	2.225	0.026*	0.004

*Note.* Dependent variable: Intention. <sup>a</sup>  $R^2 = 0.515$ . <sup>b</sup>  $R^2 = 0.459$ . \* $p < 0.05$ . \*\*\* $p < 0.001$ .

Table 36 shows that, for both contexts, the interaction between subjective norms and neutralization was statistically significant ( $p < 0.001$  for the homework context and  $p < 0.05$  for the test context). This means that neutralization moderates the relationship between subjective norms and intention. Due to the significant interaction between subjective norms and neutralization, there was no need to interpret the main effects for the independent variables in the proposed models. However, regression analysis revealed that the model explained 51.5% of the variance in intention to cheat on homework and 45.9% of the variance in intention to cheat on tests.



The next set of analyses explored the extent to which neutralization moderated the relationship between perceived behavioral control and respondents' intention to cheat on homework and tests. The results of the analyses are presented in Table 37.

Table 37

*Parameter Estimates for the Moderating Effect of Neutralization on the Relationship between Perceived Behavioral Control and Intention*

Parameter	B	Std. Error	t	Sig.	Partial Eta Squared
<b>Homework Context <sup>a</sup></b>					
Intercept	-1.834	0.158	-11.633	0.000***	0.104
Perceived behavioral control (AR)	-0.018	0.161	-0.113	0.910	0.000
Neutralization LOG	1.386	0.055	25.249	0.000***	0.352
Perceived behavioral control (AR) * Neutralization LOG	0.040	0.058	0.680	0.496	0.000
<b>Test Context <sup>b</sup></b>					
Intercept	-0.975	0.064	-15.162	0.000***	0.161
Perceived behavioral control (AR)	0.209	0.063	3.334	0.001**	0.009
Neutralization LOG	0.451	0.022	20.131	0.000***	0.252
Perceived behavioral control (AR) * Neutralization LOG	-0.074	0.022	-3.354	0.001**	0.009

*Note.* Criterion variable: Intention. <sup>a</sup>  $R^2 = 0.362$ . <sup>b</sup>  $R^2 = 0.257$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

Table 37 shows that, in the homework context, the interaction between perceived behavioral control and neutralization was not statistically significant ( $p > 0.05$ ). This means that neutralization does not moderate the relationship between perceived behavioral control and intention to cheat on homework. In the test context, however, the interaction between perceived behavioral control and neutralization was found to be statistically significant ( $p < 0.01$ ) which means that neutralization did moderate the relationship between perceived behavioral control and intention to cheat on tests.

Because there was not a significant interaction effect between perceived behavioral

control and neutralization in the homework context, the main effects for each of the variables were examined. Results showed that there was not a statistically significant main effect for perceived behavioral control ( $p > 0.05$ ); however, there was a large statistically significant main effect for neutralization ( $p < 0.001$ , partial eta squared = 0.352). Overall, the model explained 36.2% of the variance in intention to cheat on homework.

Due to the significant interaction between test perceived behavioral control and neutralization, it was difficult to determine the main effects of the independent variables in the proposed model. Overall, the analysis revealed that the model explained 25.7% of the variance in intention to cheat on tests.

#### *Mediating Effects of Intention*

The next set of analyses explored the extent to which intention mediated the effects of select demographic variables including past cheating behavior on respondents' homework and test cheating frequency. Analysis was conducted in three steps.

The first step involved determining which of the variables had a significant relationship with the criterion variable (cheating frequency) in each context. The results for the homework and test contexts are presented in Tables 38 and 39, respectfully.

Table 38

#### *Summary of the GLM Analysis of the Demographic Predictors of Homework Cheating Frequency*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	93.663 <sup>b</sup>	12	7.805	74.651	0.000***
Intercept	0.723	1	0.723	6.914	0.009**
Female	0.184	1	0.184	1.755	0.185
Business	0.138	1	0.138	1.318	0.251

Table 38 Continued

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Applied sciences	2.700	1	2.700	25.824	0.000***
Natural sciences	1.532	1	1.532	14.651	0.000***
Undecided	0.700	1	0.700	6.693	0.010*
Student media participation	0.073	1	0.073	0.702	0.402
Greek participation	0.124	1	0.124	1.183	0.277
No participation	0.038	1	0.038	0.367	0.545
High school HW cheater	0.742	1	0.742	7.100	0.008**
High school test cheater	0.012	1	0.012	0.117	0.733
College homework cheater	40.544	1	40.544	387.768	0.000***
College test cheater	5.078	1	5.078	48.565	0.000***
Error	136.759	1308	0.105		
Total	361.724	1321			
Corrected Total	230.422	1320			

*Note.* Criterion variable: Homework frequency LOG.  $R^2 = 0.406$ . \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\*  $p < 0.001$ .

Table 39

*Summary of the GLM Analysis of the Demographic Predictors of Test Cheating Frequency*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	36.411 <sup>b</sup>	12	3.034	66.645	0.000***
Intercept	0.126	1	0.126	2.769	0.096
Female	0.170	1	0.170	3.739	0.053
Business	0.000	1	0.000	0.000	0.991
Applied sciences	0.000	1	0.000	0.003	0.954
Natural sciences	0.089	1	0.089	1.948	0.163
Undecided	0.064	1	0.064	1.417	0.234

Table 39 Continued

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Student media participation	0.323	1	0.323	7.102	0.008**
Greek participation	0.116	1	0.116	2.540	0.111
No participation	0.131	1	0.131	2.882	0.090
High school HW cheater	0.009	1	0.009	0.205	0.651
High school test cheater	0.010	1	0.010	0.230	0.632
College HW cheater	0.634	1	0.634	13.921	0.000***
College test cheater	21.779	1	21.779	478.352	0.000***
Error	59.324	1303	0.046		
Total	110.166	1316			
Corrected total	95.735	1315			

*Note.* Criterion variable: Test frequency LOG.  $R^2 = 0.380$ . \* $p < 0.05$ . \*\*\* $p < 0.001$ .

Table 38 shows that academic discipline (applied sciences, natural sciences, and undecided majors), past high school homework cheating, and past college homework and test cheating were significantly related to cheating frequency in the homework context. Overall, the proposed model accounted for 40.6% of the variance in homework cheating frequency. Table 39 shows that student media participation and past college homework and test cheating were significantly related to cheating frequency in the test context. Overall, the proposed model accounted for 38.0% of the variance in test cheating frequency.

The next step in the mediation analysis involved determining which of the significant variables identified in the first step also significantly predicted the proposed mediating variable, cheating intention. The results for the homework context are presented in Table 40 and the results for the test context are presented in Table 41.

Table 40

*Summary of the GLM Analysis of the Demographic Predictors of Intention to Cheat on Homework*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	342.204 <sup>b</sup>	6	57.034	65.679	0.000***
Intercept	279.373	1	279.373	321.720	0.000***
Applied sciences	15.588	1	15.588	17.951	0.000***
Natural sciences	9.042	1	9.042	10.412	0.001**
Undecided	16.529	1	16.529	19.034	0.000***
High school HW cheater	3.695	1	3.695	4.255	0.039*
College HW cheater	119.650	1	119.650	137.786	0.000***
College test cheater	35.351	1	35.351	40.709	0.000***
Error	1113.252	1282	0.868		
Total	7055.840	1289			
Corrected total	1455.457	1288			

*Note.* Dependent variable: HW intention.  $R^2 = 0.235$ . \* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .

Table 41

*Summary of the GLM Analysis of the Predictors of Intention to Cheat on Tests*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	43.324 <sup>a</sup>	3	14.441	109.569	0.000***
Intercept	20.008	1	20.008	151.804	0.000***
Student media participation	0.145	1	0.145	1.100	0.294
College HW cheater	2.382	1	2.382	18.076	0.000***
College test cheater	28.241	1	28.241	214.269	0.000***
Error	170.552	1294	0.132		
Total	327.947	1298			
Corrected total	213.876	1297			

*Note.* Dependent variable: Test intention LOG.  $R^2 = 0.203$ . \*\*\* $p < 0.001$ .

Table 40 shows that, in the homework context, all of the proposed variables were significant predictors of intention to cheat on homework. Overall, the proposed model accounted for 23.5% of the variance in intention. Table 41 shows that, in the test context, student media participation was not a significant predictor of intention to cheat on tests. Only past college homework and test cheating were found to be significant predictors. Overall, the proposed model accounted for 20.3% of the variance in intention to cheat on tests.

Variables that were identified as significant in both step one and step two of the mediation analysis were retained for further investigation. Because these variables significantly predicted intention to cheat and cheating frequency, it is possible that intention mediates the relationship between the predictors and cheating frequency. The third and final step in the analysis used general linear modeling to explore whether intention mediates the relationship between the predictor variables and cheating frequency by entering the predictor variables with intention as possible predictors of cheating frequency. The results of these analyses are presented in Tables 42 and 43 for the homework and test contexts, respectively.

Table 42

*Summary of the GLM Analysis of the Mediating Effects of Intention on the Predictors of Homework Cheating Frequency*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model	116.287 <sup>b</sup>	7	16.612	193.324	0.000***
Intercept	8.004	1	8.004	93.142	0.000***
Homework intention	24.682	1	24.682	287.236	0.000***
Applied sciences	1.079	1	1.079	12.551	0.000***
Natural sciences	0.557	1	0.557	6.482	0.011*
Undecided	0.001	1	0.001	0.006	0.937
High school HW cheater	0.429	1	0.429	4.991	0.026*
College HW cheater	20.739	1	20.739	241.348	0.000***

Table 42 Continued

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
College test cheater	1.408	1	1.408	16.381	0.000***
Error	109.905	1279	0.086		
Total	356.181	1287			
Corrected total	226.193	1286			

Note. Criterion variable: Homework frequency LOG.  $R^2 = 0.514$ . \* $p < 0.05$ . \*\*\* $p < 0.001$ .

Table 43

*Summary of the GLM Analysis of the Mediating Effects of Intention on the Demographic Predictors of Test Cheating Frequency*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected model <sup>a</sup>	38.427 <sup>b</sup>	3	12.809	293.330	0.000***
Intercept	0.157	1	0.157	3.585	0.059
Test intention LOG	3.450	1	3.450	79.001	0.000***
College HW cheater	0.431	1	0.431	9.868	0.002**
College test cheater	16.020	1	16.020	366.858	0.000***
Error	56.418	1292	0.044		
Total	109.205	1296			
Corrected total	94.844	1295			

Note. <sup>a</sup> Dependent variable: Test frequency LOG. <sup>b</sup>  $R^2 = 0.405$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

In both contexts, intention to cheat was significantly related to cheating frequency ( $p < 0.001$ ). Table 42 shows that, in the homework context, all variables with the exception of being an undecided major maintained a significant relationship with cheating frequency. This suggests that intention does not mediate the relationship between these variables. Intention was found to mediate the effects that being an undecided major had on homework cheating frequency. Overall, the proposed model accounted for 51.4% of the variance in homework cheating frequency.

Table 43 shows that past college homework and test cheating maintained a significant relationship with test cheating frequency. This means that intention does not mediate the relationship between these variables. Overall, the proposed accounted for 40.5% of the variance in test cheating frequency.

### Structural Equation Modeling

#### *Research Question 4: Model Testing*

This section presents the results of the structural equation modeling (SEM) analyses that were used to answer the fourth research question. This question explored the overall fit of the proposed model for the observed data. Prior to conducting the SEM analyses, revisions were made to the proposed models based on findings from the first three research questions. A separate model was developed and tested for both the homework and test cheating contexts. Results from the analysis of the homework model are presented first, followed by results from the analysis of the test model.

#### *Homework Model*

Based on the results of the first three research questions, the homework model was initially specified as depicted in Figure 13.

In order to determine how well the model fit the observed data the following fit indices were examined: the root-mean-square error of approximation (RMSEA), the normal fit index (NFI), and the comparative fit index (CFI). As a general rule, a RMSEA value less than 0.05 and NFI and CFI scores greater than 0.9 would indicate that the model fits the data well (Schumacker & Lomax, 2004).

Results showed that the initial homework cheating frequency model had a RMSEA of 0.043 and a NFI and CFI of 0.885 and 0.896, respectively. Together, these indices indicate that the model provides an adequate, but not ideal, fit for the observed data. Parameter estimates were examined in order to determine the extent to which the variables in the proposed model were significantly related to each other. The parameter estimates from this analysis are presented in Table 44.



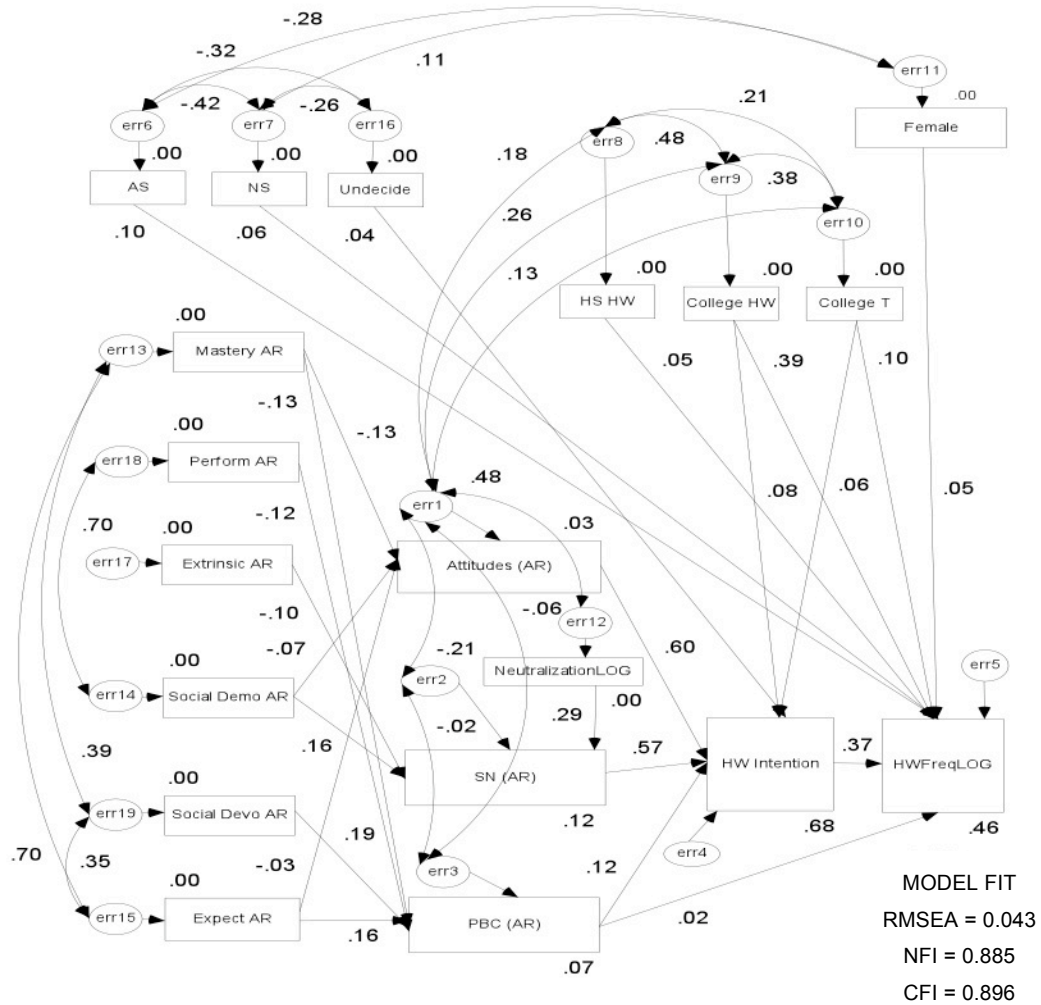


Figure 13. Initial proposed structural model of homework cheating frequency.

Table 44

SEM Parameter Estimates for the Proposed Homework Cheating Model

Relationship	Estimate	S.E.	C.R.	p
Attitudes AR ← Mastery AR	-0.128	0.031	-4.099	0.000***
Subjective norms AR ← Extrinsic AR	-0.104	0.026	-3.958	0.000***
Subjective norms AR ← Social demo. AR	0.155	0.027	5.807	0.000***
Attitudes AR ← Expectation AR	-0.028	0.031	-0.904	0.366

Table 44 Continued

	Relationship	Estimate	S.E.	C.R.	p
Attitudes AR	← Social demo. AR	-0.062	0.023	-2.760	0.006**
Perceived behavioral control AR	← Performance AR	-0.120	0.028	-4.243	0.000***
Perceived behavioral control AR	← Social devo. AR	0.190	0.031	6.198	0.000***
Perceived behavioral control AR	← Mastery AR	-0.131	0.041	-3.185	0.001**
Perceived behavioral control AR	← Expectation AR	0.162	0.040	4.054	0.000***
Subjective norms AR	← Neutralization LOG	0.644	0.059	10.960	0.000***
Intention	← Undecided	0.106	0.042	2.541	0.011*
Intention	← College HW cheater	0.151	0.035	4.346	0.000***
Intention	← College test cheater	0.157	0.045	3.478	0.000***
Intention	← Attitudes AR	0.623	0.017	36.114	0.000***
Intention	← Subjective norms AR	0.564	0.016	35.295	0.000***
Intention	← Perceived behavioral control AR	0.116	0.016	7.292	0.000***
Frequency LOG	← Applied sciences	0.085	0.019	4.412	0.000***
Frequency LOG	← Natural sciences	0.055	0.020	2.697	0.007**
Frequency LOG	← High school HW cheater	0.047	0.021	2.245	0.025*
Frequency LOG	← College HW cheater	0.313	0.019	16.138	0.000***
Frequency LOG	← College test cheater	0.111	0.023	4.808	0.000***
Frequency LOG	← Female	0.037	0.017	2.251	0.024*
Frequency LOG	← Intention	0.151	0.008	17.906	0.000***
Frequency LOG	← Perceived behavioral control AR	0.007	0.008	0.879	0.379
err14	← err18	0.702	0.032	21.947	0.000***
err13	← err19	0.396	0.028	13.970	0.000***
err15	← err19	0.350	0.027	12.724	0.000***
err13	← err15	0.703	0.031	22.805	0.000***
err1	← err12	0.203	0.013	15.828	0.000***
err9	← err10	0.071	0.005	12.921	0.000***
err1	← err10	0.046	0.009	5.376	0.000***
err9	← err1	0.120	0.012	10.251	0.000***
err1	← err2	-0.183	0.021	-8.556	0.000***
err3	← err2	-0.014	0.026	-0.553	0.580

Table 44 Continued

	Relationship	Estimate	S.E.	C.R.	p
err1	← err3	-0.052	0.022	-2.386	0.017*
err8	← err9	0.103	0.007	15.771	0.000***
err8	← err10	0.035	0.005	7.682	0.000***
err6	← err16	-0.057	0.003	-21.067	0.000***
err11	← err6	-0.066	0.003	-18.966	0.000***
err11	← err7	0.024	0.003	7.632	0.000***
err7	← err16	-0.043	0.002	-17.103	0.000***
err6	← err7	-0.087	0.003	-25.965	0.000***
err8	← err1	0.071	0.010	7.153	0.000***

Note. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001.

Table 44 shows that all of the parameters predicting homework cheating intention and frequency were in the expected direction and were significantly different from zero ( $p < 0.05$ ) with the exception of the relationship between perceived behavioral control and homework cheating frequency ( $p > 0.05$ ).

The fit of the model containing only the theory of planned behavior variables (attitudes, subjective norms, perceived behavioral control, intention, and frequency) was also explored for the homework context. This model is depicted in Figure 14.

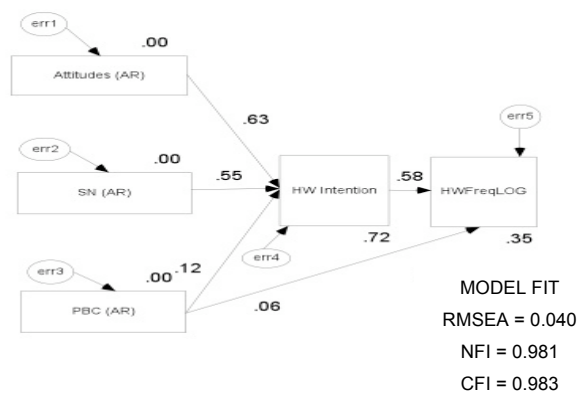


Figure 14. Structural model of theory of planned behavior variables predicting homework cheating frequency.

Results showed that the theory of planned behavior model predicting homework cheating frequency had a RMSEA of 0.040 and a NFI and CFI of 0.981 and 0.983, respectively. Together, these indices indicate that the model provides a good fit for the observed data. Parameter estimates were examined in order to determine the extent to which the variables in the theory of planned behavior model were significantly related to each other. These estimates are presented in Table 45.

Table 45

*SEM Parameter Estimates for the Proposed Theory of Planned Behavior Homework Cheating Model*

	Relationship	Estimate	S.E.	C.R.	p
Intention	← Attitudes AR	0.669	0.016	41.670	0.000***
Intention	← Subjective norms AR	0.585	0.016	36.473	0.000***
Intention	← Perceived behavioral control AR	0.124	0.016	7.663	0.000***
Frequency LOG	← Intention AR	0.230	0.009	26.250	0.000***
Frequency LOG	← Perceived behavioral control AR	0.025	0.010	2.604	0.009**

Table 45 shows all of the parameters predicting homework cheating frequency and intention were in the expected direction and were significantly different from zero ( $p < 0.05$ ). While the full model did not provide an ideal fit, the reduced model including only the theory of planned behavior variables provided a good model-to-data fit.

*Test Model*

Based on the results of the first three research questions, the test model was initially specified as depicted in Figure 15.

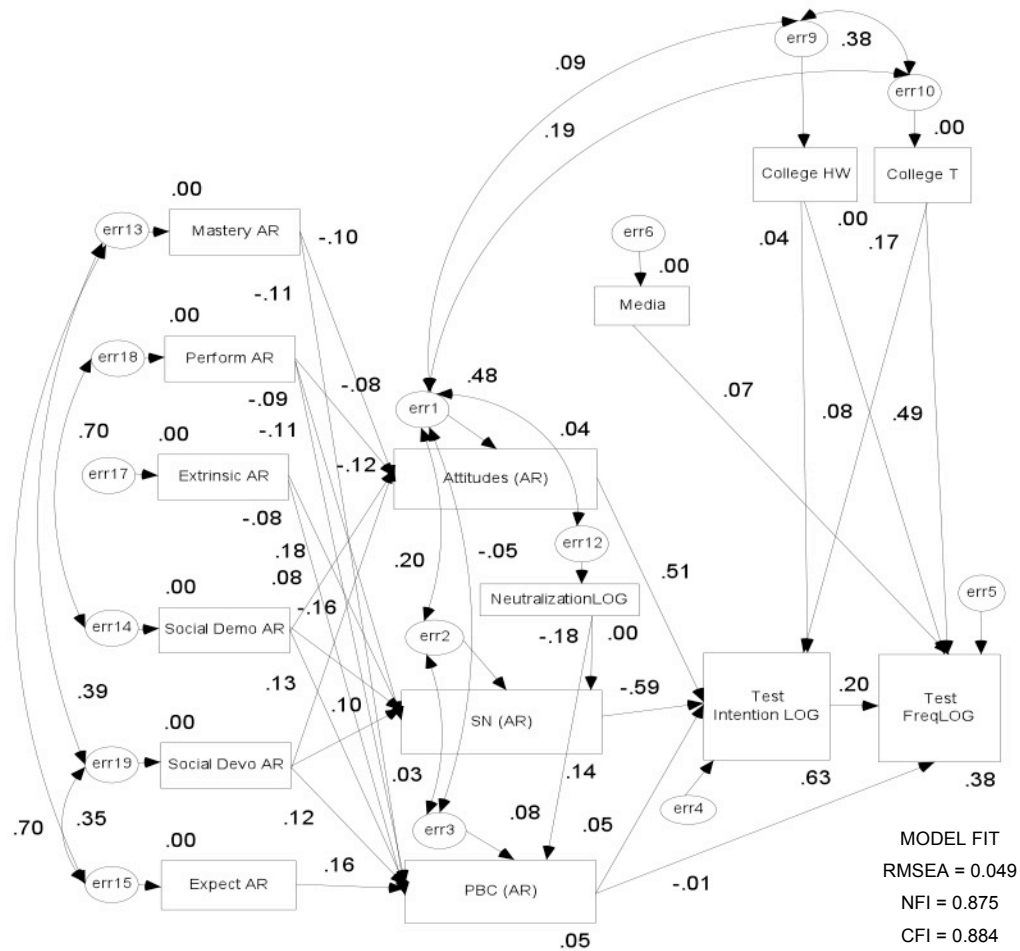


Figure 15. Initial proposed structural model of test cheating frequency.

Results showed that the initial homework cheating frequency model had a RMSEA of 0.049 and a NFI and CFI of 0.875 and 0.884, respectively. Together, these indices indicate that the model provides an adequate but not ideal fit for the observed data. Parameter estimates were examined in order to determine the extent to which the variables in the proposed model were significantly related to each other. The parameter estimates from this analysis are presented in Table 46.

Table 46

*SEM Parameter Estimates for the Proposed Homework Cheating Model*

	Relationship	Estimate	S.E.	C.R.	p
Subjective norms AR	← Neutralization LOG	-0.388	0.058	-6.742	0.000***
Attitudes AR	← Mastery AR	-0.092	0.024	-3.873	0.000***
Attitudes AR	← Performance AR	-0.076	0.032	-2.362	0.018*
Attitudes AR	← Social demo. AR	0.079	0.032	2.450	0.014*
Attitudes AR	← Social dev. AR	-0.113	0.024	-4.636	0.000***
Subjective norms AR	← Performance AR	-0.107	0.037	-2.925	0.003**
Subjective norms AR	← Extrinsic AR	0.178	0.025	7.081	0.000***
Subjective norms AR	← Social demo. AR	-0.165	0.037	-4.512	0.000***
Subjective norms AR	← Social dev. AR	0.099	0.025	3.887	0.000***
Perceived behavioral control AR	← Mastery AR	-0.110	0.040	-2.789	0.005**
Perceived behavioral control AR	← Performance AR	-0.094	0.039	-2.416	0.016*
Perceived behavioral control AR	← Extrinsic AR	-0.077	0.027	-2.823	0.005**
Perceived behavioral control AR	← Social demo. AR	0.126	0.039	3.252	0.001**
Perceived behavioral control AR	← Social dev. AR	0.124	0.030	4.177	0.000***
Perceived behavioral control AR	← Expectation AR	0.158	0.038	4.136	0.000***
Perceived behavioral control AR	← Neutralization LOG	0.179	0.061	2.939	0.003**
Intention LOG	← Attitudes AR	0.205	0.007	30.424	0.000***
Intention LOG	← Subjective norms AR	-0.226	0.006	-35.437	0.000***
Intention LOG	← Perceived behavioral control AR	0.019	0.006	2.917	0.004**
Intention LOG	← College HW cheater	0.032	0.014	2.247	0.025*
Intention LOG	← College test cheater	0.173	0.019	9.136	0.000***
Frequency LOG	← Intention LOG	0.139	0.016	8.917	0.000***
Frequency LOG	← Perceived behavioral control AR	-0.001	0.006	-0.228	0.820
Frequency LOG	← Student media	0.094	0.030	3.106	0.002**
Frequency LOG	← College HW cheater	0.041	0.012	3.348	0.000***
Frequency LOG	← College test cheater	0.341	0.017	20.221	0.000***

Table 46 Continued

	Relationship	Estimate	S.E.	C.R.	p
err14	← err18	0.701	0.032	21.944	0.000***
err13	← err19	0.395	0.028	13.974	0.000***
err15	← err19	0.347	0.027	12.652	0.000***
err13	← err15	0.702	0.031	22.798	0.000***
err1	← err12	0.206	0.013	15.950	0.000***
err9	← err10	0.071	0.005	12.943	0.000***
err1	← err10	0.067	0.009	7.701	0.000***
err9	← err1	0.045	0.011	3.933	0.000***
err1	← err2	0.178	0.021	8.426	0.000***
err3	← err2	0.028	0.025	1.147	0.251
err1	← err3	-0.046	0.022	-2.120	0.034*

Note. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001.

Table 46 shows that all of the parameters predicting homework cheating intention and frequency were in the expected direction and were significantly different from zero ( $p < 0.05$ ) with the exception of the relationship between subjective norms (estimate = -0.226) and intention and the relationship between perceived behavioral control and homework cheating frequency ( $p > 0.05$ ).

The fit of the model containing only the theory of planned behavior variables (attitudes, subjective norms, perceived behavioral control, intention, and frequency) was also explored for the test context. This model is depicted in Figure 16.

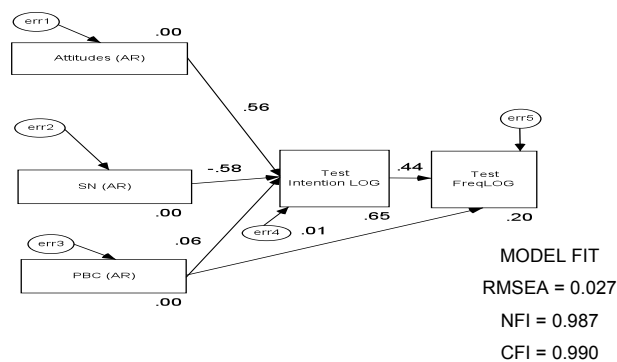


Figure 16. Structural model of theory of planned behavior variables predicting test cheating frequency.

Results showed that the theory of planned behavior model predicting test cheating frequency had a RMSEA of 0.027 and a NFI and CFI of 0.987 and 0.990, respectively. Together, these indices indicate that the model provides a good fit for the observed data. Parameter estimates were examined in order to determine the extent to which the variables in the theory of planned behavior model were significantly related to each other. These estimates are presented in Table 47.

Table 47

*SEM Parameter Estimates for the Proposed Theory of Planned Behavior Homework Cheating Model*

	Relationship	Estimate	S.E.	C.R.	P
Intention LOG	← Attitudes AR	0.231	0.007	35.330	0.000***
Intention LOG	← Subjective norms AR	-0.236	0.007	-36.163	0.000***
Intention LOG	← Perceived behavioral control AR	0.023	0.007	3.498	0.000***
Frequency LOG	← Intention LOG	0.291	0.016	17.929	0.000***
Frequency LOG	← Perceived behavioral control AR	0.003	0.007	0.410	0.682

Table 47 shows all of the parameters predicting test cheating intention and frequency were in the expected direction and were significantly different from zero ( $p < 0.05$ ) with the exception of the relationship between subjective norms and intention and the relationship between perceived behavioral control and frequency. Similar to the homework context, the full model did not provide an ideal fit however, the reduced model, which included only the theory of planned behavior variables, provided a good model-to-data fit.

#### Limitations

It is important to note that this study suffered from several limitations. First, cheating is a sensitive topic. Given that students were asked to self-report cheating in a specific course in which they were currently enrolled, while only being assured confidentially as opposed to



anonymity, students may have been more likely to underreport both their intentions to cheat and their actual cheating behavior out of a fear that answering survey questions honestly could result in negative repercussions. In order to reduce the effects of this limitation, every effort was made to reassure students that they could and should answer survey questions honestly. For example, while anonymity could not be promised due to requirements associated with tracking survey responses, the confidential as opposed to anonymous nature of the survey instrument was not made obvious to the respondents. Students were only asked to provide general demographic information as opposed to specific identifying information like their name and/or student identification number. Additionally, when students were asked to provide information about their most challenging course they were specifically instructed to provide a general descriptive name for the course (i.e., Physics, Poetry, Intro. Biology, etc.) as opposed to a specific course name and number (i.e., PHY200, ENG120, BIO101, etc.). These strategies were used in an effort to reassure students that the primary goal of the study was to examine cheating generally as opposed to identifying specific incidents of cheating in specific courses by specific students.

Students' unwillingness to respond honestly to survey questions due to the sensitive nature of the survey topic may have led to conservative estimates of actual cheating behavior (Finn & Frone, 2004). This is a continual issue that arises in the academic cheating literature. Future studies should consider ways to reduce the perceived risks associated with answering questions about cheating honestly and/or should include a measure to explore the extent to which questions are answered dishonestly (i.e., a scale for measuring socially desirable responding) so that the effects of this limitation can be assessed and/or controlled for.

A second limitation was related to the online nature of the survey instrument. Because the survey instrument was administered via the Internet, students were able to complete the survey on their own time and at their own pace. Students were also allowed to begin the survey and come back to complete it at a later date. While every effort was made to remind students of the completion deadline, many surveys were never submitted or, if submitted, were only partially completed. This had serious implications for response rate and

reduced the amount of useable data. Future studies should consider using additional strategies to ensure survey completion (i.e., reminding students as they are leaving the survey that they failed to complete certain parts of the survey and providing them with a mechanism for going back to complete those parts). Future studies could also consider asking students to complete the survey in-person (i.e., in class), which would likely yield a higher response rate.

A third limitation was due to the timing of survey administration. The survey used in this study was administered during the final weeks of the spring 2008 semester. This may not have been an ideal time because many students were working to complete their final assignments and prepare for their final exams and, as a result, may not have had the time or energy to complete the survey. Alternatively, many students may have viewed the survey as a welcome distraction during the busy and often stressful end of the semester period. While it was impossible to assess the effects of survey timing on survey response in the present study future studies should consider including mechanisms in their survey design to explore the extent to which the timing of survey administration, particularly as it relates to the academic calendar, impacts survey response.

The timing of survey administration may have also skewed some of the survey data. Specifically, actual self-reported cheating would have likely been higher and intention to cheat would have likely been lower due to the fact that the students had already completed most of their tests and assignments in the course of interest at the time the survey was administered. In an effort to address the problem with the intention measure, the survey questions were worded in such a way that intention reflected students' intention to cheat in their most challenging course during the spring of 2008 or in any similar course in the future. This method may not have been the best strategy for measuring intention. Future studies should consider using longitudinal data to better assess the relationship between intention and behavior.

A fourth limitation is related to the generalizability of the survey results. The generalizability of the study is limited because of its reliance on data collected from a restricted population (first-year college students) at a single institution (a large public land

grant institution). Therefore, generalizations to other populations or institutional types should be made with caution. The decision to administer the present study a single institution using a restricted population was very intentional due to the fact that this was the first time that the model used this study was being empirically tested. Now that the model has been empirically tested and the reliability of the measures used in this study have been confirmed, it would be appropriate for future studies to replicate this study using larger and more diverse populations. Specifically it would be useful to see how the model performs across grade levels (i.e., high school students, college students, and graduate and professional students, etc.), institutional types (i.e., public, private, religious affiliated, community colleges, etc.), and institutional approaches to academic integrity (i.e., full honor codes, modified honor codes, or no honor codes).

Fifth, due to limitations in response rate and the range of responses provided, it was difficult to make meaningful statistical comparisons across all groups. Group differences were not assessed for college, high school type, and academic achievement. Future studies should attempt to explore if and how these factors are related to students' motivations, intentions, and decisions to cheat.

#### Summary

This chapter presented the results of the data analysis used to answer the study's research questions. Results showed that the respondent group was demographically representative of the target population and included 1,340 students which yielded a response rate of 30.22%. Respondents were assessed on two criterion variables of interest: self-reported homework cheating frequency and self-reported test cheating frequency in their most challenging course during the spring semester of 2008.

Results showed that the respondent group consisted primarily of non-cheaters. Of those that cheated, most reported cheating on homework as opposed to cheating test or cheating on both homework and tests. When responses were compared across subgroups, results showed that men were more likely than women to cheat on homework and tests, students studying in the applied and natural sciences were more likely to cheat on homework

than students studying in other academic disciplines, and students who participated in extracurricular activities were more likely than students who did not participate in extracurricular activities to cheat on both homework and tests. The relationship between past high school cheating and first year college cheating was also assessed. Results showed that respondents who cheated in high school on homework or on tests were more likely to continue the pattern of cheating during their first year of college.

The next phase of data analysis focused on exploring the proposed model of academic cheating. Reliability analysis confirmed that all of the variables in the proposed model were reliable measures. Factor analysis was used to reduce the total number of variables in the proposed model from 23 to 15. In an effort to answer the study's four research questions, the reduced factor model was explored using multiple and hierarchical regression analyses and structural equation modeling.

For the first research question, results showed that goals and expectations were small but significant predictors of respondents' attitudes toward cheating on homework and tests. For the second research question, results showed that, prior to controlling for demographics and past cheating behavior, all of the cost variables were significant positive predictors of intention to cheat and actual cheating in both the homework and test contexts with the exception of perceived subjective norms in the test context which was found to be a significant negative predictor of both intention to cheat and actual cheating behavior. In total, the cost variables accounted for 71.9% and 30.4% of the variance in homework cheating intention and frequency, respectively, and 65.4% and 16.6% of the variance in test cheating intention and frequency, respectively. After controlling for demographics and past cheating behavior, the cost variables predicted 49.4% and 7.7% variance in homework cheating intention and frequency, respectively, and 7.7% and 2.8% of the variance in test cheating frequency and intention, respectively.

For the third research question, the moderating and mediating effects of neutralization and intention were explored. Results showed that neutralization and intention indirectly affected relationships between variables in the proposed model. Finally, the fourth research

question explored the overall data-to-model fit. Results showed that the data provided an adequate fit with the proposed model; however, the data-to-model fit was improved when the proposed model was reduced to include only the core theory of planned behavior variables as predictors of cheating intention and frequency. The next chapter will discuss these results and their implications for theory and practice.

## CHAPTER 5: DISCUSSION AND RECOMMENDATIONS

The final chapter of this dissertation begins with a restatement of the research problem and a review of the proposed model and research questions. The remaining sections are devoted to summarizing and discussing the research findings. At the conclusion of this chapter recommendations for practice and future research are provided.

### Restatement of the Problem

As discussed in Chapters 1 and 2, academic cheating is a serious problem that affects institutions at all educational levels (Ecegovac & Richardson, 2004; Haines et al., 1986; Jensen, Arnett, Feldman, & Cauffman, 2002; Wajda-Johnston, Handal, Brawer, & Fabricatore, 2001; Whitley & Keith-Spiegel, 2002). In an effort to understand and address this problem, researchers have spent a considerable amount of time and resources exploring possible predictors of student cheating, specifically at the college level (Whitley, 1998). However, much of this research has been descriptive in nature and lacks an overarching, theoretically-based, conceptual framework. Without a conceptual framework, it is difficult to identify and make meaning of the many factors that influence students' decisions to cheat. Building on the work of Murdock and Anderman (2006) and Harding et al., (2007), the present study aimed to fill this gap in the existing cheating literature by testing a proposed model of the motivational predictors of academic cheating using a population of first-year college students.

### Review of the Proposed Model

The proposed model (see figure 17) was derived from expectancy-value theory and included three categories of predictors: goals, expectations, and costs. Goals are the achievement and social motivations that drive students' attitudes and behaviors within an academic setting. Expectations are the beliefs that students' have in their ability to achieve their academic goals. Together, goals and expectations were proposed as possible predictors of students' perceptions of the costs associated with cheating. In the proposed model, costs were determined by students' attitudes toward cheating, subjective norms associated with

cheating, perceived behavioral control of cheating, and moral obligation not to cheat. The model suggests that when the benefits associated with cheating are perceived to outweigh the costs, students will be more likely to form an intention to cheat and, in turn, be more likely to cheat.

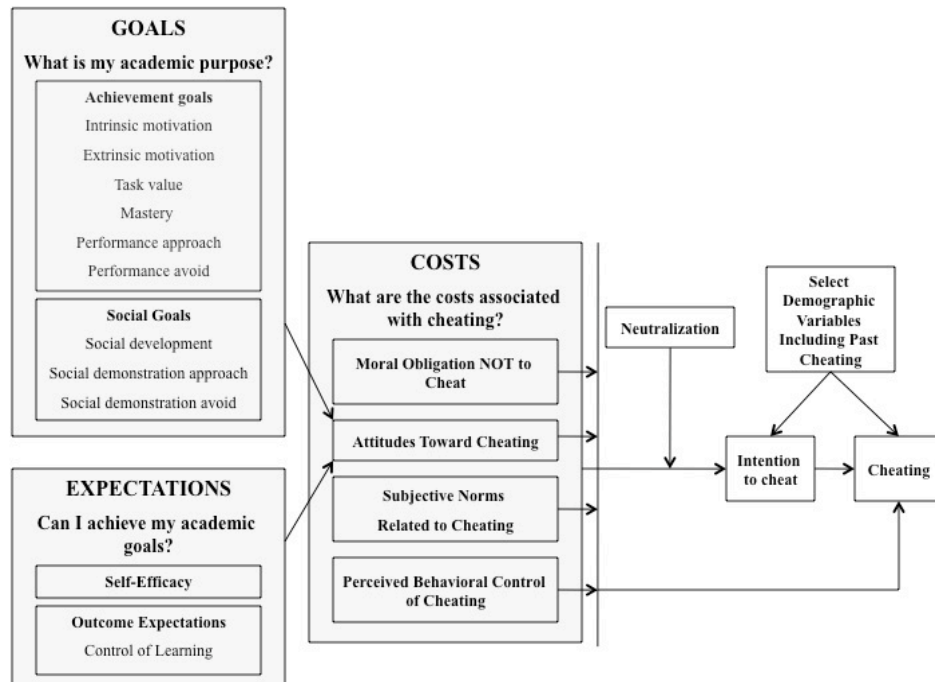


Figure 17. Proposed model of academic cheating.

### Review of Research Questions

The following research questions were used to explore various aspects of the proposed model:

1. To what extent do goals and expectations predict students' attitudes toward cheating?
2. To what extent do students' perceptions of costs predict their intentions to cheat and actual cheating before and after controlling for the effects of select demographic variables and past cheating behavior?

3. To what extent do students' neutralizing attitudes moderate and students' intentions to cheat mediate the relationships between variables in the proposed model?
4. To what extent does the proposed model fit the observed data?

## Discussion of Findings

### *Prevalence*

#### *Summary of Findings*

A majority of the respondents (58.4%) reported no cheating in their most challenging course while 27.7% reported cheating only on homework, 2.3% reported cheating only on tests, and 11.6% reported cheating on both homework and tests.

#### *Interpretation and Discussion of Findings*

Overall, the prevalence of cheating in this study was low compared to rates found in previous studies. In a meta-analysis of 107 studies of college student cheating, Whitley (1998) found that prevalence rates for homework cheating ranged from 3% to 83% with a mean of 40.9%, test cheating ranged from 4% to 82% with a mean of 43.1%, and total cheating ranged from 9% to 95% with a mean of 70.4%. While the prevalence rates for this study were lower than the average rates found in previous studies, they were all close to or within the range of rates identified by Whitley.

Differences in the prevalence rates reported in this study and in previous studies are likely due to differences in the methods used to measure and report cheating frequency. For example, Harding et al. (2007) found that 54.5% and 28.7% of students cheated on homework and tests, respectively, whereas the present study found that only 27.7% and 2.3% of students reported cheating on homework and tests. One notable difference between the two studies is that Harding and his colleagues asked respondents to report their total cheating frequency for all of their classes during the previous academic term, whereas the present study asked respondents to report their cheating frequency during the current academic term and in a specific course (i.e., their most challenging course). Had students been asked to report their cheating frequency in all of their courses during the spring of 2008, the observed prevalence rates probably would have been higher. In addition, despite the fact that students



were assured confidentiality, and despite the inherent subject-matter sensitivity in any survey about cheating, respondents' may have been even more hesitant to report cheating in this survey, for a specific course in which they were currently enrolled, due to a heightened fear of negative repercussions if their survey answers were revealed. For these reasons, the estimates of cheating prevalence found in this study are likely to be conservative.

Another possible explanation for the lower observed prevalence rates could be due to the fact that the institution of interest employs a modified honor code. While the effects of the institution's honor code were not directly assessed in this study, it is well established in the cheating literature that institutions with honor codes, particularly those with modified honor codes, experience lower rates of academic cheating than their non-honor code counterparts (McCabe, 2005a; McCabe & Pavela, 2000; McCabe, Trevino & Butterfield, 2002). Modified honor codes are different from traditional honor codes in that students play a major role in promoting and supporting standards of integrity for the institution (McCabe, McCabe & Pavela). When both faculty and students are involved in promoting integrity in the classroom, a culture is created which deters dishonesty.

When specific types of cheating behavior were examined, results showed that cheating on homework was much more common than cheating on tests (27.7% vs 2.3%, respectively). These findings support the work of previous researchers who have also found that cheating is more common on homework than tests (Haines et al., 1986; Harding et al., 2007; Vowell & Chen, 2004). One possible explanation for this finding is that students view cheating on homework and tests differently. Results showed that, on average, when compared to homework cheating, students held less favorable attitudes toward test cheating, held lower perceptions of subjective norms that support test cheating, and perceived that they had less control over whether they could successfully cheat on tests and get away with it.

### *Demographics*

#### *Summary of Findings*

Results showed that respondents differed significantly across subgroups of the criterion variables (non-cheaters, homework cheaters, test cheaters, and both homework and

test cheaters) for the following demographic characteristics: gender, college group, extracurricular participation, and past cheating behavior.

### *Interpretation and Discussion of Findings*

*Gender.* Results showed that males (14.1%) were more likely than females (8.8%) to be categorized as what some may consider to be the most egregious type of cheater: one who cheats on both homework and tests. This finding was not surprising. Of the previous studies that have examined and found differences in the frequency of cheating between males and females, most have found that males cheat significantly more than females (Aiken, 1991; Buckley, Wiese, & Harvey, 1998b; Michaels & Miethe, 1989; Newhouse, 1982; Rettinger et al., 2004; Ward, 1986). A few studies have found contradictory results, which indicate that females cheat significantly more than males (Graham et al., 1994; Leming, 1980). Other studies have found no differences between males and females (Haines et al., 1986; Nowell & Laufer, 1997). One possible explanation for the differences between studies is that there are distinct differences in how researchers quantify and measure cheating behavior. For example, each of the studies cited in the previous paragraph differed either in the number of survey items used to measure cheating (Aiken used 2, Michaels and Miethe used 3, while Graham et al. and Rettinger et al. used 17) or in the technique used to measure cheating (Leming used lab experiments, Newhouse used an experiment, Rettinger et al. used vignettes, and Ward used self-graded tests). This vast variation in methods makes it especially difficult to compare and make meaning of differences across studies.

When findings differ across previous studies, it is useful to look within the present study for an explanation of observed differences. In the present study, differences between males and females can be explained by fact that males differed significantly from females on all of the cost variables (attitudes, subjective norms, and perceived behavioral control). Males reported significantly higher scores on each of these variables when compared to their female counterparts. Higher scores on cost variables, indicate a greater perceived benefit associated with cheating, and in turn are associated with an increased likelihood of cheating (Harding et al., 2007). Also, effects of these variables were likely amplified due to the fact that, unlike

most large state institutions, the institution of interest enrolled more men than women. Having more men in the population who hold more favorable attitudes toward cheating would likely lead to a stronger perception of peer norms that support cheating. This may, in turn, lead to an increased cheating, particularly among male students.

*Academic discipline.* Results showed that students from applied science and natural science disciplines were more likely to cheat on homework than students from other academic disciplines. For this study, applied science majors included students enrolled in the colleges of Design, Engineering, and Textiles. Natural science majors included students enrolled in the colleges of Agriculture and Life Sciences, Natural Resources, and Math Sciences. Students majoring in the social sciences (i.e., those who were enrolled in the colleges of Education and Humanities and Social Sciences) were found to be more likely than students in all other academic disciplines to report not cheating on either homework or tests. These findings support the work of Harding and his colleagues (2007), who found that engineering students reported higher cheating frequencies for homework when compared to humanities students.

One might initially conclude that students majoring in applied science and natural science fields may have more opportunities to cheat than students majoring in the social sciences due to the number of homework assignments that they are given. In the present study, opportunity to cheat was controlled for by using cheating frequency, as opposed to the number of cheating occurrences, as the main criterion variable. Respondents were asked to report both frequency and number. The number measure, however, was only used as confirmation of the validity of the frequency items.

After controlling for differences in opportunity to cheat, differences in cheating frequency may be explained by differences in the nature of assignments given across disciplines. For example, in the applied and natural sciences, students are typically given homework assignments that are more conducive to cheating (e.g., problem sets, lab reports, etc.). In these disciplines, homework questions often have clear right or wrong answers. In contrast, students in the social sciences are typically given homework assignments that are

less conducive to cheating (e.g., lesson plans, reflection papers, etc.) because the assignments may not have right or wrong answers. As a result of these differences, students in the social sciences may view cheating as a less useful strategy than students in the applied or natural sciences and, as a result, may cheat less frequently.

Due to sample limitations, statistical comparisons could not be made between business majors and other academic disciplines. However, descriptive analysis showed that a majority of the business student respondents (65.9%) were classified as non-cheaters. In fact, business students had the lowest prevalence rates of cheating when compared to students in other academic disciplines. This finding was initially surprising because business is often cited as one of the majors with the highest rates of academic cheating (Baird, 1980; McCabe, 1997; McCabe & Trevino, 1995; Nowell & Laufer, 1997). These claims however have been explored and challenged in recent years by researchers like Klein, Levenburg, McKendall, and Mothersell (2007). As was the case in the present study, Klein et al. explored cheating at a large state institution and found that business students were not any more likely than students in other academic disciplines to report cheating.

Klein et al. (2007) offered one possible explanation for this finding suggesting that business students are more liberal in their classification of what constitutes cheating than students in other academic disciplines, especially when the behavior in question involves some element of collaboration. In the present study, each student defined cheating on his or her own and specific types of cheating (collaborative vs. not collaborative) were not assessed therefore, it was impossible to draw conclusions about the extent to which the students' definitions of cheating influenced their self-reported prevalence rates. Future studies should examine this relationship in more detail.

Another possible explanation for the finding could be that students in the business program at the institution of interest actually cheated less than students in other academic disciplines. This may be due in part to the emphasis that the business program at the institution of interest places on ethics. Specifically, all undergraduate business majors at the institution of interest are required to take at least one course in ethics whereas students in

other majors are not required to do so. Again, due to the limited scope of the present study, it was impossible to draw conclusions about the relationship between required ethics courses and/or training and the prevalence of self-reported cheating among undergraduate college students. However, this link would be interesting and useful to explore in future studies.

*Extracurricular activities.* Results showed that students who participated in extracurricular activities while in college were more likely to cheat on both homework and tests than students who did not participate in extracurricular activities (18.9% vs. 9.1%, respectively). The extracurricular activities that were examined in this study included participation in student government, student judicial board, student media publications, ROTC, intercollegiate athletics, and greek life. Of these, students who participated in greek life and student media publications were more likely to cheat on both homework and tests than students who did not participate in these activities.

The finding that students who participate in greek life were more likely to cheat on both homework and tests was not surprising. The link between greek membership and cheating has been well documented in the cheating literature (Eberhardt et al., 2003; McCabe & Bowers, 1996; Premeaux, 2005; Whitley, 1998). In their multi-campus investigation of student cheating, McCabe and Bowers found that greek students were more likely to cheat than their non-greek counterparts. They suggested that one possible explanation for this finding was that greek students perceived that their peers held more lenient views of cheating, viewing cheating as more socially acceptable than their non-greek counterparts.

In her study of student cheating, Premeaux (2005) distinguished between general and residential members of greek organizations and found that only the latter was associated with increased levels of cheating. She suggested that one possible explanation for this finding was that residential members of greek organizations have more social time commitments than non-residential members and, as a result, may be more likely to suffer from a lack of preparation and, in turn, experience a greater need to cheat. While the present study did not assess whether respondents were residential or non-residential members of greek organizations, it is likely that many (if not all) were non-residential due to their freshman

class standing. However, like residential members of greek organizations, freshmen who are pledging greek organizations also have significant social time commitments because their level of involvement in the house's activities is often considered to be an indication of their interest in and commitment to the organization. Therefore, the same rationale used to explain high levels of cheating among residential greeks can also be applied to freshmen pledges of greek organizations.

Unlike the link between greek membership and cheating, the link between participation in student media publications and cheating is a new contribution of this study. No articles, to-date, have been found which have examined this relationship directly. However, one only needs to look to the media for evidence that cheating, specifically plagiarism, is a serious issue among journalists (Shapiro, 2006). Robertson (2005) suggests that the problem may be cultural. She argues that the demanding, fast-paced, and deadline driven media culture incentivizes "faster, quicker, cheaper [work] ...and encourages cutting corners" (p. 37) which, in turn, encourages cheating and other unethical behaviors. The present study found that 50% of the students who participated in student media publications reported cheating on homework, tests, or both homework and tests. This finding is of particular interest and concern because prior studies have shown that college cheating is positively associated with cheating in the work place (Lovett-Hooper, Komarraju, Weston, & Dollinger, 2007; Nonis & Swift, 2001). Therefore, one might be concerned that students who participate in student media publications may develop the habit of cheating in college and then take that habit when they enter the field of media or journalism.

Another possible (general) explanation for the finding that students who participate in extracurricular activities are more likely to cheat is that these students may have more cheating resources (i.e., closer associations with students with whom they share classes or professors, access to exam study files, study groups, etc.) than students who do not participate in extracurricular activities. This is especially true for students with other commitments or jobs that take them away from university life. For example, students may choose not to participate in extracurricular activities because their time is taken up by part-

time or full-time jobs. Previous research has shown that cheating is more common among students who work fewer hours and as a result have more time for outside activities (Haines et al., 1986; Whitley, 1998).

*Past cheating.* Past cheating was shown to have a strong association with cheating frequency. Past homework cheating was associated with future cheating on homework and on both homework and tests and past test cheating was associated with future cheating on homework, tests, and both homework and tests. These findings support the work of previous authors who have found that past cheating is an important predictor of future cheating (Harding et al., 2007) and various other unethical behaviors (Lovett-Hooper et al., 2007; Nonis & Swift, 2001).

One possible explanation for these findings is that cheating can be habit-forming. Students who cheat may feel good when they receive higher marks as a result of their cheating. The next time they are presented with the opportunity to cheat, they may recall the good feelings that they had and the ease with which they were able to achieve those good feelings and, as a result, choose to cheat again. Similarly, students who cheat, and get away with it, may build up confidence in their ability to cheat successfully and may be more willing to take a similar risk in the future. Several authors have explored and found support for the hypothesis that cheating is a habitual behavior (Ashworth, 1999; Clarke & Lancaster, 2006; Kidwell, Wozniak, & Laurel, 2003; Mixon, 1996; Mixon & Mixon, 1996).

Another possible explanation is that students cheat out of necessity because they are unable to understand or learn material. The student may have an inherent learning difficulty (i.e., ADD, or dyslexia) that causes them to struggle with each academic assignment. Alternatively, the student simply may not have the requisite foundational knowledge needed to be successful. For example, if a student successfully cheats his or her way through an introductory Spanish course and fails to learn the material, he or she will likely be much further behind in the next course (i.e., Spanish 2) and, as a result, may feel a need to keep cheating in order to continue getting by.

### *Summary*

This study found that select demographic variables (being male, majoring in applied or natural science fields, and participating in greek organizations or student media publications) are associated with increased cheating frequency. Past cheating was also found to have a strong positive association with increased cheating frequency. This information can be used to identify students who may be most at risk for cheating on homework and tests. It does not, however, provide information about what motivates these students to cheat. In an effort to understand how motivational factors influence students' decisions to cheat, this study proposed and tested a conceptual model of the motivational predictors of student cheating. The results of the four research questions that were used to test the model are discussed next.

#### *Research Question 1: Goals and Expectations as Predictors of Attitudes Toward Cheating*

The first research question explored the extent to which goals and expectations predicted students' attitudes toward cheating on homework and tests. Both achievement goals and social goals were assessed. Achievement goal variables included mastery goal orientation (a composite of intrinsic motivation, mastery, and task value items), performance goal orientation (a composite of performance approach and performance avoid items), and extrinsic motivation. Social goal variables included social development goals and social demonstration goals (a composite of social demonstration approach and social demonstration avoid items). The expectation variable was constructed using a composite of the self-efficacy and control of learning items. Figure 18 depicts the portion of the proposed model that was examined and will be discussed in this section.





Figure 18. Reduced-factor model of goals and expectations as predictors of attitudes toward cheating.

### Summary of Findings

*Homework attitudes.* Regression analysis showed that goals and expectations accounted for 7.5% of the variance in respondents' attitudes toward cheating on homework. Mastery goals, social demonstration goals, and expectations were significant predictors in the regression equation ( $p < 0.05$ ). Results showed that increases in mastery goals and expectations would lead to less favorable attitudes toward cheating on homework, while increases in social demonstration goals would lead to more favorable attitudes. Of the three significant predictors, mastery goals accounted for the largest percentage of the variance in respondents' attitudes toward homework cheating.

*Test attitudes.* Regression analysis showed that goals and expectations accounted for 9.5% of the variance in respondents' attitudes toward cheating on tests. Mastery goals, performance goals, social demonstration goals, and social development goals were significant predictors in the regression equation ( $p < 0.05$ ). Results showed that increases in mastery goals, performance goals, and social development goals would lead to less favorable attitudes toward cheating on tests, while increases in social demonstration goals would lead

to more favorable attitudes toward test cheating. Of the four significant predictors, mastery goals accounted for the largest percentage of the variance in respondents' attitudes toward test cheating.

### *Interpretation and Discussion of Findings*

The findings suggest that goals and expectations predict a small but significant amount of the observed variance in respondents' attitudes toward cheating on homework and tests, with goals accounting for more of the variance than expectations. When goals and expectations were examined together, mastery goals and social demonstration approach goals emerged as the only consistent significant predictors of respondents' attitudes toward cheating for both the homework and tests cheating contexts. The effects of the other predictor variables varied across contexts.

*Achievement goals.* Mastery goals were found to be a significant negative predictor of students' attitudes toward cheating on both homework and tests. Results showed that students who are mastery-oriented are less likely to hold favorable attitudes toward cheating. Students who are mastery-oriented engage in academic tasks in an effort to learn or master the material. Cheating does not help students learn or master academic material; therefore, these students would not view cheating as a viable strategy for achieving their academic goals (Murdock et al., 2001).

Performance goals were found to be a significant predictor of students' attitudes toward cheating in the test context only. Results showed that students who were performance-oriented were less likely to hold favorable attitudes toward cheating. This finding was surprising because students who are motivated by performance goals are typically driven by the desire to earn higher grades or achieve external awards and cheating is often viewed as a viable strategy for achieving that goal (Murdock & Anderman, 2006). One possible explanation for this finding is that, regardless of achievement goal orientation (mastery vs. performance), students in the present study generally held less favorable attitudes toward cheating on tests (mean score of 2.06 on a scale of 1 (negative view) to 7 (positive view)). While it has been well documented that performance orientation is

associated with increased cheating frequency (Anderman et al., 1998; Anderman & Midgley, 1997; Jordan, 2001; Murdock et al., 2001; Newstead et al., 1996; Rettinger et al., 2004), this study showed that performance orientation does not always lead to favorable attitudes toward cheating. A student who is performance orientated may choose to cheat even though he or she views cheating unfavorably. This is especially likely when the student uses neutralizing attitudes to rationalize or justify their cheating behavior (Haines et al., 1986; Smith et al., 2004; Vowell & Chen, 2004) (Neutralization of cheating is discussed in detail later in this chapter).

*Social goals.* Social demonstration goals were also found to be significant positive predictors of attitudes toward cheating for both the homework and test cheating contexts. Students who are motivated by social goals are interested in demonstrating social competence or avoiding the appearance of social incompetence (Ryan & Shim, 2006). Generally, students who pursue social demonstration goals are interested in being viewed by others as socially desirable (Ryan & Shim). One possible explanation for this finding is that the students with strong social demonstration goals may believe that cheating, achieving higher grades, or cheating to achieve high grades, would result in positive judgments by their peers. This study was unable to determine which of these explanations was more plausible. However, findings did show that there was a significant positive correlation between social demonstration goals and perceived subjective norms that support cheating on both homework and tests. This provides support for the argument that students with strong social demonstration approach goals may hold favorable attitudes toward cheating because they believe that their peers support cheating.

Unlike social demonstration goals, social development goals were found to be a negative predictor of attitudes toward cheating. However, this variable was only found to be significant in the test context. Students who are motivated by social development goals are interested in growth, improvement, and developing social skills (Ryan & Shim, 2006). One possible explanation for this finding is that students with strong social development goals may view cheating as a poor strategy for building meaningful social relationships, especially

if they perceive that their peers view cheaters as unfavorable or untrustworthy.

*Expectations.* Expectations were found to be a significant negative predictor of students' attitudes toward cheating on homework. In this study, expectations measured the beliefs that students have in their ability to successfully accomplish their academic goals (Bandura, 1986, 1997) and the belief that their academic performance is dependant of factors that are within their control (Duncan & McKeachie, 2005). Results showed that students with higher expectations for academic success held less positive attitudes toward cheating on homework. Murdock et al. (2001) found similar results when they found a relationship between achievement goals and student cheating among middle school students. A possible explanation for these findings is that students who are confident that they will perform academically well will feel less of a need to cheat. This especially applies to homework, where the stakes are not as high as they would be on tests. These students would view cheating as an unfavorable strategy, because the risks associated with cheating would outweigh the perceived gain.

#### *Summary*

A number of previous studies have explored the relationship between goals and expectation variables and student cheating frequency. However, none of the studies explored the possibility that goals and expectations influence cheating frequency through the effects that they have on students' attitudes toward cheating. This study filled this gap in the existing literature by demonstrating that goals and expectations significantly predict students' attitudes toward cheating. This study also extended the literature by examining both achievement goals and social goals. To-date, social goals have been widely neglected in the cheating literature; however, results of this study demonstrated that achievement goals and social goals work together to influence students' perceptions of the costs associated with cheating and, in turn, students' decisions to cheat.

#### *Research Question 2: Costs as Predictors of Intention and Cheating Frequency*

The second research question explored the extent to which the cost variables predicted intention to cheat and actual cheating before and after controlling for select

demographics and past cheating behavior. Figure 19 depicts the portion of the proposed model that was examined and will be discussed in this section.

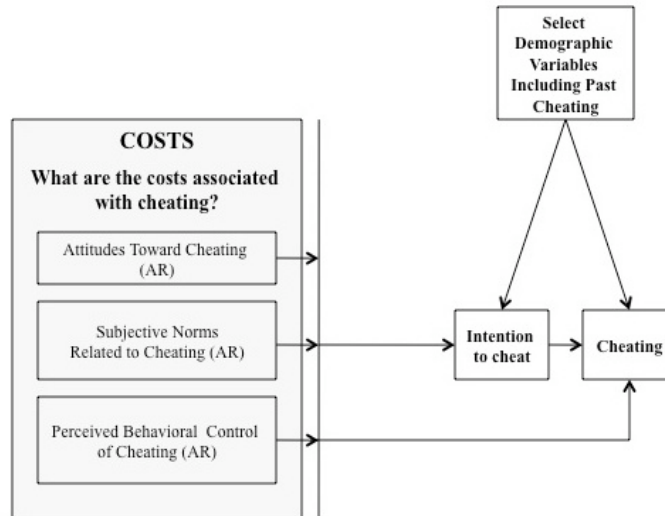


Figure 19. Reduced-factor model of costs as predictors of intention to cheat (after controlling for demographics and past cheating).

### Summary of Findings

*Homework context.* Prior to controlling for select demographic variables and past cheating behavior, all of the cost variables were found to be significant positive predictors ( $p < 0.001$ ) of intention to cheat and actual cheating frequency for the homework context. In total, the cost variables accounted for 71.9% of the variance in homework cheating intention and 30.4% of the variance in homework cheating frequency.

After controlling for select demographic variables (i.e., gender, academic discipline, and extracurricular participation) and past cheating behavior, all of the cost variables, in addition to undecided major status and cheating on homework and tests during the first semester of college, were found to be significant predictors ( $p < 0.01$ ) of intention to cheat on homework. Together, these variables accounted for 73.3% of the variance in homework cheating intention.

When predicting homework cheating frequency, all of the cost variables, in addition to gender, academic discipline (applied science and natural science majors), and past college homework and test cheating were found to be significant predictors ( $p < 0.05$ ). Together, these variables accounted for 40.3% of the variance in homework cheating frequency.

*Test context.* Prior to controlling for select demographic variables and past cheating behavior, all of the cost variables were found to be significant positive predictors ( $p < 0.001$ ) of intention to cheat and actual cheating frequency for the test context, with the exception of perceived subjective norms, which were found to be significant negative predictors of both intention and cheating frequency ( $p < 0.001$ ). In total, the cost variables accounted for 65.4% of the variance in test cheating intention and 16.6% of the variance in test cheating frequency.

After controlling for select demographic variables and past cheating behavior, all of the cost variables, in addition to past college homework and test cheating, were found to be significant predictors ( $p < 0.05$ ) of intention to cheat on tests. Together, these variables accounted for 68.4% of the variance in test cheating intention.

When predicting test cheating frequency, all of the cost variables, with the exception of perceived behavioral control, were found to be significant predictors of test cheating frequency. Past college homework and test cheating and participation in student media publications were also found to be significant predictors. Together, these variables accounted for 41.4% of the variance in test cheating frequency.

#### *Interpretation and Discussion of Findings*

Results showed that the variables in the proposed model were very good predictors of intention and moderately good predictors of cheating frequency. The values reported here are similar to those reported by other studies that have used the theory of planned behavior to explore academic cheating (Harding et al., 2007; Ward & Beck, 1990; Connor & Armitage, 1998). Therefore, this study provides further evidence and support for the use of the theory of planned behavior as an appropriate model for exploring and explaining academic cheating.

Unlike the Harding et al. (2007) study, this study was able to distinguish between the

individual effects of the cost variables on intention to cheat and actual cheating frequency. For the homework context, attitudes, subjective norms, and perceived behavioral control were all found to be significant positive predictors of students' intention to cheat and actual frequency. This was an expected outcome based on the theory of planned behavior, which suggests that students who hold favorable attitudes toward cheating, perceive that subjective norms support cheating, and perceive that they have the ability to control the outcome of their cheating (i.e., not get caught) will perceive lower costs associated with cheating. When costs are perceived to be low, students are more likely to form an intention to cheat which, in turn, makes them more likely to actually cheat. Of the three cost variables, attitudes toward cheating served as the strongest predictor of both intention to cheat and cheating frequency.

In the test context, results varied. Attitudes were found to be significant positive predictors of both intention and cheating frequency. Subjective norms were found to be significant negative predictors of both intention and cheating frequency. Perceived behavioral control was found to be a significant positive predictor of intention only. As stated in the previous paragraph, positive relationships between the cost variables and cheating intention and frequency were expected. What was unexpected was the negative relationship between perceived subjective norms and test cheating intention and frequency. The theory of planned behavior suggests that high levels of subjective norms should predict stronger intention to cheat and increased cheating frequency (Harding et al., 2007). This study found the opposite effect. One possible explanation for this finding could be due to an interaction effect between attitudes and subjective norms. In general, students in this study held very low levels of attitudes that support cheating on tests (ranging from a mean score of 0.48 to 1.01 out of 5 for non cheaters vs. students who cheated on both). Students may perceive that subjective norms support cheating but may decide not to cheat because they have strong negative attitudes toward cheating.

Another finding of interest in the test context was that perceived behavioral control significantly predicted intention to cheat on tests but not test cheating frequency. This finding supports the finding by Harding et al. (2007) and provides further evidence that students'

perceived ease of cheating on tests may have little impact on their decision to cheat.

It was no surprise that past cheating, specifically past college cheating, was a strong predictor of intention to cheat and actual cheating frequency across both contexts. Unlike the Harding et al. (2007) study, this study made a distinction between high school homework and tests cheating and first semester college homework and test cheating. The Harding et al. study explored past cheating generally by measuring only past high school cheating. His results showed that students who cheated in high school were more likely to report cheating in college. In comparison, this study found that past high school cheating did not significantly predict cheating by the respondent in his or her most challenging course. However, past college cheating (cheating that occurred during the first semester of college) was a very strong significant predictor of cheating in the respondent's most challenging course. In the homework context, past college homework and test cheating accounted for 39.7% and 12.5% of the variance in homework cheating frequency, respectively. In the test context, past college homework cheating and test cheating accounted for 7.7% and 49.5% of the variance in test cheating, respectively. Together, these results demonstrate a clear pattern. Past homework cheating is a strong predictor of future homework cheating and past test cheating is a strong predictor of future test cheating. In practical terms, this suggests that if students cheat and get away with it, they will be more likely to engage in the same type of cheating behavior in the future.

### *Summary*

This study found that select demographics, past cheating behavior, and students' perceptions of the costs associated with cheating have direct effects on students' intention to cheat and actual cheating frequency. Of the cost variables, attitudes toward cheating was the strongest predictor of intention to cheat and actual cheating frequency across both the homework and test cheating contexts. Students who held favorable attitudes toward cheating were more likely to form an intention to cheat and actually engage in cheating behavior. In general, the cost variables were stronger predictors of intention to cheat and cheating frequency than the demographic variables and past cheating behavior.

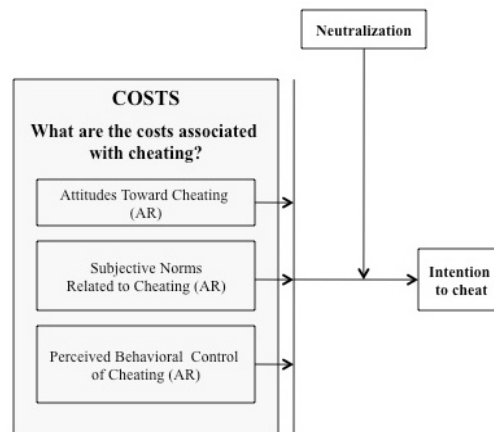


The next section presents and discusses the results of the analyses designed to explore the moderating effects of neutralization and the mediating effects of intention in the proposed model.

*Research Question 3: The Moderating and Mediating Effects of Neutralization and Intention*

The third research question first explored the extent to which neutralization moderated the relationship between costs and intention to cheat, and second, explored the extent to which intention mediated the effects that select demographic variables and past cheating behavior had on cheating frequency. Moderating variables affect the direction and/or strength of the relationship between two variables, whereas mediating variables affect the relationship between two variables because of the relationships that the two variables have with the mediating variable (Frazier, Tix, & Barron, 2004; Preacher, Rucker, & Hayes, 2007).

Figures 20 and 21 depict the portions of the proposed model that were examined and will be discussed in this section.



*Figure 20.* Neutralization as a moderator of the relationship between costs and intention.

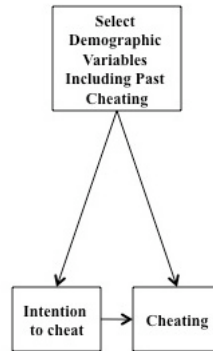


Figure 21. Intention as a mediator of the effects that select demographic variables and past cheating behavior have on cheating frequency.

### *Summary of Findings*

Results showed that neutralization negatively moderated the effects that subjective norms had on respondents' intentions to cheat on homework, and positively moderated the effects that subjective norms had on respondents' intentions to cheat on and tests. Neutralization was found to negatively moderate the effects that perceived behavioral control had on respondents' intention to cheat on tests. Results showed that the only relationship mediated by intention was the relationship between being an undecided major and homework cheating frequency.

### *Interpretation and Discussion of Findings*

*Neutralization as a moderator.* Neutralization is a technique used by individuals to rationalize or justify their decisions in order to engage behaviors that they know to be wrong (Sykes & Matza, 1957). Neutralization has been explored extensively in the cheating literature and has often been associated with increased cheating frequency (Haines et al., 1986; LaBeff et al., 1990; Polding, 1995; Smith et al., 2004; Ward & Beck, 1990), as was the case in the present study (non-cheaters  $M = 2.67$ , homework cheaters  $M = 2.99$ , test cheaters  $M = 3.00$ , and both homework and test cheaters  $M = 3.22$ ). What has not been explored in the cheating literature is the mechanism through which neutralization effects students'

decisions to cheat. A significant contribution of this study was its examination of neutralization as a possible moderator of the relationship between students' perceptions of the costs associated with cheating and students' intention to cheat.

The finding that neutralization negatively moderates the relationship between subjective norms and intention to cheat on homework suggests that subjective norms are a better predictor of intention to cheat on homework for students who are less likely to employ neutralizing attitudes (Nye & Witt, 1995). The finding that neutralization positively moderates the relationship between subjective norms and intention to cheat on tests suggests that subjective norms are a better predictor of intention to cheat on tests for students who are more likely to employ neutralizing attitudes (Nye & Witt). Neutralization was also found to be a significant negative moderator of the relationship between perceived behavioral control and intention to cheat on tests. This means that perceived behavioral control is a better predictor of intention to cheat on tests for students who are less likely to employ neutralizing attitudes (Nye & Witt). Together, these results suggest that neutralization is an important variable in the prediction of intention to cheat and has differential effects on the relationship between students' perceptions of cost and intention to cheat. Generally, when students employ neutralizing attitudes the effects that the cost variables have on intention to cheat are weaker. This finding is not surprising because attitudes toward cheating has been previously shown in this study to be the strongest predictor of students' intention to cheat and subsequent cheating decisions.

*Intention as a mediator.* Intention was explored as a possible mediator of the effects that select demographic variables, including past cheating behavior, have on cheating frequency. Specifically, intention was explored to assess whether the effects that the demographic variables had on cheating frequency could be explained by the relationship that the variables had with intention (Frasier, Tix, & Barron, 2004). Results showed that intention only mediated the effects that being an undecided major had on cheating frequency. This was not surprising because being an undecided major was found to have a direct effect on intention but not on cheating frequency. All other relationships were better explained by their

direct effects on either intention or frequency. These results are different from Harding et al.'s (2007) study, which found that intention mediated the effects that discipline and past cheating behavior had on cheating frequency. Again, differences in results between this study and the Harding et al. study may be due to differences in the way that the predictor and criterion variables were measured. Harding et al. used general measures of past cheating and intention, whereas the present study examined specific types of past cheating behavior and intention to cheat in a specific course.

### *Summary*

Together, these findings show that neutralization and intention indirectly affect relationships between variables in the proposed model. Results showed that the effect of the cost variables on students' intention to cheat depended on the extent to which the students employed neutralizing attitudes. Additionally, the effect that being an undecided major had on cheating frequency was mediated by the relationship that being an undecided major had with cheating intention.

The next section presents and discusses the results of the structural equation modeling that was used to explore the overall fit of the proposed model for the observed data.

### *Research Question 4: The Overall Fit of the Proposed Model*

The fourth research question explored the extent to which the proposed model fit the observed data. Figure 22 presents the model that was explored and will be discussed in this section.

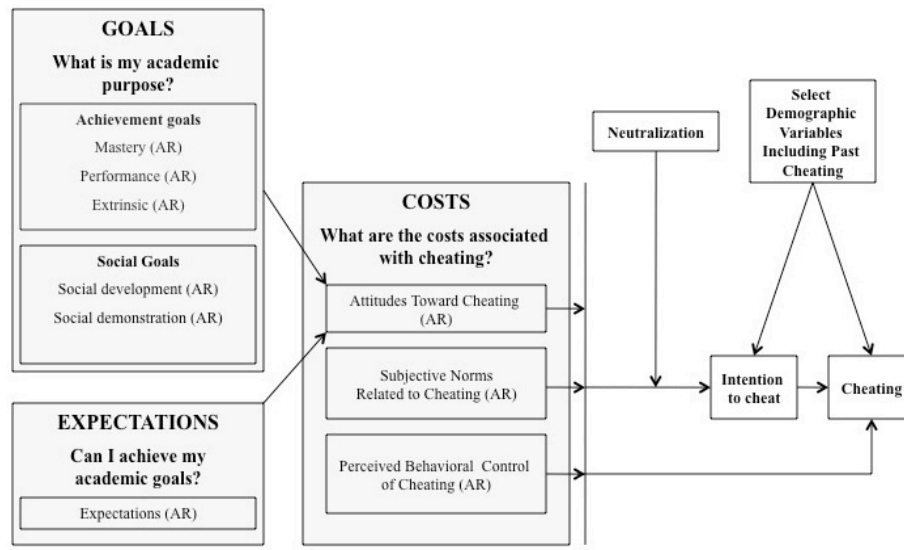


Figure 22. Proposed reduced-factor model of academic cheating.

### Summary of Findings

Results of the structural equation modeling analysis demonstrated that the proposed model provided an adequate, but not ideal, fit for the observed data for both contexts. Fit indices suggested that the fit of the proposed model in homework context was slightly better than the fit of the model in the test context (RMSEA = 0.043 vs. 0.049, NFI = 0.885 vs. 0.875, and CFI = 0.896 vs. 0.884 for the homework and test cheating contexts, respectively).

For both contexts, a reduced model consisting of only the theory of planned behavior variables (attitudes, subjective norms, perceived behavioral control, intention, and cheating) provided a nearly ideal fit for the proposed data (RMSEA = 0.040 and 0.027, NFI = 0.981 and 0.987, and CFI = 0.983 and 0.990, for the homework and test cheating contexts, respectively).

### Interpretation and Discussion of Findings

The results of this study provide additional support for the use of expectancy-value theory, specifically the theory of planned behavior, as a tool for understanding students'

decisions to cheat on homework and tests. These findings provide support for the work of previous researchers who have also used the theory of planned behavior to explain student cheating (Beck & Ajzen, 1991; Conner & Armitage, 1998; Genereux & McLeod, 1995; Harding et al., 2007; Whitley, 1998).

*Homework cheating.* Results showed that the relationships between all of the variables in the proposed model were significant with two exceptions: first, relationship between expectations and attitudes and second, the relationship between perceived behavioral control and homework cheating frequency.

The finding that expectations do not significantly predict attitudes was surprising because it was previously found to be a significant negative predictor of attitudes when analyzed as part of the first research question. This suggests that, when combined with the effects of the other variables in the prediction equation, expectations no longer serve as a significant predictor of attitudes. This suggests that there may be interaction effects between the variables in the proposed model that influence the relationship between expectations and attitudes toward cheating.

Another possible explanation for this finding could be that students with either high or low expectations for success may view cheating on homework as a viable strategy for achieving their academic goals after taking into account all other motivational factors. Students with low expectations (low self-efficacy and/or low control of learning) may choose to cheat because they do not believe that they have any other option (Calabrese & Cochran, 1990; Evans & Craig, 1990; Norton et al., 2001; Zajacova et al., 2005). On the other hand, students with high expectations for success (i.e., those who are generally high achievers) may choose to cheat simply because it is an easy strategy for achieving their academic goals (Stephens, 2004 as reported in Murdock & Anderman, 2006).

The finding that perceived behavioral control was not related to cheating frequency was also surprising because this relationship was found to be significant during earlier analyses conducted for research question two. This finding suggests that a student's ability to successfully cheat on homework is not an important consideration in his or her decision to

cheat when all other motivational factors are considered. This finding, however, does support the previous work of Harding et al. (2007), who also found no relationship between perceived behavioral control and homework cheating frequency.

This study extended the previous work of Harding et al. (2007) by examining the individual effects of the cost variables (attitudes, subjective norms, and perceived behavioral control) on intention to cheat. Results showed that all of the variables were positive predictors of homework cheating frequency. Attitudes served as the strongest positive predictor, followed by subjective norms, and then perceived behavioral control. This finding is important because it suggests that the most effective way to reduce students' intention to cheat and subsequent cheating decisions is to change how students think and feel about cheating.

When the relationship between intention to cheat and actual cheating was explored, results showed that intention to cheat predicted 37% of the variance in homework cheating. This finding again supports the work of Harding et al. (2007) who also found that intention predicted a significant portion (21.9%) of the variance in homework cheating.

Overall, the data-to-model fit for the full model including goals, expectations, costs, neutralization, intention, demographics, past cheating, and cheating frequency provided an adequate fit for the observed data (RMSEA = 0.043; NFI = 0.885; CFI = 0.896). When the model was reduced to include only the theory of planned behavior variables, the overall model-to-data fit was much better (RMSEA = 0.040; NFI = 0.981; CFI = 0.983). These findings suggest that the theory of planned behavior may be a better model than the proposed model for predicting homework cheating frequency.

*Test cheating.* Results showed that the relationships between all of the variables in the proposed model were significant, with the exception of the relationship between perceived behavioral control and test cheating frequency. Again, this finding supported the previous work of Harding et al. (2007), which found no relationship between perceived behavioral control and test cheating frequency. Together, these findings provide further support for the conclusion that students' perceptions of their ability to successfully cheat on tests has no

effect on their actual decisions to cheat on tests when all other motivational factors are considered.

When the individual effects of the cost variables were examined, results showed that attitudes and perceived behavioral control were positive predictors of intention to cheat, while subjective norms negatively predicted intention to cheat. This finding was not surprising. It confirms the results of previous analyses conducted for research questions two and three. In contrast to the findings in the homework context, subjective norms were slightly better predictors of intention to cheat than attitudes. Results showed that increases in subjective norms that support cheating on tests would result in decreases in intention to cheat on tests. Again, this finding suggests that there could be an interaction effect between subjective norms and other variables in the proposed model. Future studies should explore why this negative relationship existed.

Finally, when the relationship between intention to cheat and actual cheating was explored, results showed that intention predicted 44% of the variance in test cheating. This finding supports the work of Harding et al. (2007), which also found that intention to cheat predicted a significant portion (21.9%) of the variance in test cheating. The noticeable differences in the amount of the variance predicted is likely due to the specificity with which the variables in the proposed model were measured. The Harding et al. (2007) study relied on general measures of students' perceptions of the costs associated with cheating and general measures of their intention to cheat and actual cheating behavior. In contrast, the present study asked students to respond specifically about their perceptions of costs, intention to cheat, and actual cheating frequency for specific course. Harding et al.'s (2007) use of general measures likely led to weaker relationships between variables in the proposed model.

Overall, the data-to-model fit for the full model including goals, expectations, costs, neutralization, intention, demographics, past cheating and cheating frequency provided an adequate fit for the observed data (RMSEA = 0.049; NFI = 0.875; CFI = 0.884) in the test context. When the model was reduced to include only the theory of planned behavior variables, the overall model-to-data fit was much better (RMSEA = 0.027; NFI = 0.987; CFI



= 0.990). As was the case in the homework context, these findings suggest that the theory of planned behavior may be a better model than the proposed model for predicting test cheating frequency.

### *Summary*

The results in this section provided support for the use of expectancy-value theory, specifically the theory of planned behavior, as a model for exploring students' motivations, intentions, and decision to cheat. Across contexts, attitudes toward cheating were shown to positively predict students' intentions to cheat and intention to cheat was shown to positively predict cheating frequency. Also, across contexts, the proposed relationship between perceived behavioral control and intention was shown to be insignificant, suggesting that students' perceptions of their ability to cheat and get away with it have little bearing on their decisions to cheat.

Together, these findings suggest that if educators want to deter cheating behavior, they should shift their focus to designing strategies that influence students' attitudes toward cheating as opposed to strategies that focus solely on deterring cheating by making cheating more difficult (i.e., creating multiple versions of assignments, spreading students out during exams, etc.) or by enforcing harsh punitive sanctions. Prior to discussing additional implications of these findings, the next section will identify and discuss this study's limitations.

### *Theory Building*

One of the most common critiques of the academic cheating literature has been the lack of attention to theory and theory building (Murdock & Anderman, 2006). To-date, much of the research on academic cheating has been descriptive in nature. There are a few examples however, of researchers who have attempted to explore cheating through a theoretical lens (Beck & Ajzen, 1991; Brandao & Teixeira, 2005; Buckley et al., 1998; Caruana et al., 2000; Cochran et al., 1999; Genereux & McLeod, 1995; Harding et al., 2007; Michaels & Miethe, 1989; Murdock & Anderman, 2006; Nonis & Swift, 2001; Passow et al., 2006; Whitley, 1998; Whitley & Kost, 1999). Unfortunately, despite these efforts, the

cheating literature, as a whole, continues to lack a cohesive and overarching theoretical base. This study aimed to advance the literature by developing and testing a theoretically-based conceptual model of academic cheating. The model used in this study was developed based on the combined work of Murdock and Anderman (2006) and Harding et al. (2007) whose previous research laid the foundation for exploring academic cheating as a motivational issue.

The initial proposed model of academic cheating (see Figure 23) consisted of three categories of predictors of student cheating behavior: goals, expectations, and costs. The model was derived primarily based on concepts from the achievement motivation literature.

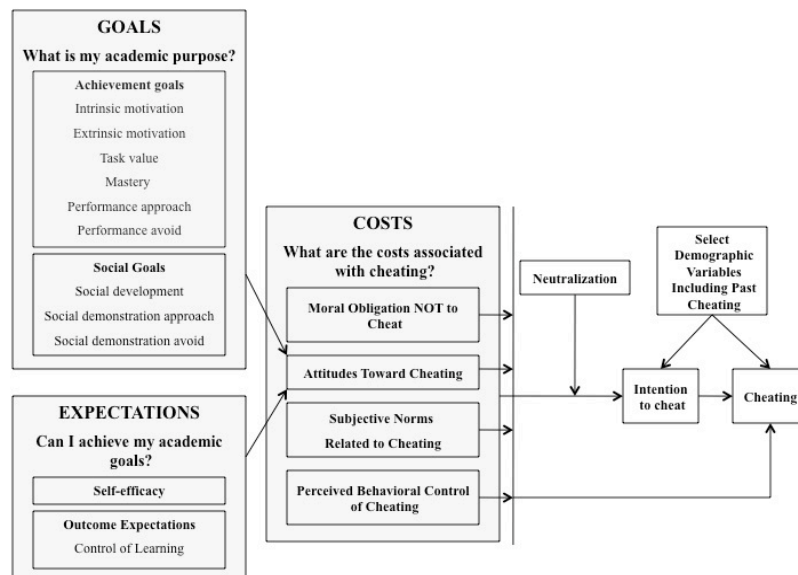


Figure 23. Initial proposed model of academic cheating.

As with any theory-building endeavor, this study was iterative in nature and was conducted in several stages. In the first step, individual relationships between variables in the proposed model were explored. The first research question examined the extent to which goals and expectations influenced students' attitudes toward cheating. This step was

required to determine if and how students' goals and expectations were related to their perceived costs associated with cheating via their effects on students' attitudes toward cheating. When only weak relationships were found, costs as a whole were explored as a primary predictor of students' cheating behavior. When it was determined that costs accounted for a large amount of the variance in students' intention to cheat and actual cheating, the relationships between costs and other model variables (i.e., demographics and past cheating behavior) were examined. The next research question explored the moderating and mediating effects of neutralization and intention on the relationship between costs and actual cheating behavior. The final step involved examining the model as a whole using structural equation modeling. The initial model, which included goals, expectations, and costs as predictors of student cheating, was found to provide an adequate fit for the observed data. However, in an effort to provide a more parsimonious solution, the model containing only the most significant cost variables (attitudes, subjective norms, and perceived behavior control) was also examined. Results showed the simplified model (see Figure 24), which is identical to the Theory of Planned Behavior model (Ajzen, 1991, 2002), provided the best fit for the observed data.

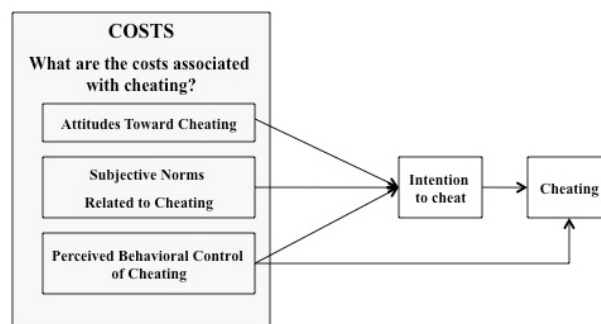


Figure 24. Final model of academic cheating.

Together, these findings provide support for the use of the Theory of Planned Behavior as a core model for exploring academic cheating. This finding was not surprising

because a number of previous researchers have also found support the use of the Theory of Planned Behavior as a model for predicting student cheating (Beck & Ajzen, 1991; Harding et al., 2007; Whitley, 1998). In the future, researchers should work to expand this core model by examining other variables that may influence students' perceptions of the costs associated with cheating. This study began that process by exploring how students' goals and expectations influence their perceptions of costs. Due to the large number of variables used in this study, many of the observed significant relationships were found to be weak. Future researchers should consider employing a simpler strategy of expanding the core model by examining one new relationship at a time (i.e., the relationship between self-efficacy and perceived costs or the relationship between achievement goals and perceived costs). Future researchers should also consider exploring interaction effects between variables in the proposed model.

This study not only provided support for exploring cheating as a motivational issue, it also provided evidence that students' decisions to cheat are motivated by a variety of complex factors. The complexity of the cheating problem is just one of the reasons future researchers should continue to explore cheating from a theoretical perspective. This study provided support for the Theory of Planned Behavior as a core theory for exploring the problem of academic cheating. As researchers continue to explore the use of the Theory of Planned Behavior as a model for academic cheating, they should also explore how the Theory of Planned Behavior has been used to understand other behaviors that students often engage in yet know to be wrong (i.e., underage drinking, hazing, illegally downloading, etc.). Insight from these literature bases could be used to further our understanding of what causes students to cheat.

#### Recommendations for Practice

This study demonstrated that expectancy-value theory, and in particular the theory of planned behavior, provides a useful model for understanding and predicting first-year college students' motivations, intentions, and decisions to cheat on homework and tests. The proposed model suggested that students' decisions to cheat are primarily based on a

cost/benefit analysis and students' assessments of the costs and benefits associated with cheating are influenced by their academic goals and expectations. Rational students who perceive that the costs associated with cheating outweigh the benefits will not cheat. The model consisted of three categories of costs: attitudes toward cheating, subjective norms associated with cheating, and perceived behavioral control of cheating.

### *Homework Cheating*

Results showed that homework cheating was more common than test cheating. This was likely due to the fact that students perceived the costs associated with cheating on homework as lower than the costs associated with cheating on tests. To address this concern, educators should try to convince students that cheating on homework is equally as costly as cheating on tests. Educators can shift students' thinking about the costs and benefits associated with homework cheating by tackling each of the three categories of costs simultaneously. First, with respect to attitudes, educators need to help students realize the role that homework plays in building a foundation of knowledge for future learning and assignments. Additionally, educators should demonstrate to students that assignments are not simply "busy work" and that they serve a specific purpose. One way to do this is to create and communicate learning outcomes and objectives for each assignment.

With respect to subjective norms, the biggest hurdle for educators to overcome is students' perception that "everyone is doing it." When students perceive that a majority of their peers are cheating and are being rewarded for it, they may be more inclined to cheat in order to avoid an unfair disadvantage. The present study showed that a majority of students do not cheat. However, we know from prior research that students often overestimate the amount of cheating that is happening among their peers (Jordan, 2001). A useful strategy to address this misperception could be the implementation of a social norm campaign designed to debunk myths about the prevalence of homework cheating. This campaign could occur at any level (campus or classroom) and could be initiated by faculty and/or students. A campaign led by peer mentors or student leaders would likely have the strongest effect.

Finally, with respect to perceived behavioral control, educators should be aware that

students feel much more confident in their ability to cheat on homework and get away with it than they do in their ability to successfully cheat on tests. This finding should lead educators to ask the following question: what is it about tests that make students perceive that cheating will be more difficult? First, in contrast to tests, homework is often ungraded, or if graded, may not be graded for accuracy. Therefore, students may feel like it is easier to copy other students' homework and get away with it if they are only receiving marks for completion. Second, unlike tests, teachers often do not create multiple versions of homework assignments. Using multiple versions of homework assignments may reduce the amount of cheating that takes place, especially on online assignments. Third, homework assignments, particularly online assignments, often rely on multiple-choice answers and do not require students to show their work. Educators could address this problem by also requiring students to show their work in order to receive credit on homework assignments.

Another possible explanation is that students may perceive that their faculty members do not take cheating on homework as seriously as they take cheating on tests, and therefore, may believe that the risk of getting caught and punished for cheating on homework is not as severe as the risk associated with being caught and punished for cheating on tests. If educators view homework and test cheating as equally unacceptable, they should clearly communicate punishments associated with both types of cheating.

Another possible strategy that could be employed is for faculty members to accept the fact that students are going to be inclined to cheat on homework. Homework cheating is easy to do and difficult to prevent due to the fact that homework is often completed in an unmonitored setting. Knowing this, faculty members could employ a different homework paradigm in which collaboration with others is encouraged. This would not only give students the opportunity to develop skills associated with working in group settings, it would also give faculty the opportunity to employ some of the collaborative learning techniques that are well documented in the college teaching literature (Barkley, Cross, & Major, 2005).

### *Past Cheating*

Another finding that is important for educators to note is the influence of past

cheating behavior. Results showed that one of the strongest predictors of cheating frequency in the respondent's most challenging course was past cheating, particularly cheating during the first semester of college. The first semester of college provides a prime opportunity to change the "cheating mentality" of students (Johnson & Martin, 2005, p. 48). Educators must not assume that all college students are created equal. That is, not all students arrive at college prepared to do college level work and not all students share the same understanding of what constitutes academic dishonesty. Students must be reminded early and often about institutional and classroom standards for integrity. Not only must educators help students learn the institutional expectations, they must also help students learn and practice the skills needed to complete work with integrity (i.e., planning, time management, use of library resources and services, use of academic support resources and services, etc.). Educators cannot take a passive approach to educating students, particularly those in their first-year, about academic integrity. This study demonstrated that the first year of college, particularly the first-semester of college, is a pivotal time for confronting the problem of student cheating. Institutions should strive to design and implement programs that influence students' attitudes toward cheating as early and as often as possible.

### *Motivations*

A significant contribution of the present study was the inclusion of motivational variables (goals and expectations) along with the theory of planned behavior variables in the proposed model of student cheating. Findings showed that achievement goals, social goals, and expectations are important predictors of students' attitudes toward cheating which, in turn, predict students' intention to cheat and subsequent cheating decisions. Educators interested in deterring student cheating, therefore, cannot neglect the importance of these variables. Intrinsic motivation was one of the strongest negative predictors of attitudes toward cheating.

Social motivations were also found to be important predictors of students' attitudes toward cheating. Students who feel like they have to prove that they are "cool" to their peers are more likely to cheat.

### *Incentive Programs*

Together, the findings that cheating can be habit forming and linked to motivation are particularly important as educators consider implementing “incentive programs” at the primary and secondary school levels. Large school systems in New York, Chicago, Baltimore, and Washington, D.C., have recently implemented programs that give students cash and prizes (i.e., iPods, video games, etc.) for receiving high grades among other things (i.e., perfect attendance, good behavior, etc.) (Turque, 2008). These programs have been praised for their success; students are receiving higher grades, attending class more often, and are on their best behavior (Turque). But what are the costs? Aside from the millions in monetary costs, programs like these focus solely on extrinsic rewards as opposed to the intrinsic value of learning. To some degree, these programs may incentivize cheating. Currently, little is known about the impact that these programs have on students’ decisions to cheat. Educators who administer these programs need to think carefully about how to also incentivize the intrinsic rewards associated with learning and doing honest work.

### Recommendations for Future Research

This study revealed several important implications for future research. First, a major strength of this study was its use of expectancy-value theory as a theoretical framework for organizing and examining the motivational predictors of first-year college students’ decisions to cheat on homework and tests. A major critique of the cheating literature is the lack of an overarching, theoretically-based, conceptual framework (Murdock & Anderman, 2006). This study provided support for the use of expectancy-value theory, specifically, the theory of planned behavior, as a possible framework. While the model used in this study provided a reasonable fit for the observed data, it did not provide an ideal fit. This study should be replicated using larger and more diverse samples in an effort to improve the fit of the proposed model and increase its validity and generalizability.

Second, this study provided evidence that students’ motivations and decisions to cheat vary across contexts. Researchers should take this in to account when designing future



studies and when drawing conclusions from the existing literature. The two contexts that were explored in this study were homework cheating and test cheating in each respondent's most difficult course. Future studies should examine whether differences exist in students' motivations and decisions to cheat across other contexts, such as institutional size and type (i.e., large public vs. small private vs. religiously affiliated vs. community college, etc.), institutional honor code status (i.e., full honor code vs. modified honor code vs. no honor code), grade level (i.e., high school vs. college vs. graduate school vs. professional school), incentive program status (i.e., school districts with incentive programs vs. those without), etc. Applying the model used in this study across different contexts will not only add to the validity and generalizability of the model, but will also shed light on how contextual factors influence students' decisions to cheat.

Third, this study highlighted the predictive power of past cheating behavior. Results showed that one of the strongest predictors of cheating frequency in the respondents' most difficult course was past college-level cheating. In contrast, past high school cheating did not emerge as a significant predictor in the proposed model. Prior research shows that cheating frequency peaks in high school and levels off in college (Cizek, 1999). This study found evidence to support this trend. Therefore, something must happen during the transition from high school to college, which influences students' decisions to cheat. Future studies should examine cheating across this transition in order to shed light on what causes students who cheat in high school to stop cheating in college. Additionally, future researchers should examine whether cheating is truly habit forming and, if so, what are the underlying mechanisms that lead to the behavior. Longitudinal mixed-methods analysis, which is extremely rare in the cheating literature, would be an effective method for answering these questions and would contribute significantly to both research and practice.

Fourth, this study examined individual student characteristics as predictors of students' intention to cheat and actual cheating behavior. While students were asked specific questions about their motivations and behavior in their most challenging course, no characteristics of that course were incorporated as predictors in the proposed model.

However, research suggests that classroom environment is an important predictor of many of the variables in the proposed model including achievement goals, social goals, perceptions of costs, neutralization, and actual cheating frequency (Pulvers & Diekhoff, 1990; Murdock & Anderman, 2006). Future studies should explore if and how classroom characteristics (i.e., teaching style, the number and type of assignments that are given, and the way in which classroom activities and assignments are structured, etc.) influence variables in the proposed model.

Fifth, this study was unable to assess the level of and the effects of socially desirable responding among respondents. However, “the need to examine social desirability as a response tendency with self-report measures has been well documented and continues to be a methodological consideration in research” (Reynolds, 1982, p. 119). To-date, the 33-item Marlowe-Crowne (1960) Social Desirability Scale has served as a primary tool for measuring socially desirable responding. In an effort to save space and shorten the survey length, the present study assessed the level of socially desirable responding using a 10-item shortened version of the Marlowe-Crowne scale (Strahan & Gerbasi, 1972). While this scale had previously proved to be a valid and reliable measure of social desirability among college students (Strahan & Gerbasi; Reynolds), it was not found to be a reliable measure ( $r = 0.567$ ) among the present population of first-year college students at the institution of interest. The reliability of the scale was likely influenced by the fact that scale was included, in tact, as the next to last page of the survey instrument. Respondents were likely suffering from survey fatigued by that point and may not have been reading each item thoroughly. In future studies, researchers should consider embedding the scale items in other scales throughout the survey and/or presenting the scale items earlier in the survey. Researchers who have the luxury of adding additional survey items may also consider using one of the longer versions of the Marlowe-Crowne scale such as Reynold’s 13-item scale or Strahan & Gerbasi’s 20-item scale, which have both been administered to college students and have been shown to have stronger reliability and stronger overall correlation with the original 33-item Marlowe-Crowne scale (Loo & Thorpe, 2000; Reynolds; Strahan & Gerbasi).

## Summary

Much remains to be learned about what motivates students to cheat. This study attempted to fill many gaps in the existing literature by examining first-year college students' motivations to cheat on homework and test within a specific course using a theoretically-based conceptual model.

Results showed that most students were classified as non-cheaters and that, among those that cheated, homework cheating was more prevalent than test cheating. Demographically, male students, students in the applied and natural sciences, students who were undecided majors, students who participated generally in extracurricular activities and those who participated specifically in greek organizations and student media publications were more likely to cheat than students in other demographic groups. Past cheating, specifically during the first semester of college, was found to be a significant predictor of cheating in the respondents' most challenging courses.

The most significant contribution of this study was its use of expectancy-value theory as a framework for understanding how multiple motivational predictors (goals, expectations, and costs) influence students' intentions and subsequent decisions to cheat. Expectancy-value theory not only provides researchers with a framework for organizing the vast and often disjointed cheating literature, it also creates a simple and easily understood cost/benefit analysis model which can be used by educators to design and implement strategies that will deter student cheating.

This study demonstrated the importance of the theory of planned behavior as a core for any proposed model of student cheating. This study added to the cheating literature by extending the theory of planned behavior model to include goals and expectations as predictors of attitudes associated with cheating. Results showed that goals and expectations were significant predictors of students' attitudes toward cheating, with mastery goals having the most predictive power. This study also showed that students' goals and expectations may also influence their perceptions of other costs variables (i.e., subjective norms and perceived

behavioral control). Another new contribution of this study was that it found support for the use of social goals as predictors of students' attitudes toward cheating. Social goals, to-date, have been underexplored in the cheating literature.

Future studies that examine academic cheating should continue to use expectancy-value theory as a framework for exploring how motivational factors that work together to influence students' decisions to cheat. Understanding the motivational mechanisms that drive the behavior is an essential first step towards understanding how to prevent it.

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## APPENDICIES



Appendix A  
Request for Access to Student Data

February 25, 2008

Dr. Thomas Conway  
Dean, Undergraduate Academic Program  
Flex Lab Building 1216, Box 7105  
North Carolina State University  
Raleigh, NC 27695

Dear Dr. Conway,

I am a doctoral student in the Higher Education Administration program at North Carolina State University. I am currently working on my dissertation entitled “Motivational predictors of academic cheating among first-year college students: Goals, expectations, and costs.” My study, which is directed by Dr. Audrey Jaeger and Dr. Joy Gaston Gayles, is designed to test the predictive ability of a proposed conceptual model of academic cheating using a web-based survey instrument. I would like to administer this survey to the entire population of full-time first-year college students at North Carolina State University prior to the end of the spring 2008 semester.

I am writing to request permission for access to student records for this project. Specifically, I am requesting a data file that contains the following information for each student enrolled as a full-time second-semester freshman during the spring of 2008:

- First Name and Last Name
- Email Address
- Age or Date of Birth
- Gender
- Race (White, Black, Native American, Asian, Hispanic, Not Reported, International)
- Residence (In-state, Out-of-State, International)
- College (A&LS, DESIGN, EDU, ENGR, NATR, H&SS, PAMS, TEXT, MGMT, DUAP)

I am requesting that the following students be excluded from the dataset:

- Transfer students
- Part-time students
- Distance education students

The information in this dataset will be used for contact purposes and to check whether the respondent group is representative of the target population. The dataset will be stored on my personal home computer, which is used only by me and is password protected and locked when not in use. Upon the completion of my dissertation, I will ensure that the dataset is properly destroyed.

Prior to survey administration this study will be submitted for approval to the North Carolina State University Institutional Review Board. Students will be invited to participate in the survey via an email and will be asked to complete an informed consent agreement prior to beginning the survey. Participation in the survey will be completely voluntary and confidential and students will have the opportunity to end their participation at any time.

I believe that this study will make a significant contribution to the academic integrity literature and will provide valuable information for faculty and administrators at North Carolina State University. I appreciate any assistance that you can provide. Please let me know if you need any additional information. I can be reached by email at [armouber@ncsu.edu](mailto:armouber@ncsu.edu) or by phone at 703-463-1950.

Sincerely,

Ashley Mouberry Sieman  
Doctoral Student  
Higher Education Administration

Appendix B  
Permission to Use Scales  
*Request to use the MSLQ*

March 4, 2008

Marie Bien  
610 E. University Ave., Room 1323  
Ann Arbor, MI 48109-1259

Dear Ms. Bien,

I am currently working to pursue a doctoral degree in the Higher Education Administration program at North Carolina State University. I am now working on my dissertation entitled “Motivational predictors of academic cheating among first-year college students: Goals, expectations, and costs.”

My dissertation is based on two recently published models of academic cheating. The first model was published by Murdock and Anderman in 2006 (*Educational Psychologist*, Volume 41(3), pages 129-145) and the second model was published by Harding, Mayhew, Finelli, and Carpenter in 2007 (*Ethics & Behavior*, Volume 17(4), pages 255-279). For my dissertation, I plan to test the predictive ability of the proposed model using a web-based survey administered to the entire population of first-year college students at North Carolina State University.

I am writing to request permission to reproduce and use the motivation scales from the Motivated Strategies for Learning Questionnaire (Pintrich et al., 1993) in my online survey. Specifically, I am interested in using the Intrinsic Goal Orientation, Extrinsic Goal Orientation, Task Value, Control of Learning Beliefs, and Self-Efficacy for Learning and Performance scales.

The requested permission extends to any future revisions and editions of my dissertation, including the electronic publication of my dissertation by North Carolina State University Libraries and the publication of any articles based on the results of my dissertation. Please let me know if you have any additional questions about this project. If you are willing to grant me permission to use the scales it would be helpful if you could respond with a letter suitable for inclusion in the appendix of my dissertation. I look forward to hearing from you soon.

Sincerely,  
Ashley Mouberry Sieman

*Permission to use the MSLQ (Pintrich et al., 1993)*



Combined Program In Education And Psychology  
1406 SCHOOL OF EDUCATION  
610 E. UNIVERSITY AVENUE  
ANN ARBOR, MI 48109-1259  
(734) 647-0626 FAX: (734) 615-2164

March 5, 2008

Ashley Mouberry Sieman  
Higher Education Administration Program  
North Carolina State University

Dear Ashley:

I mail out the MSLQ for a fee of \$20. With this payment, you are allowed to use the MSLQ for your needs but making sure you give the authors credit. Consider this your letter for permission to use the MSLQ for your needs. If you have any further questions, email us at [cpep@umich.edu](mailto:cpep@umich.edu).

Sincerely,

Marie

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Marie-Anne Bien, Secretary  
The University of Michigan  
Combined Program in Education & Psychology (CPEP)  
610 East University, 1413 School of Education  
Ann Arbor, MI 48109-1259  
PH (734) 647-0626; FAX (734) 615-2164  
[mabien@umich.edu](mailto:mabien@umich.edu)  
<http://www.soe.umich.edu>

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*Request to use the PALS (Midgley et al., 2000)*

February 27, 2008

Michael Middleton, PhD  
Assistant Professor  
Department of Education, Morrill Hall  
University of New Hampshire  
Durham, NH 03824

Dear Dr. Middleton,

I am currently working to pursue a doctoral degree in the Higher Education Administration program at North Carolina State University. I am now working on my dissertation entitled "Motivational predictors of academic cheating among first-year college students: Goals, expectations, and costs."

My dissertation is based on two recently published models of academic cheating. The first model was published by Murdock and Anderman in 2006 (*Educational Psychologist*, Volume 41(3), pages 129-145) and the second model was published by Harding, Mayhew, Finelli, and Carpenter in 2007 (*Ethics & Behavior*, Volume 17(4), pages 255-279). For my dissertation, I plan to test the predictive ability of the proposed model using a web-based survey administered to the entire population of first-year college students at North Carolina State University.

I am writing to request permission to reproduce and use the scales published by you and your colleagues in the 2000 Manual for the Patterns of Adaptive Learning Scales. Specifically, I am interested in using the revised versions of the Personal Achievement Goal Orientation Scales (mastery goal orientation, performance approach goal orientation, and performance avoid goal orientation).

The requested permission extends to any future revisions and editions of my dissertation, including the electronic publication of my dissertation by North Carolina State University Libraries and the publication of any articles based on the results of my dissertation. Please let me know if you have any additional questions about this project. If you and your colleagues grant me permission to use your scales it would be helpful if you could respond with a letter suitable for inclusion in the appendix of my dissertation. I look forward to hearing from you soon.

Sincerely,  
Ashley Mouberry Sieman

*Permission to use the PALS (Midgley et al., 2000)*

From: Michael Middleton <Michael.middleton@unh.edu>  
To: Ashley Mouberry Sieman <armouber@ncsu.edu>  
Date: Fri, March 7, 2008 at 9:09pm  
Subject: Request for permission to use PALS for dissertation research

Hi Ashley,

I apologize for the delay in responding. I was traveling out of the country with no email access. Your work sounds very promising and I'll be interested in the results. You have permission to revise and use the scales from the Pattern of Adaptive Learning Survey (PALS) for your study. Please let me know if I can be helpful as you progress.

Best regards,

Mike Middleton

Michael Middleton, PhD  
Associate Professor  
Department of Education  
University of New Hampshire  
Durham, NH 03824  
(603) 862-7054

*Request to use the Social Goals Scales (Ryan & Shim, 2006)*

February 27, 2008

Dr. Allison M. Ryan  
Department of Educational Psychology, University of Illinois  
230 Education Building, 1310 South Sixth Street  
Champaign, IL 61820

Dear Dr. Ryan,

I am currently working to pursue a doctoral degree in the Higher Education Administration program at North Carolina State University. I am now working on my dissertation entitled "Motivational predictors of academic cheating among first-year college students: Goals, expectations, and costs."

My dissertation is based on two recently published models of academic cheating. The first model was published by Murdock and Anderman in 2006 (*Educational Psychologist*, Volume 41(3), pages 129-145) and the second model was published by Harding, Mayhew, Finelli, and Carpenter in 2007 (*Ethics & Behavior*, Volume 17(4), pages 255-279). For my dissertation, I plan to test the predictive ability of the proposed model, which includes a social goal component, using a web-based survey administered to the entire population of first-year college students at North Carolina State University.

I am writing to request permission to reproduce and use the scales published by you and Shim in a 2006 article entitled "Social achievement goals: The nature and consequences of different orientations toward social competence" (*Personality and Social Psychology Bulletin*, 32(9), 1246-1263). I am interested in using all three scales: the social development scale, the social demonstration approach scale, and the social demonstration avoid scale.

The requested permission extends to any future revisions and editions of my dissertation, including the electronic publication of my dissertation by North Carolina State University Libraries and the publication of any articles based on the results of my dissertation. Please let me know if you have any additional questions about this project. If you and your colleague grant me permission to use your scales it would be helpful if you could respond with a letter suitable for inclusion in the appendix of my dissertation. I look forward to hearing from you soon.

Sincerely,  
Ashley Mouberry Sieman

*Permission to use the Social Goals Scales (Ryan & Shim, 2006)*

From: Allison Ryan allison.ryan2@gmail.com  
To: Ashley Mouberry Sieman armouber@ncsu.edu  
Date: Thu, Feb 28, 2008 at 6:25 PM  
Subject: Request for permission to use social goals scales for dissertation research

Yes, I am happy to give permission. Your dissertation sounds interesting. Keep me posted on what you find with the social goals! Best of luck, Allison



*Request to use the PACES-2 Scales (Harding et al., 2007)*

February 25, 2008

Dr. Trevor Harding  
Associate Professor, Materials Engineering  
Building 041, Room 223  
California Polytechnic State University  
San Luis Obispo, CA 93407

Dear Trevor,

As you know through our work together with the Templeton Foundation, I am currently working to pursue a doctoral degree in the Higher Education Administration program at North Carolina State University. I am now working on my dissertation entitled "Motivational predictors of academic cheating among first-year college students: Goals, expectations, and costs."

I am writing to request permission to reproduce and use the scales published by you and your colleagues in an article entitled "The Theory of Planned Behavior as a Model of Academic Dishonesty in Engineering and Humanities Undergraduates" which was recently published in *Ethics & Behavior*, Volume 17(4), pages 255-279.

For my dissertation, I aim to replicate and extend your work by combining your model of academic cheating with Murdock and Anderman's (2006) model of academic cheating that was recently published in *Educational Psychologist*, Volume 41(3), pages 129-145. I plan to test the predictive ability of the proposed model using a web-based survey administered to the entire population of first-year college students at North Carolina State University.

The requested permission extends to any future revisions and editions of my dissertation, including the electronic publication of my dissertation by North Carolina State University Libraries and the publication of any articles based on the results of my dissertation. Please let me know if you have any additional questions about this project. If you and your colleagues grant me permission to use your scales it would be helpful if you could respond with a letter suitable for inclusion in the appendix of my dissertation. I look forward to hearing from you soon.

Sincerely,  
Ashley Mouberry Sieman

*Permission to use the PACES-2 Scales (Harding et al., 2007)*

From: Trevor Harding tharding@calpoly.edu  
To: Ashley Mouberry Sieman armouber@ncsu.edu  
Date: Wed, March 5, 2008 at 5:17pm  
Subject: Request for permission to use PACES-2 scales for dissertation research

Dear Ashley,

After talking with my colleagues, I think that we are in agreement that you can use whatever scales you can glean from our publication (with attribution of course). Please consider this your letter for permission to use the PACES-2 scales for your dissertation.

Sincerely,

Trevor

Trevor S. Harding, Ph.D.  
Associate Professor  
Materials Engineering  
California Polytechnic State University  
San Luis Obispo, CA 93407  
(805)-756-7163  
tharding@calpoly.edu

*Request to use the Neutralization Scale (Haines et al., 1986)*

March 4, 2008

Dr. Emily E. LaBeff  
Division of Social and Behavioral Sciences  
124 O'Donohoe Hall  
Midwestern State University  
Wichita Falls, TX 76308

Dear Dr. LaBeff,

I am currently working to pursue a doctoral degree in the Higher Education Administration program at North Carolina State University. I am now working on my dissertation entitled "Motivational predictors of academic cheating among first-year college students: Goals, expectations, and costs."

My dissertation is based on two recently published models of academic cheating. The first model was published by Murdock and Anderman in 2006 (*Educational Psychologist*, Volume 41(3), pages 129-145) and the second model was published by Harding, Mayhew, Finelli, and Carpenter in 2007 (*Ethics & Behavior*, Volume 17(4), pages 255-279). For my dissertation, I plan to test the predictive ability of the proposed model, which includes a social goal component, using a web-based survey administered to the entire population of first-year college students at North Carolina State University.

I am writing to request permission to reproduce and use the neutralization scale published by you and your colleagues in a 1986 article entitled "College cheating: Immaturity, lack of commitment, and the neutralizing attitude" (*Research in Higher Education*, 25(4), 342-354).

The requested permission extends to any future revisions and editions of my dissertation, including the electronic publication of my dissertation by North Carolina State University Libraries and the publication of any articles based on the results of my dissertation. Please let me know if you have any additional questions about this project. If you and your colleagues grant me permission to use your scales it would be helpful if you could respond with an email suitable for inclusion in the appendix of my dissertation. I look forward to hearing from you soon.

Sincerely,  
Ashley Mouberry Sieman

*Permission to use the Neutralization Scale*

From: LaBeff, Emily <emily.labeff@mwsu.edu>  
To: Ashley Mouberry Sieman <armouber@ncsu.edu>  
Cc: Diekhoff, George <george.diekhoff@mwsu.edu>  
Date: Wed, March 5, 2008 at 3:54pm  
Subject: Request for permission to use neutralization scale for dissertation research

Hello Ashley. We would be honored to have you use our neutralization scale and give our full permission. I hope this email will suffice as a letter indicating that you have our permission.

Emily E. LaBeff  
George M. Diekhoff

*Request to use the Social Desirability Scale (Strahan & Gerbasi, 1972)*

March 5, 2008

Dr. Kathleen Carrese Gerbasi  
Assistant Professor, Psychology  
Niagara County Community College  
3111 Saunders Settlement Road  
Sanborn, NY 14132

Dear Dr. Gerbasi,

I am currently working to pursue a doctoral degree in the Higher Education Administration program at North Carolina State University. I am now working on my dissertation entitled “Motivational predictors of academic cheating among first-year college students: Goals, expectations, and costs.”

My dissertation is based on two recently published models of academic cheating. The first model was published by Murdock and Anderman in 2006 (*Educational Psychologist*, Volume 41(3), pages 129-145) and the second model was published by Harding, Mayhew, Finelli, and Carpenter in 2007 (*Ethics & Behavior*, Volume 17(4), pages 255-279). For my dissertation, I plan to test the predictive ability of the proposed model, which includes a social goal component, using a web-based survey administered to the entire population of first-year college students at North Carolina State University.

I am writing to request permission to reproduce and use the M-C 1(10) Social Desirability Scale published by you and Robert Strahan in a 1972 article entitled “Short, homogeneous versions of the Marlow-Crowne Social Desirability Scale” (*Journal of Clinical Psychology*, 28(2), 191-193).

The requested permission extends to any future revisions and editions of my dissertation, including the electronic publication of my dissertation by North Carolina State University Libraries and the publication of any articles based on the results of my dissertation. Please let me know if you have any additional questions about this project. If you and your colleagues grant me permission to use your scales it would be helpful if you could respond with an email suitable for inclusion in the appendix of my dissertation. I look forward to hearing from you soon.

Sincerely,  
Ashley Mouberry Sieman

*Permission to use the Social Desirability Scale (Strahan & Gerbasi, 1972)*

From: Kathy Gerbasi kgerbasi@niagaracc.suny.edu  
To: Ashley Mouberry Sieman armouber@ncsu.edu  
Date: Thur, March 6, 2008 at 1:29pm  
Subject: Request for permission to use your social desirability scale for dissertation research

Ashley your work sounds interesting. You are more than welcome to use the scale. I would be interested in finding out how your study turns out.

K Gerbasi PhD

Appendix C  
Scales, Scale Items, and Internal Consistency

Table C1  
*Achievement Goal Scales, Items, and Internal Consistency*

Scale and Items	Alpha
Intrinsic Motivation <sup>a</sup>	0.74
In a class like [INSERT NAME], I prefer course material that really challenges me so I can learn new things.	
In a class like [INSERT NAME], I prefer course material that arouses my curiosity, even if it is difficult to learn.	
The most satisfying thing for me in [INSERT NAME] is trying to understand the content as thoroughly as possible.	
When I have the opportunity in [INSERT NAME], I choose course assignments that I can learn from even though they don't guarantee a good grade.	
Extrinsic Motivation <sup>a</sup>	0.62
Getting a good grade in [INSERT NAME] is the most satisfying thing for me right now.	
The most important thing for me right now is improving my overall grade point average, so my main concern in [INSERT NAME] is getting a good grade.	
If I can, I want to get better grades in [INSERT NAME] than most of the other students.	
I want to do well in [INSERT NAME] because it is important to show my ability to my family, friends, employer or others.	
Task Value <sup>a</sup>	0.90
I think I will be able to use what I learn in [INSERT NAME] in other courses.	
It is important for me to learn the course materials in [INSERT NAME].	
I am very interested in the content area of [INSERT NAME].	
I think the course material in [INSERT NAME] is useful for me to learn.	
I like the subject matter of [INSERT NAME].	
Understanding the subject matter of [INSERT NAME] is very important to me.	

Table C1 Continued

Scale and Items	Alpha
Mastery Goal Orientation <sup>b, c</sup> It's important to me that I learn a lot of new concepts this year in [INSERT NAME]. One of my goals in [INSERT NAME] is to learn as much as I can. One of my goals is to master a lot of new skills this year in [INSERT NAME]. It's important to me that I thoroughly understand my coursework in [INSERT NAME]. It's important to me that I improve my skills this year in [INSERT NAME].	0.78
Performance Approach Goal Orientation <sup>b, c</sup> It's important to me that other students in [INSERT NAME] think I'm good at my coursework. One of my goals is to show others in [INSERT NAME] that I'm good at my coursework. One of my goals is to show others in [INSERT NAME] that coursework is easy for me. One of my goals is to look smart in comparison to other students in my [INSERT NAME] course. It's important to me that I look smart compared to others in my [INSERT NAME] course.	0.83
Performance Avoid Goal Orientation <sup>b, c</sup> It's important to me that I don't look stupid in my [INSERT NAME] class. One of my goals is to keep others from thinking I'm not smart in my [INSERT NAME] class. It's important to me that my instructor doesn't think that I know less than others in my [INSERT NAME] class. One of my goals in my [INSERT NAME] class is to avoid looking like I have trouble doing the coursework.	0.86

*Note.* 7-point scale (1) not at all true of me to (7) very true of me. <sup>a</sup> Scale developed by Pintrich et al. (1993). <sup>b</sup> Scale developed by Midgley et al. (2000). <sup>c</sup> Internal consistency measures computed by Ross et al. (2002)



Table C2

*Social Goal Scales, Items, and Internal Consistency*

Scales and Items	Alpha
Social Development Goal Orientation <sup>a</sup>	0.80
In general, I strive to develop my interpersonal skills.	
I like friendships that challenge me to learn new things about myself.	
I feel successful when I learn something new about how I relate to other people.	
It is important to me to work on improving the quality of my relationships with my friends.	
Social Demonstration Approach Goal Orientation <sup>a</sup>	0.85
It is important to me to have cool friends.	
I want to be friends with popular people.	
It is important to me that others think of me as popular.	
It is important to me to be seen as having a lot of friends.	
Social Demonstration Avoid Goal Orientation <sup>a</sup>	0.81
My goal is to avoid doing things that would cause others to make fun of me.	
I would be successful if I could avoid being socially awkward.	
In social situations, I feel successful if I manage to avoid having others think I'm a geek.	
I try not to goof up when I am out with people.	

*Note.* 7-point scale: (1) not at all true of me to (7) very true of me. <sup>a</sup> Scale developed by Ryan & Shim (2006).

Table C3

*Expectation Scales, Items, and Internal Consistency*

Scale and Items	Alpha
Self-Efficacy for Learning <sup>a</sup> I believe I will receive an excellent grade in [INSERT NAME]. I am certain I can understand the most difficult material presented in the readings for [INSERT NAME]. I'm confident I can learn the basic concepts taught in [INSERT NAME]. I'm confident I can understand the most complex material presented by the instructor in [INSERT NAME]. I'm confident I can do an excellent job on the assignments and tests in [INSERT NAME]. I expect to do well in [INSERT NAME]. I'm certain I can master the skills being taught in [INSERT NAME]. Considering the difficulties of [INSERT NAME], the teacher, and my skills, I think I will do well in [INSERT NAME].	0.93
Control of Learning Beliefs <sup>a</sup> If I study in appropriate ways, then I will be able to learn the required course materials for [INSERT NAME]. It is my own fault if I do not learn the materials in [INSERT NAME]. If I try hard enough, then I will understand the course material in [INSERT NAME]. If I don't understand the course materials in [INSERT NAME], it is because I didn't try hard enough.	0.68

*Note.* 7-point scale (1) not at all true of me to (7) very true of me. <sup>a</sup> Scale developed by Pintrich et al. (1993).

Table C4

*Cost Scale, Items, and Internal Consistency*

Scales and Items	Alpha Test	Alpha HW
Attitude toward cheating <sup>a</sup>	0.77	0.84
Positive to Negative		
Good to Bad		
Pleasant to Unpleasant		
Superior to Inferior		
Thrilling to Boring		
Subjective norms about cheating <sup>b</sup>	0.86	0.89
If I cheated on an in-class test or exam* in [INSERT NAME], most of the people who are important to me (e.g., my family, friends, colleagues, teachers, etc.) would approve of my behavior.		
The people in my life whose opinions I value (e.g., my family, friends, colleagues, teachers, etc.) would be willing to cheat on an in-class test or exam* in [INSERT NAME] if they were in my situation.		
Most people who are important to me (e.g., my family, friends, colleagues, teachers, etc.) would be willing to cheat on an in-class test or exam* in [INSERT NAME] if they were in my situation.		
The people in my life whose opinions I value (e.g., my family, friends, colleagues, teachers, etc.) would NOT approve if I cheated on an in-class test or exam* in [INSERT NAME]. ®		
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* in [INSERT NAME]. ®		
People whose opinions I value (e.g., my family, friends, colleagues, teachers, etc.) expect me to cheat on an in-class test or exam* in [INSERT NAME].		
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* in [INSERT NAME]. ®		
NO ONE who is important to me (e.g., my family, friends, colleagues, teachers, etc.) thinks it is OK to cheat on an in-class test or exam* in [INSERT NAME]. ®		

Table C4 Continued

Scales and Items	Alpha Test	Alpha HW
Perceived behavioral control of cheating <sup>b</sup> I believe that I would have a great deal of control over whether I get caught attempting to cheat on an in-class test or exam* in [INSERT NAME]. I believe that I have the skills needed to [successfully] cheat on an in-class test or exam* in [INSERT NAME] in all circumstances. It is mostly up to me whether or not I successfully cheat on an in-class test or exam* in [INSERT NAME]. Even if I wanted to, I could NOT cheat on an in-class test or exam* in [INSERT NAME]. <sup>®</sup> *Indicates wording change from in-class test or exam to homework assignment for questions asked with respect to homework.	0.67	0.77
Moral obligation NOT to cheat <sup>b</sup> Cheating on an in-class test or exam* in [INSERT NAME] is against my principles. <sup>®</sup> I would feel guilty if I cheated on an in-class test or exam* in [INSERT NAME]. <sup>®</sup> It would NOT be morally wrong for me to cheat on an in-class test or exam* in [INSERT NAME].	0.85	0.86

*Note.* Scale developed by Harding et al. (2007). <sup>a</sup> 7-point semantic differential scale: (1) extremely closely related to (7) extremely closely related. <sup>b</sup> 5-point scale: (1) strongly disagree to (5) strongly agree. \* Indicates wording change from in-class test or exam to homework assignment for questions asked with respect to homework. <sup>®</sup> Indicates items that were reverse-scored.

Table C5

*Moderator Scale, Items, and Internal Consistency*

Scale and Items	Alpha
<p>Neutralization</p> <p>The course material is too hard. No matter how much someone studies he/she cannot understand the material.</p> <p>If someone is in danger of losing his/her scholarship due to low grades.</p> <p>If someone cannot study because he/she is working to pay for school.</p> <p>The instructor doesn't seem to care if students learn the material.</p> <p>The instructor acts like his/her course is the only one that students are taking.</p> <p>Too much material is assigned.</p> <p>Cheating doesn't hurt anyone.</p> <p>Everyone else in the room seems to be cheating.</p> <p>The students in the course make no attempt to cover their papers and others can see their answers.</p> <p>A friend asks him/her to help them cheat and he/she couldn't say no.</p> <p>The instructor leaves the room to talk to someone during the test.</p> <p>The course is required for his/her degree but the information seems useless.</p> <p>He/she is only interested in the grade.</p>	0.93

*Note.* 5-point scale: (1) strongly disagree to (5) strongly agree. Scale developed by Haines et al., (1986).

Table C6

*Mediation Scale, Items, and Internal Consistency*

Scale and Items	Alpha Test	Alpha HW
Intention	0.92	0.94
I would try to cheat on an in-class test or exam* in [INSERT NAME].		
I intend to cheat on an in-class test or exam* in [INSERT NAME].		
I do NOT plan to cheat on an in-class test or exam* in [INSERT NAME]. ®		
I will NOT cheat on an in-class test or exam* in [INSERT NAME]. ®		
If I had the opportunity, I would cheat on an in-class test or exam* in [INSERT NAME].		

*Note.* 5-point scale: (1) strongly disagree to (5) strongly agree. \* Indicates wording change from in-class test or exam to homework assignment for questions asked with respect to homework. ® Indicates items that were reverse-scored. Scale developed by Harding et al. (2007).

Table C7

*Social Desirability Scale, Items, and Internal Consistency*

Scale and Items	Alpha
MCSDSX1	0.88
I'm always willing to admit it when I make a mistake. (T)	
I always try to practice what I preach. (T)	
I never resent being asked to return a favor. (T)	
I have never been irked when people expressed ideas very different from my own. (T)	
I have never deliberately said something that hurt someone's feelings. (T)	
I like to gossip at times. (F)	
There have been occasions when I took advantage of someone. (F)	
I sometimes try to get even rather than forgive and forget. (F)	
At times I have really insisted on having things my own way. (F)	
There have been occasions when I felt like smashing things. (F)	

*Note.* (1) True (2) False. Scale developed by Strahan & Gerbasi (1972). Internal consistency measure computed by Fischer & Fick (1993)

Appendix D  
Variables, Definitions, Measures, and Quantifications



Table D1

*Criterion Cheating Variables, Definitions, Measures, and Quantification*

Variable	Definition	Measure	Quantification
Test/ Homework Cheating Frequency (general)	Self-reported measure of how frequently the respondent has cheated on in-class tests or exams/ homework assignments. Respondent defines what constitutes cheating.	1 context specific item; 5-point scale: (1) never to (5) every time I took a test or exam/worked on a homework assignment	Higher score indicates higher frequency of test/homework cheating
Test/Homework Cheating Frequency (specific)	Self-reported measure of the number of times the respondent has engaged in in-class test or exam/homework cheating.	1 context specific item; Continuous scale starting at 0	Higher score indicates higher frequency of test/homework cheating. Compute correlations between frequency and number to provide support for validity of frequency items.

Table D2

*Predictor Goal Variables, Definitions, Measures, and Quantification*

Variable	Definition	Measure	Quantification
<b>Achievement Goals</b>			
Intrinsic motivation	The extent to which the respondent perceives that he/she engages in academic tasks to pursue intrinsic rewards (i.e., learning or mastery of concepts).	4 items; 7-point scale: (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall intrinsic goal score. Higher scores reflect stronger intrinsic motivation.
Extrinsic motivation	The extent to which the respondent perceives that he/she engages in academic tasks to pursue external rewards (i.e., good grades, praise from others).	4 items; 7-point scale: (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall intrinsic goal score. Higher scores reflect stronger extrinsic motivation.
Task value	The respondent's perceptions of the course material with respect to interest, importance, and utility.	6 items; 7-point scale; (1) not at all true of me to (7) very true of me	Mean of 6 items gives overall task value score. High scores reflect stronger task value.
Mastery	The extent to which the respondent endorses goals related to developing competence.	4-items; 7-point scale (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall mastery goal score. Higher scores reflect stronger endorsement of mastery goals.

Table D2 Continued

Variable	Definition	Measure	Quantification
Performance approach	The extent to which the respondent endorses goals related to demonstrating competence.	4-items; 7-point scale (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall performance approach score. High scores reflect stronger endorsement of performance-approach goals.
Performance avoid	The extent to which the respondent endorses goals related to avoiding demonstrating incompetence.	4-items; 7-point scale (1) not at all true of me to (7) very true of me.	Mean of 4 items gives overall performance-avoid score. High scores reflect stronger endorsement of performance avoid-goals.
<b>Social Goals</b>			
Social development	The extent to which the respondent perceives that he/she engages in tasks to develop social competence or meaningful relationships.	4 items; 7-point scale (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall social development goal score. Higher scores reflect stronger endorsement of social development goals
Social demonstration approach	The extent to which the respondent perceives that he/she engages in tasks to demonstrate social desirability and gain positive judgments from others.	4 items; 7-point scale ranging from (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall social demonstration approach goal score. Higher scores reflect stronger endorsement of social demonstration approach goals

Table D2 Continued

Variable	Definition	Measure	Quantification
Social demonstration avoid	The extent to which the respondent perceives that he/she engages in tasks to avoid appearing socially incompetent or experiencing negative judgments from others.	4 items; 7-point scale ranging from (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall social demonstration avoid score. Higher scores reflect stronger endorsement of social demonstration avoid goals
Expectations			
Self-efficacy	The extent to which the respondent believes that he/she has the skills necessary to achieve academically.	8 items; 7-point scale: (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall self-efficacy score. Higher scores reflect stronger sense of self-efficacy.
Control of learning	The extent to which one believes that his/her academic performance is dependent on factors within his/her control.	4 items; 7-point scale: (1) not at all true of me to (7) very true of me	Mean of 4 items gives overall outcome expectations score. Higher scores reflect stronger control beliefs.
Costs			
Attitudes toward cheating	The respondent's overall evaluation (positive or negative) of cheating.	5 items; 7-point semantic differential measure anchored by bipolar adjectives (i.e., negative-positive, good-bad, unpleasant-pleasant, etc.)	Recode items that have negatively worded endpoints on the right side of the scale. High scores reflect positive attitude toward behavior. Mean of 5 attitudinal item scores gives an overall attitude score.

Table D2 Continued

Variable	Definition	Measure	Quantification
Social norms related to cheating	The respondent's perceptions of the social pressures to cheat or not to cheat.	8 items; 5-point scale: (1) strongly agree to (5) strongly disagree	Recode reverse coded items so that high scores reflect stronger social pressure to cheat. Mean of 8 social norms item scores gives an overall social norms score.
Perceived behavioral control of cheating	The extent to which the respondent feels that he/she can control his/her ability to successfully cheat.	4 items; 5-point scale: (1) strongly agree to (5) strongly disagree.	Recode reverse coded items so that high scores reflect less control over cheating. Mean of 4 perceived behavioral control item scores gives an overall score for perceived behavioral control.
Moral obligation NOT to cheat	The respondent's personal feelings of responsibility NOT to cheat.	3 items; 5-point scale: (1) agree to (5) strongly disagree	Recode reverse coded items so that high scores reflect stronger obligation to cheat. Mean of 3 moral obligation item scores gives an overall score for moral obligation not to cheat.
Moderator Neutralization	The respondent's tendency to justify or rationalize cheating.	11 items; 5-point scale: (1) strongly agree to (5) strongly disagree	Reverse code items so that high scores always reflect high levels of neutralization. Mean of 11 items gives an overall score for neutralization.

Table D2 Continued

Variable	Definition	Measure	Quantification
Mediator			
Intention	The respondent's intent or plan to cheat.	5 items; 5-point scale: (1) strongly agree to (5) strongly disagree	Recode reverse code items so that high scores always reflect a stronger intention to cheat. Mean of 5 intention item scores gives an overall score for intention to cheat.
Control			
Social desirability	The respondent's tendency to answer questions in a socially desirable way.	10 items; (1) true or (2) false	<p>Each item is scored as true or false. Items scored in the keyed direction of social desirability are assigned a score of 1. Items scored in the unkeyed direction are given a score of 0. Sum of 0s and 1s for the 10 items gives overall score.</p> <p>Items keyed as true: SD3, SD6, SD7, SD8, SD9</p> <p>Items keyed as false: SD1, SD2, SD4, SD5, SD10</p>

## Appendix E

### Survey Questions

This appendix presents the text of the survey that was used in this study. The survey consisted of 163 items presented on 13 pages. For reference, the name of the study variable that was used in the creation of the study codebook is included in square brackets by each survey question.

=====  
Informed Consent  
=====

North Carolina State University Informed Consent Form for Research

Title of the study: Motivational predictors of academic cheating among first-year college students

Principal Investigator: Ashley Mouberry

Faculty Sponsor: Dr. Joy Gaston Gayles

What is the purpose of this study?

The purpose of this research study is to explore how academic motivations, goals, and expectations influence students' cheating attitudes and behaviors.

What will happen if you take part in this study?

If you agree to participate in this study, you will be asked to complete a 35 question survey designed to explore your academic motivations and expectations and cheating attitudes and behaviors in a specific course (i.e., the course you find most challenging/difficult this semester). At the end of the survey, you will be asked if you are willing to grant the researcher permission to link your responses to this survey to your responses to the First-Year Student Survey that you completed during New Student Orientation. If you grant permission, your survey responses will be linked through a randomly generated survey ID. Your name and email address will never be linked to your survey responses. The survey will take approximately 20 minutes to complete. Your responses are completely confidential and you may withdraw from this study at any time. If you have to stop participating, for any reason, you may resume your survey session any time before the survey closes on May 16, 2008 by re-clicking the link provided in your email.

Risks

In this study you will be asked to provide information about past cheating behaviors. This is sensitive information. As such, the researcher will take extra measures to ensure that your information will remain confidential and protected at all times. Specifically, the researcher will ensure that your name and/or email address will not be linked to your survey responses. Additionally, all data collected in this study will be encrypted and stored in a secure location with a password known only to the researcher. As a research participant, you also have an important role to play in minimizing the risks associated with this study. It is advised that you complete this survey in a private setting using your personal computer. This will help you avoid the privacy risks that are associated with completing this survey on a high use



public computer. Also, after you have completed the survey, please be sure to exit the survey properly by clicking "End Now."

#### Benefits

This study will not directly benefit you, however, it is the researcher's hope that this study will provide useful information for faculty, staff, and students who are interested learning about the motivational factors that influence students' decisions to cheat.

#### Confidentiality

The information in the study records will be kept strictly confidential. Your name and contact information will not be linked to your survey responses. The information you provide will be grouped with data others provide for reporting and presentation purposes only. No references will be made in oral or written reports that can link you to this study. All data collected will be stored securely in an encrypted file on the researcher's personal password protected computer.

#### Compensation

By participating in this study you will have the opportunity to enter a lottery for one of several \$50.00 Amazon.com gift certificates or one of 5 Nintendo Wii Entertainment Systems. Chances of winning one of the \$50.00 Amazon.com gift certificates are 1 out of every 30 participants. Chances of winning one of the 5 Nintendo Wii Entertainment systems will depend on the number of participants. You must enter your email address on the lottery entry page to receive this opportunity. You will not have the opportunity to enter the drawing if you close your web browser before entering your email address on the lottery entry page. Email addresses will only be used to select lottery participants and will never be connected to survey responses.

#### What if you have questions about this study?

If you have questions at any time about this study or the procedures, you may contact the researcher, Ashley Mouberry, at [armouber@ncsu.edu](mailto:armouber@ncsu.edu) or by cell at 703-463-1950.

#### What if you have questions about your rights as a research participant?

If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact Dr. David Kaber, Chair of the NCSU IRB for the Use of Human Subjects in Research Committee, Box 7514, NCSU Campus (919/515-3086) or Mr. Matthew Ronning, Assistant Vice Chancellor, Research Administration, Box 7514, NCSU Campus (919/513-2148).

Consent to Participate

I have read and understand the above information. I agree to participate in this study with the understanding that I may withdraw at any time. Please print a copy of this page for your records. [Consent]

I Agree (1)

I Do Not Agree (2)



3. How many credit hours is your [course name] course? (Select one.) [Credits]

- 1.0 (1)
- 2.0 (2)
- 3.0 (3)
- More than 3.0 (4)

4. Who primarily teaches your [course name] course? (Select one.) [Teacher]

- Graduate Student/ Teaching Assistant (1)
- Faculty Member/ Professor (2)
- Other (e.g., lecturer) (3)
- Not sure (4)

5. Approximately how many students are enrolled in your [course name] course? (Select one.) [Size]

- Less than 20 (1)
- 20 to 50 (2)
- 51 to 100 (3)
- 101 to 200 (4)
- Over 200 (5)

6. On average, approximately how many hours per week do you spend outside of class doing work (e.g., homework, reading, or studying) for your [course name] course? (Select one.) [Hrs Wrk Week]

- None (1)
- Less than 1 (2)
- At least 1 but less than 3 (3)
- At least 3 but less than 5 (4)
- At least 5 but less than 7 (5)
- At least 7 but less than 9 (6)
- 9 or more (7)

7. What were your reasons for taking your [course name] course? (Check all that apply.)

- The content seemed interesting [Reason1]

- It fulfilled an elective requirement [Reason2]
- I heard good things about the instructor [Reason3]
- I was told that it was an easy course [Reason4]
- I thought it would help me improve my academic skills [Reason5]
- I thought it would help me improve my career prospects [Reason6]
- I thought the content would be useful to me in other courses [Reason7]
- It is required for my major [Reason8]
- It was recommended by a friend [Reason9]
- It was recommended by an academic advisor or teacher [Reason10]
- It was recommended by my parents [Reason11]
- It was offered at a convenient day/time [Reason12]
- My friends also enrolled [Reason13]

8. What do you expect will be your final grade in your [course name] course at the end of this semester? (Select one.) [Course Grade]

- A+ (1)
- A- to A (2)
- B- to B+ (3)
- C- to C+ (4)
- D- to D+ (5)
- F (6)
- It is a pass/fail course and I expect to receive a PASS (7)
- it is a pass/fail course and I expect to receive a FAIL (8)
- Unsure (9)



10. Use the scale below to respond to each statement.

- Not at all true of me (1)
- 2
- 3
- 4
- 5
- 6
- Very true of me (7)

I'm confident I can learn the basic concepts taught in my [course name] course. [Efficacy3]

If I can, I want to get better grades in my [course name] course than most of the other students. [Extrinsic3]

I'm confident I can understand the most complex material presented by the instructor in my [course name] course. [Efficacy4]

In a course like my [course name] course, I prefer course material that arouses my curiosity, even if it is difficult to learn. [Intrinsic2]

I'm very interested in the content area of my [course name] course. [Task\_Value3]

If I try hard enough, then I will understand the course material in my [course name] course. [COL3]

I'm confident I can do an excellent job on the assignments and tests in my [course name] course. [Efficacy5]

I expect to do well in my [course name] course. [Efficacy6]

The most satisfying thing for me in my [course name] course is trying to understand the content as thoroughly as possible. [Intrinsic3]

11. Use the scale below to respond to each statement.

- Not at all true of me (1)
- 2
- 3
- 4
- 5
- 6
- Very true of me (7)

I think the course material in my [course name] course is useful for me to learn.  
[Task\_Value4]

When I have the opportunity in my [course name] course, I choose course assignments that I can learn from even if they don't guarantee a good grade. [Intrinsic4]

If I don't understand the course material in my [course name] course, it is because I didn't try hard enough. [COL4]

I like the subject matter of my [course name] course. [Task\_Value5]

Understanding the subject matter of my [course name] course is important to me.  
[Task\_Value6]

I'm certain I can master the skills being taught in my [course name] course. [Efficacy7]

I want to do well in my [course name] course because it is important to show my ability to my family, friends, employers, or others. [Extrinsic4]

Considering the difficulty of my [course name] course, the teacher, and my skills, I think I will do well in my [course name] course. [Efficacy8]



==== Personal Attitudes and Goals  
=====

12. Use the scale below to respond to each statement.

- Not at all true of me (1)
- 2
- 3
- 4
- 5
- 6
- Very true of me (7)

It's important to me that I look smart compared to others in my [course name] course.  
[Performance\_Approach1]

In general, I strive to develop my interpersonal skills. [Social\_Development1]

I try not to goof up when I am out with people. [Social\_Demo\_Avoid1]

It is important to me to have cool friends. [Social\_Demo\_Approach1]

One of my goals in my [course name] course is to avoid looking like I have trouble doing the coursework. [Performance\_Avoid1]

It is important to me that others think of me as popular. [Social\_Demo\_Approach2]

It's important to me that my instructor doesn't think that I know less than others in my [course name] course. [Performance\_Avoid2]

I feel successful when I learn something new about how I relate to other people.  
[Social\_Development2]

It's important to me that I learn a lot of new concepts in my [course name] course.  
[Mastery1]

13. Use the scale below to respond to each statement.

- Not at all true of me (1)
- 2
- 3
- 4
- 5
- 6
- Very true of me (7)

One of my goals is to look smart in comparison to other students in my [course name] course.  
[Performance\_Approach2]

I would be successful if I could avoid being socially awkward. [Social\_Demo\_Avoid2]

It is important to me to be seen as having a lot of friends. [Social\_Demo\_Approach3]

One of my goals is to show others in my [course name] course that coursework is easy for me. [Performance\_Approach3]

One of my goals is to keep others from thinking I'm not smart in my [course name] course.  
[Performance\_Avoid3]

I like friendships that challenge me to learn new things about myself. [Social\_Development3]

One of my goals in my [course name] course is to learn as much as I can. [Mastery2]

In social situations, I feel successful if I manage to avoid having others think I'm a geek.  
[Social\_Demonstration\_Avoid3]

One of my goals is to show others in my [course name] course that I'm good at my coursework. [Performance\_Approach4]

14. Use the scale below to respond to each statement.

- Not at all true of me (1)
- 2
- 3
- 4
- 5
- 6
- Very true of me (7)

One of my goals is to master a lot of new skills this year in my [course name] course.  
[Mastery3]

I want to be friends with popular people. [Social\_Demo\_Approach4]

My goal is to avoid doing things that would cause others to make fun of me.  
[Social\_Demo\_Avoid4]

It is important to me that I improve my skills this year in my [course name] course.  
[Mastery4]

It is important to me that I don't look stupid in my [course name] course.  
[Performance\_Avoid4]

It is important to me to work on improving the quality of my relationships with my friends.  
[Social\_Development4]

It is important to me that other students in my [course name] course think I'm good at my coursework. [Performance\_Approach5]

It is important to me that I thoroughly understand my coursework in my [course name] course. [Mastery5]

15. Use the scale below to respond to each statement.

- Strongly Disagree (1)
- 2
- 3
- 4
- Strongly Agree (5)

The people in my life whose opinions I value (e.g., family, friends, teachers, etc.) would NOT approve if I cheated on an in-class test or exam in my [course name] course. [TEST\_SN1] (Reverse coded)

If I had the opportunity, I would cheat on an in-class test or exam in my [course name] course or in a course like my [course name] course, in the future. [TEST\_Intention1]

Most people who are important to me (e.g., family, friends, teachers, etc.) would be willing to cheat on an in-class test or exam in my [course name] course if they were in my situation. [TEST\_SN2]

I believe that I have the skills needed to successfully cheat on an in class test or exam in my [course name] course in all circumstances. [TEST\_PBC1]

I intend to cheat on an in-class test or exam in my [course name] course or in a course like my [course name] course, in the future. [TEST\_Intention2]

Most people who are important to me (e.g., family, friends, teachers, etc.) will look down on me if I cheat on an in class test or exam in my [course name] course. [TEST\_SN3] (Reverse coded)

I will try to cheat on an in-class test or exam in my [course name] course or in a course like my [course name] course, in the future. [TEST\_Intention3]

It is mostly up to me whether or not I successfully cheat on an in-class test or exam in my [course name] course. [TEST\_PBC2]

People whose opinions I value (e.g., family, friends, teachers, etc.) expect me to cheat on an in-class test or exam in my [course name] course. [TEST\_SN4]

It would NOT be morally wrong for me to cheat on an in-class test or exam in my [course name] course. [TEST\_MO1]

16. Use the scale below to respond to each statement.

-Strongly Disagree (1)

-2

-3

-4

-Strongly Agree (5)

Most people who are important to me (e.g., family, friends, teachers, etc.) think I should NOT cheat on an in-class test or exam in my [course name] course. [TEST\_SN5] (Reverse coded)

I will NOT cheat on an in-class test or exam in my [course name] course or in a course like my [course name] course, in the future.[TEST\_Intention4](Reverse coded)

If I cheated on an in-class test or exam in my [course name] course most of the people who are important to me (e.g., family, friends, teachers, etc.) would approve of my behavior. [TEST\_SN6]

Even if I wanted to, I could not cheat on an in-class test or exam in my [course name] course. [TEST\_PBC3] (Reverse coded)

I do NOT plan to cheat on an in-class test or exam in my [course name] course or in a course like my [course name] course, in the future. [TEST\_Intention5] (Reverse coded)

I would feel guilty if I cheated on an in-class test or exam in my [course name] course. [TEST\_MO2] (Reverse coded)

The people in my life whose opinions I value (e.g., family, friends, teachers, etc.) would be willing to cheat on an in-class test or exam in my [course name] course if they were in my situation. [TEST\_SN7]

I believe that I would have a great deal of control over whether I get caught attempting to cheat on an in-class test or exam in my [course name] course. [TEST\_PBC4]

Cheating on an in-class test or exam in my [course name] course is against my principles.  
[TEST\_MO3] (Reverse coded)

NO ONE who is important to me (e.g., family, friends, teachers, etc) thinks it is ok to cheat on an in-class test or exam in my [course name] course. [TEST\_SN8] (Reverse coded)

17. For me, the thought of cheating on an in-class test or exam in my [course name] course is: (Select the button that most closely reflects your attitude for each item)

Positive	(1)	[TEST_Attitudes1] (Reverse coded)
( )	(2)	
( )	(3)	
( )	(4)	
( )	(5)	
( )	(6)	
Negative	(7)	

Bad	(1)	[TEST_Attitudes2]
( )	(2)	
( )	(3)	
( )	(4)	
( )	(5)	
( )	(6)	
Good	(7)	

Pleasant	(1)	[TEST_Attitudes3] (Reverse coded)
( )	(2)	
( )	(3)	
( )	(4)	
( )	(5)	
( )	(6)	
Unpleasant	(7)	

Superior (1) [TEST\_Attitudes4] (Reverse coded)  
( ) (2)  
( ) (3)  
( ) (4)  
( ) (5)  
( ) (6)  
Inferior (7)

Boring (1) [TEST\_Attitudes5]  
( ) (2)  
( ) (3)  
( ) (4)  
( ) (5)  
( ) (6)  
Thrilling (7)

18. Estimate the number of times you have cheated this semester on an in-class test or exam in your [course name] course. (Insert whole number) (e.g., 0, 3, 5, 10, 20, etc.)  
[TEST\_Number]

[Insert number]

19. Use the scale below to respond to each statement.

-Strongly Disagree (1)

-2

-3

-4

-Strongly Agree (5)

The people in my life whose opinions I value (e.g., family, friends, teachers, etc.) would NOT approve if I cheated on a homework assignment in my [course name] course.

[HW\_SN1]

If I had the opportunity, I would cheat on a homework assignment in my [course name] course or in a course like my [course name] course, in the future. [HW\_Intention1]

Most people who are important to me (e.g., family, friends, teachers, etc.) would be willing to cheat on a homework assignment in my [course name] course if they were in my situation.

[HW\_SN2]

I believe that I have the skills needed to successfully cheat on a homework assignment in my [course name] course in all circumstances. [HW\_PBC1]

I intend to cheat on a homework assignment in my [course name] course or in a course like my [course name] course, in the future. [HW\_Intention2]

Most people who are important to me (e.g., family, friends, teachers, etc.) will look down on me if I cheat on a homework assignment in my [course name] course. [HW\_SN3]

I will try to cheat on a homework assignment in my [course name] course or in a course like my [course name] course, in the future. [HW\_Intention3]

It is mostly up to me whether or not I successfully cheat on a homework assignment in my [course name] course. [HW\_PBC2]

People whose opinions I value (e.g., family, friends, teachers, etc.) expect me to cheat on a homework assignment in my [course name] course. [HW\_SN4]



It would NOT be morally wrong for me to cheat on a homework assignment in my [course name] course. [HW\_MO1]

20. Use the scale below to respond to each statement.

- Strongly Disagree (1)
- 2
- 3
- 4
- Strongly Agree (5)

Most people who are important to me (e.g., family, friends, teachers, etc.) think I should NOT cheat on a homework assignment in my [course name] course. [HW\_SN5] (Reverse coded)

I will NOT cheat on a homework assignment in my [course name] course or in a course like my [course name] course, in the future. [HW\_Intention4] (Reverse coded)

If I cheated on a homework assignment in my [course name] course most of the people who are important to me (e.g., family, friends, teachers, etc.) would approve of my behavior. [HW\_SN6]

Even if I wanted to, I could not cheat on a homework assignment in my [course name] course. [HW\_PBC3] (Reverse coded)

I do NOT plan to cheat on a homework assignment in my [course name] course or in a course like my [course name] course, in the future. [HW\_Intention5] (Reverse coded)

I would feel guilty if I cheated on a homework assignment in my [course name] course. [HW\_MO2] (Reverse coded)

The people in my life whose opinions I value (e.g., family, friends, teachers, etc.) would be willing to cheat on a homework assignment in my [course name] course if they were in my situation. [HW\_SN7]

I believe that I would have a great deal of control over whether I get caught attempting to cheat on a homework assignment in my [course name] course. [HW\_PBC4]

Cheating on a homework assignment in my [course name] course is against my principles.  
[HW\_MO3] (Reverse coded)

NO ONE who is important to me (e.g., family, friends, teachers, etc) thinks it is ok to cheat on a homework assignment in my [course name] course. [HW\_SN8] (Reverse coded)

21. For me, the thought of cheating on a homework assignment in my [course name] course is: (Select the button that most closely reflects your attitude for each item)

Positive	(1)	[HW_Attitudes1] (Reverse coded)
<input type="radio"/>	(2)	
<input type="radio"/>	(3)	
<input type="radio"/>	(4)	
<input type="radio"/>	(5)	
<input type="radio"/>	(6)	
Negative	(7)	

Bad	(1)	[HW_Attitudes2]
<input type="radio"/>	(2)	
<input type="radio"/>	(3)	
<input type="radio"/>	(4)	
<input type="radio"/>	(5)	
<input type="radio"/>	(6)	
Good	(7)	

Pleasant	(1)	[HW_Attitudes3] (Reverse coded)
<input type="radio"/>	(2)	
<input type="radio"/>	(3)	
<input type="radio"/>	(4)	
<input type="radio"/>	(5)	
<input type="radio"/>	(6)	
Unpleasant	(7)	

Superior (1) [HW\_Attitudes4] (Reverse coded)  
( ) (2)  
( ) (3)  
( ) (4)  
( ) (5)  
( ) (6)  
Inferior (7)

Thrilling (1) [HW\_Attitudes5] (Reverse coded)  
( ) (2)  
( ) (3)  
( ) (4)  
( ) (5)  
( ) (6)  
Boring (7)

22. Estimate the number of times you have cheated this semester on a homework assignment in your [course name] course. (Insert whole number) (e.g., 0, 3, 5, 10, 20, etc.).  
[HW\_Number]

[Insert Number]

==== Cheating Behavior

(All items in this section were collapsed to 5 response items by combining 4&5)

23. In HIGH SCHOOL, how frequently did you cheat on IN-CLASS TEST AND EXAMS?  
(Select one.) [HS\_TEST\_Freq] (Reverse coded)

- Every time I took a test or exam (1)
- Almost every time I took a test or exam (2)
- About half of the times I took at test or exam (3)
- A few of the times I took a test or exam (4)
- Almost none of the times I took a test or exam (5)
- Never (6)

24. In HIGH SCHOOL, how frequently did you cheat on HOMEWORK ASSIGNMENTS?  
(Select one.) [HS\_HW\_Freq] (Reverse coded)

- Every time I worked on a homework assignment (1)
- Almost every time I worked on a homework assignment (2)
- About half of the times I worked on a homework assignment (3)
- A few of the times I worked on a homework assignment (4)
- Almost none of the times I worked on a homework assignment (5)
- Never (6)

25. LAST SEMESTER, how frequently did you cheat on IN-CLASS TESTS OR EXAMS?  
(Select one.) [College\_TEST\_Freq] (Reverse coded)

- Every time I took a test or exam (1)
- Almost every time I took a test or exam (2)
- About half of the times I took at test or exam (3)
- A few of the times I took a test or exam (4)
- Almost none of the times I took a test or exam (5)
- Never (6)

26. LAST SEMESTER, how frequently did you cheat on HOMEWORK ASSIGNMENTS?  
(Select one.) [College\_HW\_Freq] (Reverse coded)

- Every time I worked on a homework assignment (1)
- Almost every time I worked on a homework assignment (2)

- About half of the times I worked on a homework assignment (3)
- A few of the times I worked on a homework assignment (4)
- Almost none of the times I worked on a homework assignment (5)
- Never (6)

27. THIS SEMESTER, how frequently have you cheated on IN-CLASS TEST OR EXAMS in your [course name] course? (Select one.) [TEST\_Freq] (Reverse coded)

- Every time I took a test or exam (1)
- Almost every time I took a test or exam (2)
- About half of the times I took at test or exam (3)
- A few of the times I took a test or exam (4)
- Almost none of the times I took a test or exam (5)
- Never (6)

28. THIS SEMESTER, how frequently have you cheated on HOMEWORK ASSIGNMENTS in your [course name] course? (Select one.) [HW\_Freq] (Reverse coded)

- Every time I worked on a homework assignment (1)
- Almost every time I worked on a homework assignment (2)
- About half of the times I worked on a homework assignment (3)
- A few of the times I worked on a homework assignment (4)
- Almost none of the times I worked on a homework assignment (5)
- Never (6)

29. Use the scale below to respond to each statement.

-Strongly Disagree (1)

-2

-3

-4

-Strongly Agree (5)

Cheating is okay if the course material is too hard. No matter how much one studies one cannot understand the material. [N1]

Cheating is okay if someone does it to help a friend. [N2]

Cheating is okay if someone is danger of losing his/her scholarship due to low grades. [N3]

Cheating is okay if someone doesn't have time to study because he/she is working to pay for school. [N4]

Cheating is okay if the instructor doesn't seem to care if students learn the material. [N5]

Cheating is okay if the instructor acts like his/her course is the only one that students are taking. Too much material is assigned. [N6]

Cheating is okay because cheating doesn't hurt anyone. [N7]

Cheating is okay if the instructor leaves the room during the test or exam. [N8]

Cheating is okay if everyone else seems to be cheating. [N9]

Cheating is okay if the people sitting around me make no attempt to cover up their papers and I can see their answers. [N10]

Cheating is okay if the class is required for someone's degree but the information seems useless. He/she is only interested in the grade. [N11]



31. What best describes the type of high school you graduated from? (Select one.)

[HS\_TYPE]

- Public, non-residential (1)
- Private, non-residential (2)
- Public, residential (e.g., NCSSM) (3)
- Private, residential (e.g., boarding school) (4)
- I was home schooled (5)
- Other (Please specify) (6)

Dummy coded:

[PUBLIC\_HS] (1-->1; 2-->0; 3-->1; 4-->0; 5-->0; 6-->0)

[PRIVATE\_HS] (1-->0; 2-->1; 3-->0; 4-->1; 5-->0; 6-->0)

[NONRESIDENTIAL\_HS] (1-->1; 2-->1; 3-->0; 4-->0; 5-->0; 6-->0)

[RESIDENTIAL\_HS] (1-->0; 2-->0; 3-->1; 4-->1; 5-->0; 6-->0)

32. What best describes your GPA at the end of high school? (Select one.) [HS\_GPA]

- A+ (1)
- A- to A (2)
- B- to B+ (3)
- C- to C+ (4)
- D- to D+ (5)
- F (6)
- Unsure (7)

33. What best describes your GPA at the end of your first semester in college? (Select one.)

[College\_GPA]

- 4.0 or greater (1)
- at least 3.5 but less than 4.0 (2)
- at least 3.0 but less than 3.5 (3)
- at least 2.5 but less than 3.0 (4)
- at least 2.0 but less than 2.5 (5)
- at least 1.5 but less than 2.0 (6)
- less than 1.5 (7)
- Unsure (8)



34. Please indicate any of the following co-curricular activities that you participated in during your first year of college. (Mark all that apply.)

- Student Government (1) [StudentGvt]
- Student Judicial Board (1) [JudicialBoard]
- Student Media/Publications (1) [StudentMedia]
- ROTC (1) [ROTC]
- Varsity Sports/Intercollegiate Athletics (1) [Athlete]
- Social Fraternity/Sorority (1) [Greek]
- I DID NOT participate in any of the activities listed above (1) [Not\_Involved]

35. Do you give the researcher permission to link your responses to this survey to your responses on the First Year Student Survey that you completed last summer during New Student Orientation? (Select one.) [Link]

- Yes (1)
- No (2)

==== Page 12

==== Redirect -- Thank You! Enter Lottery Here

Thank you for participating in this study. If you would like to enter the lottery for one of the \$50.00 Amazon.com gift cards or one of the 5 Nintendo Wii entertainment Systems please follow the instructions below. If you do not want to enter the lottery simply click the “Click to next page” button below.

==== Page 13

==== Thank You. Questions?

Thank you for your time. If you have questions regarding this study, please contact the researcher at [armouber@ncsu.edu](mailto:armouber@ncsu.edu).

Click 'End Now' to be returned to the NCSU home page.

Appendix F

IRB Materials

*Initial Application*

**North Carolina State University  
Institutional Review Board for the Use of Human Subjects in Research**

**Submission For New Studies**

**Title of Project:** Motivational Predictors of Academic Cheating Among First-Year College Students: Goals, Expectations, and Costs

Principal Investigator Ashley Mouberry Department Adult and Higher Education

Source of Funding (**required** information): Templeton Research Fellowship, sponsored by the John Templeton Foundation and the Center for Academic Integrity

Is this research receiving federal funding? No  
(if externally funded include sponsor name and university account number)

Campus Address (Box Number): 7801

Email: [armouber@ncsu.edu](mailto:armouber@ncsu.edu) Phone: 703-463-1950 Fax: N/A

RANK:  Faculty  
X Student:  Undergraduate;  Masters; or X PhD (I am pursuing an EdD)  
 Other (specify): \_\_\_\_\_

If rank is *other* than faculty, please list below the name and email address of the faculty sponsor of this project:

Faculty sponsor: Dr. Joy Gaston Gayles Email: Joy\_Gayles@ncsu.edu

*As the principal investigator, my signature testifies that I have read and understood the University Policy and Procedures for the Use of Human Subjects in Research. I assure the Committee that all procedures performed under this project will be conducted exactly as outlined in the Proposal Narrative and that any modification to this protocol will be submitted to the Committee in the form of an amendment for its approval prior to implementation.*

**Principal Investigator:**

Ashley Mouberry  
(typed/printed name)

Ashley Mouberry  
(signature)

03.25.08  
(date)

*As the faculty sponsor, my signature testifies that I have reviewed this application thoroughly and will oversee the research in its entirety. I hereby acknowledge my role as the **principal investigator of record**.*

**Faculty Sponsor:**

Joy Gaston Gayles  
(typed/printed name)

Joy Gaston Gayles  
(signature)

03.25.08  
(date)

**\*Electronic submissions to the IRB are considered signed via an electronic signature**

Please complete this application and email as an attachment to: [joe\\_rabiega@ncsu.edu](mailto:joe_rabiega@ncsu.edu) or send by mail to: Institutional Review Board, Box 7514, NCSU Campus (Administrative Services III). **Please include consent forms and other study documents with your application and submit as one document.**

\*\*\*\*\*

**For SPARCS office use only**

**Reviewer Decision (Expedited or Exempt Review)**

Exempt       Approved       Approved pending modifications       Table

Expedited Review Category:  1    2    3    4    5    6    7    8a    8b    8c    9

---

Reviewer Name

Signature

Date

**North Carolina State University  
Institutional Review Board for the Use of Human Subjects in Research  
GUIDELINES FOR A PROPOSAL NARRATIVE**

**In your narrative, address each of the topics outlined below. Every application for IRB review must contain a proposal narrative, and failure to follow these directions will result in delays in reviewing/processing the protocol.**

A. INTRODUCTION

1. Briefly describe in lay language the purpose of the proposed research and why it is important.

Purpose:

The purpose of this study is to explore the motivational predictors of test and homework cheating among first-year college students at North Carolina State University. Specifically, this study will examine how students' academic motivations, goals, and expectations (i.e., self-efficacy and outcome expectations) influence their attitudes toward cheating and how students' attitudes toward cheating, perceived social norms about cheating, perceived control of cheating, and sense of moral obligation not to cheat work together to influence their cheating behavior within a specific context (i.e., their most challenging course).

Importance of Research:

This study is designed to test a theoretical model of the motivational predictors of academic cheating which has been proposed in the research literature but has not been tested, to-date. By testing the predictive ability of the proposed model, this study will make a significant contribution to both the achievement motivation and academic cheating literature.

Second, this study will extend the cheating literature by exploring factors that motivate students' decisions to cheat. Specifically, this study is interested in exploring how students' motivations and attitudes toward learning influence their motivations and attitudes toward cheating. (I took out the language that referred to domain. My committee and I discussed this yesterday in my proposal and decided that it is a distinction that is not worth making. Understanding how students' academic motivations influence their cheating decisions will provide valuable information to faculty, staff, and students who are interested in deterring cheating at the undergraduate level.

Third, this study is specifically designed to explore the motivations and behaviors of first-year college students at North Carolina State University. This study will provide North Carolina State University faculty, staff, and students with valuable information about the prevalence of cheating among first-year students and about the factors that motivate first-year students to cheat.

If student research, indicate whether for a course, thesis, dissertation, or independent research.

This research is being conducted to fulfill the dissertation requirement for a doctoral degree in Higher Education Administration at North Carolina State University.

B. SUBJECT POPULATION

1. How many subjects will be involved in the research?

All full-time first-year college students at North Carolina State University will be invited to participate in this study. According to the North Carolina State University Fall 2007 Enrollment Report this population is equal to approximately 4,800 students.

2. Describe how subjects will be recruited. Please provide the IRB with any recruitment materials that will be used.

Subjects will be recruited via an email sent to their university sponsored email addresses (see pre-notice contact in the attached study materials). The pre-notice

email will be sent two days prior to the beginning of the survey administration period. This email describes the purpose and importance of the research study and provides the subjects with the survey administration timeline. At the beginning of the survey administration period, subjects will receive an invitation email that contains information about how to access the web-based survey (see cover letter contact in the attached study materials). Three days after the beginning of the survey administration period a reminder email will be sent to subjects who have not participated in the survey (see follow-up contact in the attached study materials). An additional reminder email will be sent ten days after the beginning of the survey period and will remind students of the survey deadline (see 2<sup>nd</sup> follow-up contact in the attached study materials). A final email will be sent (see final contact in the attached study materials) three weeks after the beginning of the survey administration period to any students who have not yet responded to the survey. The survey will close one month after the beginning of the survey period. No emails will be sent to survey respondents during the final exam period (April 28, 2008 – May 6, 2008).

In summary, the survey administration timeline will be as follows:

April 14, 2008	Pre-notice contact email
April 16, 2008	Survey opens. Invite email sent
April 19, 2008	Follow-up contact sent
April 25, 2008	2 <sup>nd</sup> Follow-up contact sent
May 7, 2008	Final contact sent
May 16, 2008	Survey closes

Each of the contact emails will contain the PI's contact information. Subjects will be encouraged to contact the PI if they have any questions regarding the survey and/or if they are not interested in or eligible to participate in the survey. Participants who either complete the survey or contact the PI to indicate that they are not interested in or eligible to participate in the survey will be removed from the email list and will not receive additional emails from the PI.

3. List specific eligibility requirements for subjects (or describe screening procedures), including those criteria that would exclude otherwise acceptable subjects.

To be eligible for participation in this study, subjects must be full-time first-year college students at North Carolina State University. Subjects must be 18 years of age at the time of survey administration and must be enrolled in their second semester of college studies.

This study will exclude students who are under the age of 18 (minors) at the time of survey administration transfer students (if any), part-time students, distance education students, and any students who have files marked with red privacy flags (i.e., those who have requested a privacy block).

4. Explain any sampling procedure that might exclude specific populations.

The survey for this study will be administered to the entire population of all eligible full-time first-year college students at North Carolina State University. All first-year students, except for those mentioned above (i.e., students under the age of 18 at the time of survey administration (minors), transfer students, part-time students, distance education students, and students with red privacy flags) will be invited to participate in this study.

The PI has already requested and received permission from Lewis Carson, the Associate Director for Institutional Research, to gain access to student records pending IRB approval. Specifically, the PI has asked for permission to receive a dataset with the following information:

- First Name and Last Name
- Email Address
- Age or Date of Birth
- Gender
- Race (White, Black, Native American, Asian, Hispanic, International and Not Reported)
- Residence (In-state, Out-of-state, and International)
- College (A&LS, DESIGN, EDU, ENGR, NATR, H&SS, PAMS, TEXT, MGMT, & DUAP)

The PI has requested that the following students be excluded from the dataset:

- Transfer students
- Part-time students
- Distance education students
- Minors
- Students with red privacy flags

All eligible students will be invited to participate in the survey however, if a student does not actively maintain or use his or her university sponsored email account he or she may not receive the invitation in a timely manner and, as a result, may not have an opportunity to participate in the study.

5. Disclose any relationship between researcher and subjects - such as, teacher/student; employer/employee.

There is no known relationship between the researcher and the study subjects.

6. Check any vulnerable populations included in study: **None**
- minors (under age 18) - if so, have you included a line on the consent form for the parent/guardian signature
  - fetuses
  - pregnant women
  - persons with mental, psychiatric or emotional disabilities
  - persons with physical disabilities
  - economically or educationally disadvantaged
  - prisoners
  - elderly
  - students from a class taught by principal investigator
  - other vulnerable population.

If any of the above are used, state the necessity for doing so. Please indicate the approximate age range of the minors to be involved.

C. PROCEDURES TO BE FOLLOWED

1. In lay language, describe completely all procedures to be followed during the course of the experimentation. Provide sufficient detail so that the Committee is able to assess potential risks to human subjects.

The survey for this study was compiled using scales that have been previously tested and validated for use in college student populations. Permissions were requested and received to reproduce and use all survey scales. The final survey will consist of 172 questions (see survey questions and response choices in attached study materials) and will be administered to all eligible full-time first-year college students at North Carolina State University at the end of the spring 2008 semester.

A dataset of all eligible students will be obtained from the Office of University Planning and Analysis. The dataset will contain the following information: name, university sponsored email address, date of birth, gender, race, residence, and college. Students' names and email addresses will be used for contact purposes only and will not be linked to the survey results. The student demographic



information provided by the Office of University Planning and Analysis will only be used to determine if the respondent group differs significantly from the target population.

The population of first-year students will be randomly divided in half and assigned to one of two treatment groups: students who receive personalized email contacts and students who receive non-personalized email contacts. Students in the personalized email contact group will receive email contacts from the PI that are addressed to them directly (e.g., Dear John). Students in the non-personalized contact group will receive emails that are addressed generically (e.g., Dear Student). The distinction is being made to determine whether students respond differently to web-based surveys based on the nature of the survey contact (personalized vs. non-personalized). Aside from the use of a personalized or non-personalized salutation, the text of the email contacts and all other study materials will be identical.

Subjects will be recruited to participate in the study via a pre-notice email that is sent to their university sponsored email address two days prior to the beginning of the survey administration period (on April 14, 2008). In the email, students will be given information about the purpose of the study and about the research timeline. Students will also be provided with the PI's contact information in case they have any questions regarding the research purpose or protocols.

At the beginning of the survey administration period (on April 16, 2008), subjects will receive an invitation email that contains information about how to access the web-based survey. Each email will contain a unique encrypted survey link that will allow the online survey tool to keep track of who has completed the survey. Once an individual has completed the survey, his or her email address will be automatically removed from the follow-up contact list. Individual names and email addresses will be used for contact and follow-up purposes only and will not be connected to survey results.

Three days after the beginning of the survey administration period (on April 19, 2008) a reminder email will be sent to students who have not participated in the survey.

A second follow-up email will be sent ten days after the beginning of the survey administration period (on April 25, 2008). This email will remind students of the importance of survey participation.

A final email will be sent three weeks after the beginning of the survey administration period (on May 7, 2008) to any students who have yet to responded to the survey. Students will be reminded of the deadline to complete the survey (11:59pm on May 16, 2008).

Participation in the survey is completely voluntary and individuals will be allowed to withdraw from the study at any time. During each contact phase (i.e., pre-notice, invite, follow-up, 2<sup>nd</sup> follow-up, and final) subjects will have the opportunity to email the PI to request to be removed from the contact list. The PI will keep track of the number of subjects who withdraw prior to clicking on the survey link.

If the subject chooses to click on the survey link provided in the invite, follow-up, or final contact emails, he or she will be directed to an informed consent page (see attached study materials). Subjects will be asked to indicate their consent by clicking on an "I Agree" button at the bottom of the page, which indicates that they have read the study description and agree to participate in the study. Subjects who agree to participate by providing consent will be directed to the first page of the survey. Subjects who do not provide consent (i.e., those who clicked "I Do Not Agree") will be directed to the thank you page (see attached study materials). Consent will be documented (as either yes or no) as the first survey response. This will allow the PI to keep track of the number of subjects who withdraw after accessing the informed consent page.

Once a subject has accessed the survey, he or she will have the opportunity to withdraw from participation at any time by clicking on a button labeled "Exit survey." Subjects will be allowed to skip any questions in the survey that they do not wish to answer and will be allowed to abandon the survey at any time by simply closing their web-browser. The PI will examine the final dataset for indicators of survey abandonment and will discard responses from abandoned surveys. Participants who change their mind after abandoning a survey will have the opportunity to contact the PI to obtain a new survey link.

At the beginning of the survey, subjects will be asked to identify their most challenging course. This course name will be automatically piped through the remaining survey questions in an effort to focus subjects' attention on the selected context of interest. Subjects will be asked a series of questions designed to assess their academic motivations and expectations within the course that they specified as the most challenging. Subjects will then be asked as series of questions designed to assess their cheating motivations within that course. Subjects will also be asked to self-report their past cheating behaviors. For the purposes of this

study, two types of cheating will be assessed: cheating on in-class tests and exams and cheating on homework. Next, subjects will be asked a series of questions designed to assess their academic and social goals. Finally, students will be asked to respond to a series of questions that assess their level of socially desirable responding and to questions that collect demographic information.

Once a subject has completed the survey he or she will be directed to a thank you page and will be given the opportunity to enter a lottery drawing for one of the survey incentives (a \$50.00 Amazon.com gift card or a Nintendo Wii Entertainment System). Participants who are interested in entering the lottery will be asked to click on a link that will direct them to a separate webpage where they will be prompted to provide an email address to enter the lottery. Lottery winners will be randomly selected from the email database and will be notified via the email address provided no later than June 1, 2008. Subjects' email addresses will not be linked to their survey responses in any way and will only be used to select and contact the lottery winners. Chances of winning a \$50.00 Amazon.com gift card in the lottery are one out of every 30 entries. Chances of winning one of the 5 Nintendo Wii Entertainment Systems will depend on the number of lottery entries (If I receive 1000 responses, chances of winning will be 1 out of 200).

Participants who exit the survey early will also be given a chance to enter the lottery; their chances of winning one of the lottery prizes will be the same as those who completed the survey.

2. How much time will be required of each subject?

The survey will take approximately 30 minutes to complete.

#### D. POTENTIAL RISKS

1. State the potential risks (physical, psychological, financial, social, legal or other) connected with the proposed procedures and explain the steps taken to minimize these risks.

One of the primary risks associated with this study is the possibility that information will be inadvertently disclosed that would allow for the identification of individual research participants. In this study participants will be asked to share information about past cheating behaviors in a specific course. If this sensitive information were to be linked back to individual participants it could be potentially damaging their self-esteem, reputation, or academic career. Therefore, the PI will make every effort to ensure that participant confidentiality is maintained and that participant data is protected and secure at all times.

In order to protect confidentiality, participants' names and email addresses will not be linked to their survey responses. Participants will, however, be asked to provide demographic and academic information which could, in some cases, possibly be used to identify individual participants (i.e., the only Native American female commuter student enrolled in Intro to Computing during the spring 2008 semester). In order to minimize this risk, survey responses will only be analyzed and reported in the aggregate. Individual survey responses will only be used to assess survey abandonment and will not be analyzed or reported.

Several steps will be taken to protect student data during collection, transmission, and storage. During the data collection period, participants' data will be stored on the surveygizmo.com's web-based server and will be protected by a password known only to the PI. A secure socket survey form will be used to encrypt participants' data during transmission. At the end of the survey administration period, participants' data will be transferred from the surveygizmo.com server to the PI's personal home computer, which is used only by the PI and is password protected and locked when not in use. Once the data is on the PI's personal computer it will be removed permanently from the surveygizmo.com server and the PI's surveygizmo.com account will be closed. The data file will be encrypted using an encryption key known only to the PI. The encrypted file will be backed up on the PI's personal external hard drive.

While every effort will be made by the researcher to ensure that the participants' data is secure, the researcher will not be able to control the security of the participants' personal computers. Participants will be cautioned against using practices that may put them at risk (i.e., failing to close their browsers when using a public computer, using a computer that is infected with a keystroke logger, etc.).

2. Will there be a request for information which subjects might consider to be personal or sensitive (e.g. private behavior, economic status, sexual issues, religious beliefs, or other matters that if made public might impair their self-esteem or reputation or could reasonably place the subjects at risk of criminal or civil liability)?

Yes, respondents will be asked to provide information about the frequency of past cheating behavior.

- a. If yes, please describe and explain the steps taken to minimize these risks.

As stated above, these risks associated with providing sensitive information will be minimized by taking several measures to ensure that participants' responses are kept confidential and that data is protected and kept secure at all times. The information obtained from this study will be reported in the aggregate and will be

used for scholarly purposes only. No direct identifiers (name or email addresses) will be linked to the participants' survey responses. The PI will destroy all data collected during this study once the study is complete.

3. Could any of the study procedures produce stress or anxiety, or be considered offensive, threatening, or degrading? If yes, please describe why they are important and what arrangements have been made for handling an emotional reaction from the subject.

None of the study procedures should produce stress, anxiety, or other negative feelings for research participants.

The informed consent will ensure participants that the information that they provide will be used for research purposes only and that every effort will be made to ensure that their responses are kept confidential. Students will be reminded throughout the study that there are no right or wrong answers to the survey questions and will be encouraged to answer as accurately and honestly as possible. Students will also be given the opportunity to withdraw from participating at any time and will always have the opportunity to skip any question that they do not feel comfortable answering. The PI's contact information will be visible on every page of the survey so that students will be able to contact the PI if they have any questions or concerns or if they experience any unexpected problems at any point during the survey.

4. How will data be recorded and stored?

Data will be initially stored on the surveygizmo.com web-based server. The PI's surveygizmo.com account is password-protected with a password known only to the PI. The data will not be accessible by anyone other than the PI. Surveygizmo.com guarantees that they will never harvest email addresses or use the data collected through their server in any way. At the conclusion of the survey administration period, data will be exported from the surveygizmo.com server to the PI's personal home computer which is always password protected and locked when not in use. At that time, all data will be removed permanently from the surveygizmo.com server and the PI's surveygizmo.com account will be closed and deleted.

Once the data is on the PI's personal home computer, the data file will be encrypted and will only be accessible through the use of an encryption key known only to the PI. The encrypted file will be backed up on the PI's personal external hard drive. Once the study is complete, the PI will destroy all data.

- a. How will identifiers be used in study notes and other materials?

Students' names and email addresses will be entered into a survey generator (surveygizmo.com). The survey generator will then create a unique number ID for each student.

The survey generator will then create personalized emails (invites and reminders) for each student (Dear John, etc.). Research has shown that personalized emails increase the response rates on web surveys. The personalized email that is sent from the survey generator will also contain a unique survey link based on the unique identifier that is randomly assigned by the survey generator. The unique survey link allows the generator to track when individual students respond to the survey and then removes those students from the follow-up contact email list. The unique survey link also allows students to begin the survey and then come back to it at a later point in time while the survey is live. Using a unique survey link also limits the ability for individuals to respond multiple times to the survey. It is truly difficult to conduct a completely anonymous web-based survey and still collect good data.

The survey generator will manage the list while the survey is live and in the field (April 16, 2008 to May 16, 2008). I am the only person with access to my password protected account on the survey generator website.

Once the survey is no longer live and in the field, the data files will be exported immediately from the survey generator website. The data files will be encrypted and stored on one of two of my personal password protected and locked computers. Once the files are exported from the survey generator I will close my survey generator account. When the account is closed the information is permanently deleted from the surveygizmo.com website.

Two files will be exported from the survey generator. The first file will be a linking file, which will connect students' NCSU student IDs to their randomly assigned survey number that is generated by the survey generator. The second file will have students survey responses connected to their randomly assigned survey number. These two files will be encrypted and stored on separate password protected and locked computers. There will never be a direct connection between students' identifying information (name, email address, student IDs) and their survey responses. Connections will only be made through the linking file, which will only be accessed by me. The randomly assigned survey number will be linked to a student ID to connect demographic information and to connect survey responses for those students who grant permission for me to do so. The linking file will be used as the connector. A file will never exist that contains personal

identifying information (name, email address, or student ID) and survey responses.

The linking file will exist only long enough to connect survey responses to demographic information and to link the survey responses of those individuals who grant permission for the researcher to link their two surveys. Surveys responses will not be linked for students who do not grant permission. Linking the survey responses to the demographic information is important because it allows me to delete several questions from my final survey instrument which significantly reduces the amount of time required to complete the survey and will in turn likely increase response rate.

To link the two surveys, I will sort the survey response file by students' responses to the final survey question (yes = 1 and no =2). (As a reminder, the final question is: Do you give the researcher permission to link your responses to this survey to your responses to the 2007 First Year Student Survey that you completed during the New Student Orientation? Yes or No). The randomly generated survey ID numbers for only those who answered yes (1) will be exported to a separate file. This file will contain only the randomly generated ID numbers, not individual survey responses.

The ID numbers will then be connected back to students' ID numbers through the linking file. I will then create a new file containing students' unique randomly generated survey numbers and their NCSU student ID number. No survey responses will be included in this file. This file will be encrypted and will be kept separate (on a separate computer) from the file with the survey responses.

This file will then be given immediately to Dr. Nancy Whelchel who will use student ID numbers to pull the data from the 2007 UPA First Year Student Survey. Dr. Whelchel will then strip the file of student ID numbers and will save a final file, which contains the unique randomly generated survey numbers and students' responses to the 2007 UPA First Year Student Survey. That file will be then be given back to me so that the students' responses from their 2007 EAP First Year Student Survey can be linked to their responses to the present study (through their unique randomly generated survey number, not their student ID numbers).

The linking file will exist only long enough to create the link between the demographic information and students' survey responses and between the two surveys for students who grant permission for me to link their responses to the two surveys. The linking information will be immediately stripped and deleted

permanently as soon as the link is made. The final dataset will contain only the unique identifying numbers generated by the survey generator and students responses to the survey items. As soon as the linking file is destroyed, there will be no way to connect students' personal identifying information to their survey responses. This step will be taken immediately after the survey closes and well before any analysis takes place.

- b. How will reports will be written, in aggregate terms, or will individual responses be described?

Reports will be written in aggregate terms. Individual responses will only be used to assess survey abandonment.

5. If audio or videotaping is done how will the tapes be stored and how/when will the tapes be destroyed at the conclusion of the study.

No audio or videotaping will be used.

6. Is there any deception of the human subjects involved in this study? If yes, please describe why it is necessary and describe the debriefing procedures that have been arranged.

There will be no deception of human subjects.

#### E. POTENTIAL BENEFITS

*This does not include any form of compensation for participation.*

1. What, if any, direct benefit is to be gained by the subject? If no direct benefit is expected, but indirect benefit may be expected (knowledge may be gained that could help others), please explain.

No direct benefit is expected for research subjects. However, each participant will be provided with the opportunity view a summary of the overall research findings. It is anticipated that the research findings will make a significant contribution to the achievement motivation and academic cheating literature. This research will also likely produce useful information for faculty, staff, and students who are interested in understanding the factors that motivate first-year college students' decisions to cheat. Understanding these motivations will help faculty and administrators identify and implement appropriate strategies for deterring academic cheating on college campuses.

#### F. COMPENSATION

1. Explain compensation provisions if the subject withdraws prior to completion of the study.



Participation in this study is completely voluntary, however, a lottery incentive will be provided to encourage participation. Students who access and begin the survey will be given the opportunity to enter a random drawing for one of several \$50 Amazon.com gift certificates and one of 5 Nintendo Wii Entertainment Systems. Approximately one in every 30 participants who begins and or completes the survey will win a \$50 gift certificate. Chances of winning one of the 5 Nintendo Wii Entertainment Systems will depend on the number of lottery entries. Winners will be notified via an email from the PI no later than June 1, 2008. Gift certificates will be sent to the lottery winners via email. Wii Entertainment Systems will be mailed via US Mail.

2. If class credit will be given, list the amount and alternative ways to earn the same amount of credit.

No class credit will be given for participation in this study.

#### G COLLABORATORS

1. If you anticipate that additional investigators (other than those named on Cover Page) may be involved in this research, list them here indicating their institution, department and phone number.

The only other additional investigator that may be involved in this research is Dr. Audrey Jaeger who is Co-Chair of my dissertation advisory committee. Dr. Jaeger is an Assistant Professor of Higher Education in the department of Adult and Higher Education at North Carolina State University. Her Phone number is 919/515-6240.

2. Will anyone besides the PI or the research team have access to the data (including completed surveys) from the moment they are collected until they are destroyed.

No one other than the PI and the PI's faculty advisors will have access to the data.

#### H. ADDITIONAL INFORMATION

1. If a questionnaire, survey or interview instrument is to be used, attach a copy to this proposal.

The survey questions are attached. Pending approval, these questions will be entered verbatim in the surveygizmo.com survey generator.

2. Attach a copy of the informed consent form to this proposal.

The informed consent form is attached. Pending approval, this form will be presented to participants on the first page of the web-based survey. Respondents who agree to offer their informed consent will be directed to the web-based

survey. Respondents who do not provide informed consent will be directed to the thank you page of the survey.

3. Please provide any additional materials that may aid the IRB in making its decision.

I. HUMAN SUBJECT ETHICS TRAINING

\*Please consider taking the [Collaborative Institutional Training Initiative](#) (CITI), a free, comprehensive ethics training program for researchers conducting research with human subjects. Just click on the underlined link.

I have completed the CITI Social Behavioral Research course (95% pass rate) and I have completed NCSU's human subjects online tutorial.

*Study Materials*

*Pre-notice Email*

Date: Monday, April 14, 2008  
To: <studentemail@ncsu.edu>  
From: Ashley Mouberry armouber@ncsu.edu

Subject: Invitation to Participate in a First-Year Student Survey

Dear [Student's name],

Two days from now you will receive an email at this address with a request to fill out a brief survey for an important research project that is being conducted at North Carolina State University.

This research project is designed to gain information regarding your academic motivations, behaviors, and experiences as a first-year college student at North Carolina State University.

I am writing in advance because I have found that many people like to know ahead of time that they will be contacted. The survey will open on Wednesday, April 14, 2008 and will close on Friday, May 16, 2008. By participating in this survey, you not only be supporting the research of a fellow NCSU student, you will also have the opportunity to win one of many \$50 gift certificates to Amazon.com or one of 5 Nintendo Wii Entertainment Systems.

Your participation in this study is important, as it will help faculty, staff, and researchers like me understand the motivations, experiences, and needs of first-year college students at North Carolina State University.

Thank you in advance for your time and consideration. It is only with the generous help of people like you that research like this can be successful.

If you have any questions, feel free to contact me at XXX-XXX-XXXX, or by email at armouber@ncsu.edu.

Sincerely,

Ashley Mouberry Sieman  
Doctoral Student, Higher Education Administration  
North Carolina State University

*Cover Letter Email*

Date: Wednesday, April 16, 2008  
To: <studentemail@ncsu.edu>  
From: Ashley Mouberry <armouber@ncsu.edu>  
Subject: First-Year Student Survey

Dear [Student or Student's name],

As indicated in the email I sent a few days ago, I am conducting an important research study on the academic motivations and experiences of first-year college students at North Carolina State University. I am writing to ask your help with this study.

You were selected to participate in this study because you are in the process of completing your first-year of college at North Carolina State University.

Results from this study will be used to help faculty, staff, and students better understand and respond to the needs of first-year college students. Specifically this study is designed to explore how academic motivations and expectations are related to students' cheating attitudes and behaviors. By participating in this survey, you will be providing a unique perspective of a first-year college student's motivations and expectations and you will be supporting the research of a fellow NCSU student. In addition, you will have the opportunity to win one of many great prizes (\$50.00 Amazon.com gift card or a Nintendo Wii Entertainment System).

Your answers to this survey are completely confidential and will be released only as a summary with no individual identifying information. This survey is voluntary and will only take approximately 30 minutes to complete. Your participation is important for this survey's success.

To access this survey, please click on the following link: [Insert survey link here]

If you have any questions or comments about this study I would be happy to talk with you. My phone number is XXX-XXX-XXXX and my email address is armouber@ncsu.edu. Thank you again for your participation.

Sincerely,

Ashley Mouberry Sieman  
Doctoral Student, Higher Education Administration  
North Carolina State University

*First Follow-up Email*

Date: Saturday, April 19, 2008

To: <studentemail@ncsu.edu>

From: Ashley Mouberry <armouber@ncsu.edu>

Subject: Reminder – Don't Forget to Participate in the First-Year Student Survey

Dear [Student's name],

A few days ago, I sent an email to you with a link to a questionnaire that asks about your experiences as a first-year student at North Carolina State University. To the best of my knowledge, this survey has not yet been completed.

I am writing again because your response is important in helping me to achieve accurate results. As a reminder, the survey that I am asking you to complete is completely confidential. Your name will not be connected to the results in any way. Protecting the confidentiality of student responses to surveys is very important to me, and to the university.

As a reminder, by participating in this survey you will have a chance to win one of many \$50 Amazon.com gift certificates or a Nintendo Wii Entertainment System. I hope that you will go online [Insert survey link here] and complete the questionnaire soon, but if for any reason you prefer not to answer it, please let me know by replying to this email.

Sincerely,

Ashley Mouberry Sieman

Doctoral Student, Higher Education Administration  
North Carolina State University

P.S. If you have any questions, please feel free to contact me. My phone number is XXX-XXX-XXXX and my email address is armouber@ncsu.edu.

*Second Follow-up Email*

Date: Friday, April 25, 2008  
To: <studentemail@ncsu.edu>  
From: Ashley Mouberry <armouber@ncsu.edu>  
Subject: Reminder – First-Year Student Survey

Dear [Student's name],

About 10 days ago I sent an email to you with a link to a questionnaire that asks about your experiences as a first-year student at North Carolina State University. To the best of my knowledge, this survey has not yet been completed.

I am writing today to ensure that you do not miss out on this exciting research opportunity and chance to win great prizes. By participating in this study you will not only be helping a fellow student get her doctorate, you will also have a chance to win a \$50.00 Amazon.com gift certificate or a Nintendo Wii Entertainment System.

If you are interested in participating in this survey, please click on the link below:

[Insert link here]

If for some reason you cannot complete the survey today, please try to do so before the deadline on May 16, 2008. If you do not want to participate in the survey, please let me know by replying to this email.

Sincerely,

Ashley Mouberry Sieman  
Doctoral Student, Higher Education Administration  
North Carolina State University

P.S. If you have any questions, please feel free to contact me. My phone number is XXX-XXX-XXX and my email address is armouber@ncsu.edu.

*Final Contact*

Date: Wednesday, May 7, 2008  
To: <studentemail@ncsu.edu>  
From: Ashley Mouberry <armouber@ncsu.edu>  
Subject: Last Chance to Participate in the First-Year Student Survey

Dear [Student or Student's name]

During the last week, I sent you several emails regarding an important research study that is being conducted among first-year students at North Carolina State University.

This study is drawing to a close, and this is the last contact that will be made with individuals who have been invited to participate in this study. Don't miss out on this exciting opportunity to contribute to the research of a fellow NCSU student and to win one of many fantastic prizes (\$50.00 Amazon.com gift certificates or a Nintendo Wii). You can access the survey by clicking on the following link:

[Insert survey link here]

You will not be able to access the survey after midnight on Friday, May 16, 2008.

I am sending this last email because I am concerned that those who have not responded may have had different experiences than those who have and I want to be sure that everyone's experiences are reflected in the study's results. Hearing from everyone helps me ensure that the survey results are as accurate as possible.

I assure you that your response to this study is voluntary, and if you prefer not to respond that is fine. If you do not believe you are eligible to participate in this study because you are not classified as a first-year college student, please let me know by replying to this email. Any information that you can provide would be very helpful.

Finally, I appreciate your willingness to consider my request as I conclude this effort to better understand the motivations and experiences of first-year college students.

Sincerely,

Ashley Mouberry Sieman

Doctoral Student, Higher Education Administration  
North Carolina State University

*Modification Request #1*

**North Carolina State Institutional Review Board  
STUDY MODIFICATION/ADDENDUM REQUEST FORM**

*Please note: this form is not for annual continuing review. If it's time for your protocol's annual review, please use a "Protocol Renewal Form."*

IRB #: 151-08-04

Most recent IRB Approval Date: April 2, 2008

Principal Investigator: Ashley Mouberry

Project Title: Motivational Predictors of Academic Cheating Among First-Year College Students: Goals, Expectations, and Costs

- I. Summarize / Itemize requested changes and justification for each.  
*DO NOT attach a complete revised protocol, only pertinent changes.*

Based on the recommendation of my dissertation committee and on suggestions from Nancy Whelchel, I would like to increase the publicity for my survey by mailing a post card to all first-year students. The postcard (see attached) will be mailed to all students the day the survey opens (April 16, 2008). Postcards will be mailed via campus mail to students who live on campus and via US mail to students who live off campus. Student addresses will be obtained from the public directory on the NCSU website. Students who have not posted their address on the public directory will not receive a postcard. In addition, I would like to hang fliers in freshmen residence halls and in visible locations across campus. The poster (see attached) will be submitted to the office of University Housing for distribution. I have already requested and received permission from University Housing officials to post the fliers pending IRB approval.

- II. Do changes require a REVISED CONSENT statement or procedure?  
*If so, attach revised form and procedures.* No, the content of the post card and flier is the same content that is presented in the email requests.
- III. Do changes affect the risks or benefits expected from participating in the study? If so, please describe. No.
- IV. Do changes require revisions to the methods of ensuring anonymity or confidentiality? *If so, explain.* No.

Ashley Sieman  
Signature of Investigator

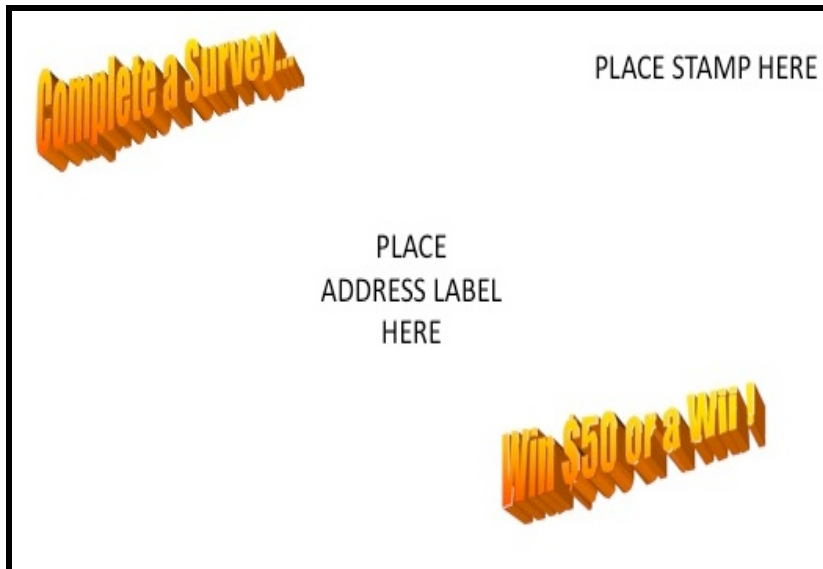
April 10, 2008  
Date



Joy Gayles  
Signature of Faculty Sponsor (if applicable)

April 10, 2008  
Date

*Postcard*



**ATTENTION FIRST YEAR STUDENTS !!**

You recently received an email inviting you to participate in a **First-Year Student Survey**.

Why should you do this survey?

- It's an easy, confidential way to share your opinions and experiences about your first year at NCSU;
- Your answers will contribute to our understanding of students' motivations to learn and to cheat during the first year of college.
- You will help a fellow student complete the final requirements to achieve her Doctoral degree;
- You will be entered into a drawing to win one of several **\$50.00 Amazon.com gift cards** (chances of winning are 1 in 30) and one of **5 Nintendo Wii Entertainment Systems!**

**So check your NCSU inbox...and respond today!**  
**Thanks in advance for your participation.**

Participation is voluntary. The deadline for responding is **May 16, 2008**.  
Questions? Email [armouber@ncsu.edu](mailto:armouber@ncsu.edu) or call 703-463-1950.

# Complete a Survey ...

## **ATTENTION First Year Students!!**

### **Check your NCSU email today to participate in the First Year Student Survey**

#### **Why should you participate?**

- It is an easy and confidential way to share your opinions and experiences about your first year at NCSU.
- You will help a fellow student complete the final requirements to achieve her Doctoral degree.
- You will be entered into a drawing to win one of several \$50.00 Amazon.com gift cards or a Nintendo Wii.

# Win \$50.00 or a Wii !!

Participation is voluntary and confidential.  
Chances of winning a \$50.00 Amazon.com gift card are 1 in 30.  
Chances of winning one of 5 Wii's depend on the number of entries.

Questions? Contact Ashley Mouberry at [armouber@ncsu.edu](mailto:armouber@ncsu.edu) or call XXX-XXX-XXX.

*Modification Request #2*

**North Carolina State Institutional Review Board  
STUDY MODIFICATION/ADDENDUM REQUEST FORM**

*Please note: this form is not for annual continuing review. If it's time for your protocol's annual review, please use a "Protocol Renewal Form."*

IRB #: 151-08-04

Most recent IRB Approval Date: April 2, 2008/April 16, 2008

Principal Investigator: Ashley Mouberry

Project Title: Motivational Predictors of Academic Cheating Among First-Year College Students: Goals, Expectations, and Costs

- V. Summarize / Itemize requested changes and justification for each.  
*DO NOT attach a complete revised protocol, only pertinent changes.*

I have created text for a separate follow-up email that will be sent to students who have started the survey but have not completed it (many students stopped after the first 10 questions). In my initial instructions I told students that once they started the survey they could stop and return to the survey at any point during the survey period. To-date, I have 484 completed surveys and 359 partial surveys. This message will be sent to the individuals who have partially completed their surveys to encourage them to complete and submit.

- VI. Do changes require a REVISED CONSENT statement or procedure?  
*If so, attach revised form and procedures. No.*

- VII. Do changes affect the risks or benefits expected from participating in the study? If so, please describe. *No.*

- VIII. Do changes require revisions to the methods of ensuring anonymity or confidentiality? *If so, explain. No.*

Ashley Mouberry Sieman  
Signature of Investigator

April 18, 2008  
Date

Joy Gayles  
Signature of Faculty Sponsor (if applicable)

April 18, 2008  
Date

*Follow-Up Contact for Partial Respondents*

Date: Saturday, April 19, 2008

To: <studentemail@ncsu.edu>

From: Ashley Mouberry <armouber@ncsu.edu>

Subject: Help Ashley Graduate! Complete Your First-Year Student Survey

Dear [Student's name],

My survey generator indicates that you have begun but have not yet completed the First-Year Student Survey. Unfortunately, I am not able to use partially completed surveys for my research. Your response is important for helping me achieve accurate results. I hope that you will take a few extra minutes this weekend to complete the survey. You can pick up where you left off (your responses have been saved) by clicking on the following link:

[Insert survey link]

As a reminder, by participating in this survey you will have a chance to win one of many \$50 Amazon.com gift certificates or one of 5 Nintendo Wii Entertainment Systems.

Be assured that your survey responses are completely confidential. Your name and email address will not be connected to your responses in any way. Your participation is voluntary.

I hope that you will go online and complete the survey soon, but if for any reason you prefer not to answer it, please let me know by replying to this email.

Sincerely,

Ashley Mouberry Sieman  
Doctoral Student, Higher Education Administration  
North Carolina State University

P.S. If you have any questions, please feel free to contact me. My phone number is XXX-XXX-XXXX and my email address is armouber@ncsu.edu.

*Modification Request #3*

**North Carolina State Institutional Review Board  
STUDY MODIFICATION/ADDENDUM REQUEST FORM**

*Please note: this form is not for annual continuing review. If it's time for your protocol's annual review, please use a "Protocol Renewal Form."*

IRB #: 151-08-04

Most recent IRB Approval Date: April 2, 2008/April 16, 2008

Principal Investigator: Ashley Mouberry

Project Title: Motivational Predictors of Academic Cheating Among First-Year College Students: Goals, Expectations, and Costs

IX. Summarize / Itemize requested changes and justification for each.  
*DO NOT attach a complete revised protocol, only pertinent changes.*

I have made minor changes to the text of my contact emails. The changes are indicated in red in the attached materials.

X. Do changes require a REVISED CONSENT statement or procedure?  
*If so, attach revised form and procedures.* No.

XI. Do changes affect the risks or benefits expected from participating in the study? If so, please describe. No.

XII. Do changes require revisions to the methods of ensuring anonymity or confidentiality? *If so, explain.* No.

Ashley Mouberry Sieman  
Signature of Investigator

May 6, 2008  
Date

Joy Gayles  
Signature of Faculty Sponsor (if applicable)

May 6, 2008  
Date

*Revised Final Contact*

To: <studentemail@ncsu.edu>  
From: Ashley Mouberry <armouber@ncsu.edu>  
Subject: Reminder – First-Year Student Survey – **Deadline Approaching May 16, 2008**  
Dear [Students' name],

My survey generator indicates that you have begun but have not yet completed the First-Year Student Survey. Unfortunately, I am not able to use partially completed surveys for my research. Your response is important for helping me to achieve accurate results. **Now that finals are over**, I hope that you will take a few minutes to complete your survey. Your responses have been saved so you can click through to where you left off.

You can access your survey by clicking on the following link:

[Insert Survey Link]

As a reminder, by participating in this survey you will have a chance to win one of many \$50 Amazon.com gift certificates or one of 5 Nintendo Wii Entertainment Systems. **Don't miss out on this exciting research opportunity and chance to win great prizes!**

**If for some reason you cannot complete the survey today, please be sure to do so before the deadline on May 16, 2008.**

Sincerely,

Ashley Mouberry Sieman  
NCSU Doctoral Student, Higher Education Administration  
North Carolina State University

P.S. If you have any questions, please feel free to contact me. My email address is armouber@ncsu.edu.

*IRB Approvals*

*Initial Approval*

North Carolina State University is a land-grant university and a constituent institution of The University of North Carolina

**Office of Research  
and Graduate Studies**

**NC STATE UNIVERSITY**

Sponsored Programs and  
Regulatory Compliance  
Campus Box 7514  
2701 Sullivan Drive  
Raleigh, NC 27695-7514  
919.515.2444  
919.515.7721 (fax)

From: Joseph Rabiega, IRB Coordinator  
North Carolina State University  
Institutional Review Board

Date: April 2, 2008

Project Title: Motivational Predictors of Academic Cheating Among First-Year College Students: Goals, Expectations and Costs

IRB#: 151-08-04

Dear Ms. Mouberry -

The project listed above has been reviewed the NC State Institutional Review Board for the Use of Human Subjects in Research, and is approved for one year. This protocol expires on April 2, 2009, and will need continuing review before that date.

NOTE:

1. This board complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU the Assurance Number is: FWA00003429.
2. Any changes must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.
4. Your approval for this study lasts for one year from the review date. If your study extends beyond that time, including data analysis, you must obtain continuing review from the IRB.

Sincerely,  
Joseph Rabiega  
NCSU IRB

*Amendment Approval*

North Carolina State University is a land-grant university and a constituent institution of The University of North Carolina

**Office of Research  
and Graduate Studies**

**NC STATE UNIVERSITY**

Sponsored Programs and  
Regulatory Compliance  
Campus Box 7514  
2701 Sullivan Drive  
Raleigh, NC 27695-7514  
919.515.2444  
919.515.7721 (fax)

From: Joseph Rabiega, IRB Coordinator  
North Carolina State University  
Institutional Review Board

Date: April 14, 2008

Project Title: Motivational Predictors of Academic Cheating Among First-Year College Students: Goals, Expectation and Costs

Dear Ms. Mouberry:

Your amendment to the study named above has been reviewed by the IRB office, and has been approved. This approval does not change the original IRB approval expiration of the project. If you have any questions please do not hesitate to contact the IRB office at 919.515.7515.

Thank you,

Joseph Rabiega  
NCSU IRB



Appendix G  
Population Demographics

Table G1  
*Demographic Characteristics of the Population*

Variable	Frequency	Percent
Gender		
Female	2023	45.3
Male	2439	54.7
Age		
18	33	0.7
19	3185	71.4
20	1221	27.4
21	16	0.4
22	4	0.1
23	2	0.0
24	1	0.0
Race		
African American	393	8.8
American Native	27	0.6
Asian	219	4.9
Hispanic	116	2.6
International	25	0.6
White	3565	79.9
Unknown	117	2.6
Home Residence		
In state	4050	90.8
Out of state	387	8.7
International	25	0.6
School Residence		
On-campus	4016	90.0
On-campus private	24	0.5
Off-campus	279	6.3
No Address	143	3.2
College		
Agriculture & Life Sciences	800	17.9
Education	139	3.1
Humanities & Social Sciences	561	12.6
Natural Resources	138	3.1

Table G1 Continued

Variable	Frequency	Percent
Engineering	1277	28.6
Management	354	7.9
Design	69	1.5
Undergrad Acad. Programs	750	16.8
Physical & Math Science	184	4.1
Textiles	190	4.3
Academic Discipline		
Business	354	7.9
Applied Sciences	1536	34.4
Natural Sciences	1122	25.1
Social Sciences	700	15.7
Undecided	750	16.8

*Note.* N = 4,462.

Appendix H  
Description of Model Variables

Table H1

*Measures of Central Tendency for Model Variables*

Variable	N	Min	Max	M	SD	Skewness	Kurtosis
<b>Predictors</b>							
Achievement goals							
Intrinsic motivation	1688	1	7	3.99	1.32	-0.05	-0.38
Extrinsic motivation	1689	1	7	4.92	1.22	-0.45	-0.19
Task value	1677	1	7	4.19	1.49	-0.09	-0.73
Mastery	1483	1	7	4.37	1.52	-0.21	-0.62
Performance approach	1485	1	7	3.11	1.40	0.38	-0.43
Performance avoid	1492	1	7	3.11	1.39	0.39	-0.43
Social goals							
Social development	1487	1	7	4.65	1.22	-0.20	-0.15
Social demo. approach	1490	1	7	2.84	1.38	0.55	-0.32
Social demo. avoid	1490	1	7	3.20	1.27	0.33	-0.27
Expectations							
Self-efficacy	1673	1	7	4.07	1.41	0.03	-0.68
Control of learning	1692	1	7	4.52	1.36	-0.13	-0.65
Costs (Homework)							
HW attitudes	1305	1	7	2.59	1.34	0.39	-0.72
HW subjective norms	1291	1	5	2.10	0.90	0.29	-1.02
HW perceived control	1307	1	5	3.35	1.05	-0.25	-0.49
HW moral obligation	1306	1	5	2.25	1.12	0.44	-0.78
Costs (Test)							
Test attitude	1434	1	7	2.06	1.06	1.04	0.68
Test subjective norms	1409	1	4	1.62	0.67	0.99	-0.14
Test perceived control	1417	1	5	2.76	0.96	0.09	-0.45
Test moral obligation	1416	1	5	1.66	0.89	1.23	0.59
<b>Criteria</b>							
HW cheating frequency	1348	1	5	1.51	0.76	1.78	3.63
Test cheating frequency	1343	1	5	1.16	0.46	3.72	18.85

Table H1 Continued

Variable	N	Min	Max	M	SD	Skewness	Kurtosis
Moderator							
Neutralization	1299	11	55	18.91	9.303	1.03	0.29
Mediators							
HW intention	1312	1	5	2.08	1.06	0.66	-0.46
Test intention	1418	1	5	1.49	0.74	1.51	1.46

Table H1 shows that the respondents exhibited moderately high levels of extrinsic goal orientation (M = 4.92 out of seven), social development goals (M = 4.65 out of seven), control of learning (M = 4.52 out of seven), perceived behavioral control with respect to homework cheating (M = 3.35 out of five), and moral obligation not to cheat on homework (negatively worded item; M = 2.25 out of five) and tests (negatively worded item; M = 1.66 out of five). Respondents exhibited low levels of perceived subjective norms that support cheating on homework (M = 2.10 out of five) and tests (M = 1.62 out of five), and low intention to cheat on homework (M = 2.08 out of five) and tests (M = 1.49 out of five).

Appendix I  
Supplemental Description of Predictor Variables

The tables presented in this appendix provide supplemental descriptive information about the predictor variables in the proposed model. Table I1 presents the correlation coefficients for the predictor variables. Table I2 presents the mean and standard deviation scores for the predictor variables for each of the criterion subgroups. Table I3 presents the results of Levene's test for equality of variances for each of the predictor variables by criterion subgroup. Table I4 presents the results of the independent samples t-tests that were conducted to compare the predictor variables across subgroups of the criterion variables.

Table I1

*Pearson Correlation Coefficients for Predictor Variables*

Variable	1	2	3	4	5	6	7	8	9	10	11
(1) Intrinsic Goal	1.000										
(2) Extrinsic Goal	0.400**	1.000									
(3) Task Value	0.777**	0.457**	1.000								
(4) Mastery	0.729**	0.497**	0.793**	1.000							
(5) Performance Approach	0.312**	0.395**	0.288**	0.365**	1.000						
(6) Performance Avoid	0.239**	0.332**	0.230**	0.300**	0.853**	1.000					
(7) Social Development	0.353**	0.364**	0.339**	0.484**	0.323**	0.303**	1.000				
(8) Social Dem. Approach	0.075**	0.178**	0.086**	0.127**	0.606**	0.069**	0.251**	1.000			
(9) Social Dem. Avoid	0.153**	0.260**	0.147**	0.203**	0.681**	0.694**	0.319**	0.694**	1.000		
(10) Self-Efficacy	0.709**	0.409**	0.693**	0.561**	0.306**	0.215**	0.329**	0.129**	0.170**	1.000	
(11) Control of Learning	0.577**	0.318**	0.604**	0.464**	0.196**	0.178**	0.349**	0.088**	0.142**	0.686**	1.000
(12) HW Attitudes	-0.228**	-0.068*	-0.194**	-0.189**	0.006	0.021	-0.077**	0.105**	0.047	-0.214**	-0.092**
(13) HW Subjective Norms	-0.189**	-0.121**	-0.159**	-0.172**	0.056*	0.068*	-0.064*	0.175**	0.120**	-0.159**	-0.065*
(14) HW Perceived Control	-0.035	-0.015	-0.012	-0.047	-0.047	-0.049	0.131**	0.008	-0.004	0.029	0.114**
(15) HW Moral Obligation	-0.234**	-0.100**	-0.176**	-0.202**	0.011	0.027	-0.057*	0.129**	0.072*	-0.184**	-0.062*
(16) HW Intention	-0.226**	-0.110**	-0.189**	-0.191**	-0.045	0.074**	-0.043	0.165**	0.109**	-0.231**	-0.073**
(17) Test Attitudes LOG	-0.188**	-0.079**	-0.153**	-0.176**	-0.047	0.076**	-0.099**	0.203**	0.107**	-0.153**	-0.074**
(18) Test Subjective Norms	-0.142**	-0.155**	-0.150**	-0.180**	0.109**	0.133**	-0.149**	0.268**	0.161**	-0.118**	-0.101**
(19) Test Perceived Control	-0.028	-0.080**	-0.041	-0.077**	0.030	0.006	0.039	0.130**	0.083**	0.052	0.084**
(20) Test Moral Obligation LOG	-0.204**	-0.166**	-0.193**	-0.235**	0.048	0.062*	-0.187**	0.240**	0.104**	-0.137**	-0.117**
(21) Test Intention LOG	-0.170**	-0.104**	-0.163**	-0.176**	0.140**	0.171**	-0.141**	0.314**	0.187**	-0.160**	-0.122**
(22) Neutralization LOG	-0.201**	-0.060*	-0.166**	-0.159**	0.099**	0.101**	-0.063*	0.203**	0.142**	-0.167**	-0.122**

Table I1 Continued

Variable	12	13	14	15	16	17	18	19	20	21	22
(1) Intrinsic Goal											
(2) Extrinsic Goal											
(3) Task Value											
(4) Mastery											
(5) Performance Approach											
(6) Performance Avoid											
(7) Social Development											
(8) Social Dem. Approach											
(9) Social Dem. Avoid											
(10) Self-Efficacy											
(11) Control of Learning											
(12) HW Attitudes	1.000										
(13) HW Subjective Norms	0.672**	1.000									
(14) HW Perceived Control	0.349**	0.324**	1.000								
(15) HW Moral Obligation	0.748**	0.794**	0.394**	1.000							
(16) HW Intention	0.702**	0.788**	0.362**	0.800**	1.000						
(17) Test Attitudes LOG	0.693**	0.472**	0.264**	0.521**	0.492**	1.000					
(18) Test Subjective Norms	0.391**	0.616**	0.056*	0.440**	0.460**	0.492**	1.000				
(19) Test Perceived Control	0.252**	0.239**	0.580**	0.275**	0.246**	0.315**	0.198**	1.000			
(20) Test Moral Obligation LOG	0.494**	0.522**	0.154**	0.591**	0.514**	0.602**	0.678**	0.301**	1.000		
(21) Test Intention LOG	0.417**	0.487**	0.090*	0.487**	0.556**	0.552**	0.710**	0.251**	0.744**	1.000	
(22) Neutralization LOG	0.614**	0.571**	0.257**	0.600**	0.586**	0.577**	0.455**	0.225**	0.528**	0.495**	1.000

Note. \*Correlation is significant at the 0.05 level (2-tailed). \*\*Correlation is significant at the 0.01 level (2-tailed).

Table I2

*Mean and Standard Deviation Scores for the Predictor Variables by Criterion Subgroup*

Variable	Non Cheater			HW Cheater			Test Cheater			Both		
	N	M	SD	N	M	SD	N	M	SD	N	M	SD
Intrinsic Motivation	777	4.15	1.34	365	3.97	1.22	31	3.85	1.48	154	3.65	1.28
Extrinsic Motivation	777	4.91	1.21	367	5.04	1.17	31	5.50	0.88	152	4.74	1.32
Task Value	772	4.38	1.49	364	4.15	1.43	31	4.14	1.45	150	3.85	1.51
Mastery	759	4.48	1.56	357	4.39	1.43	30	4.41	1.56	152	4.09	1.47
Performance Approach	759	3.06	1.44	356	3.12	1.32	31	3.45	1.44	152	3.32	1.40
Performance Avoid	763	3.06	1.42	359	3.11	1.37	31	3.46	1.36	152	3.35	1.34
Social Develop.	760	4.62	1.24	360	4.85	1.12	28	5.00	1.23	152	4.47	1.18
Social Dem. Approach	761	2.75	1.42	359	2.71	1.28	31	2.92	1.22	152	3.38	1.34
Social Dem. Avoid	762	3.16	1.29	357	3.18	1.26	31	3.10	0.95	153	3.52	1.23
Self-Efficacy	769	4.31	1.40	362	3.97	1.31	30	3.95	1.49	152	3.68	1.48
Control of Learning	776	4.60	1.37	367	4.66	1.31	31	4.42	1.35	152	4.30	1.37
Test Attitudes LOG	769	0.48	0.46	361	0.65	0.45	31	0.91	0.44	153	1.01	0.42
Test Subjective Norms	754	1.51	0.63	362	1.59	0.60	30	1.68	0.54	151	2.19	0.73
Test Perceived Control	763	2.67	0.99	366	2.81	0.96	28	2.96	1.02	151	3.14	0.78
Test Moral Obligation LOG	761	0.29	0.43	363	0.38	0.46	31	0.60	0.45	149	0.81	0.43
Test Intention LOG	757	0.20	0.35	367	0.29	0.37	31	0.55	0.38	152	0.78	0.40
HW Attitudes	751	2.06	1.16	360	3.24	1.19	30	2.81	1.15	151	3.59	1.20
HW Subjective Norms	737	1.79	0.81	362	2.47	0.86	28	2.18	0.81	152	2.72	0.76
HW Perceived Control	754	3.12	1.09	361	3.74	0.92	27	3.40	0.82	151	3.58	0.89
HW Moral Obligation	748	1.82	0.95	364	2.79	1.11	29	2.53	0.82	151	3.06	0.94
HW Intention	757	1.62	0.80	363	2.67	1.05	28	2.13	0.86	150	3.02	0.96
Neutralization LOG	749	2.67	0.39	362	2.99	0.44	29	3.00	0.42	150	3.22	0.41



Table I3

*Levene's Test for Equality of Variances for the Predictor Variables by Criterion Subgroup*

Variable	Non-Cheater vs. HW Cheater		Non-Cheater vs. Test Cheater		Non-Cheater vs. Both	
	F	p	F	p	F	p
Intrinsic Goal	4.728	0.030*	0.386	0.535	1.142	0.286
Extrinsic Goal	0.470	0.493	4.371	0.037*	1.637	0.201
Task Value	0.770	0.380	0.060	0.806	0.001	0.981
Mastery	3.264	0.071	0.031	0.861	1.418	0.234
Performance Approach	6.388	0.012*	0.132	0.717	0.037	0.848
Performance Avoid	2.276	0.132	0.008	0.930	1.577	0.210
Social Development	6.542	0.011*	0.275	0.600	0.780	0.377
Social Dem. Approach	4.424	0.036*	0.857	0.355	0.910	0.340
Social Dem. Avoid	0.640	0.424	3.906	0.048*	0.332	0.565
Self-Efficacy	3.101	0.079	0.172	0.678	0.519	0.472
Control of Learning	1.141	0.286	0.048	0.826	0.069	0.793
Test Attitudes LOG	0.069	0.793	0.472	0.492	3.349	0.068
Test Subjective Norms	0.216	0.642	0.380	0.538	17.824	0.000***
Test Perceived Control	0.421	0.516	0.209	0.648	11.662	0.001**
Test Moral Obligation LOG	7.930	0.005**	0.438	0.508	0.025	0.875
Test Intention LOG	11.547	0.001**	2.706	0.100	10.990	0.001**
HW Attitudes	0.710	0.400	0.018	0.893	0.960	0.327
HW Subjective Norms	0.049	0.825	0.064	0.801	13.222	0.000***
HW Perceived Control	7.796	0.005**	2.617	0.106	4.573	0.033*
HW Moral Obligation	2.728	0.099	4.738	0.030*	10.372	0.001**
HW Intention	24.959	0.000***	0.646	0.422	0.002	0.965
Neutralization LOG	13.463	0.000***	0.387	0.534	0.020	0.889
SD Keyed	4.377	0.037*	0.626	0.429	0.580	0.447

Table I3 Continued

Variable	Non-Cheater vs. HW Cheater		Non-Cheater vs. Test Cheater		Non-Cheater vs. Both	
	F	p	F	p	F	p
Intrinsic Goal	1.994	0.159	0.201	0.654	1.094	0.297
Extrinsic Goal	3.683	0.056	2.706	0.101	5.871	0.016*
Task Value	0.003	0.955	0.372	0.542	0.056	0.813
Mastery	0.214	0.644	0.006	0.936	0.140	0.708
Performance Approach	1.585	0.209	2.419	0.120	0.215	0.644
Performance Avoid	0.186	0.666	0.021	0.885	0.255	0.614
Social Development	0.101	0.750	0.813	0.368	0.013	0.909
Social Dem. Approach	0.055	0.814	0.281	0.596	0.224	0.637
Social Dem. Avoid	2.890	0.090	0.000	0.994	3.125	0.079
Self-Efficacy	1.042	0.308	3.297	0.070	0.003	0.954
Control of Learning	0.022	0.883	0.209	0.647	0.007	0.933
Test Attitudes LOG	0.355	0.552	2.355	0.125	0.034	0.854
Test Subjective Norms	0.250	0.617	20.832	0.000***	7.645	0.006**
Test Perceived Control	0.461	0.498	8.142	0.004**	5.217	0.024*
Test Moral Obligation LOG	0.099	0.753	2.918	0.088	0.292	0.589
Test Intention LOG	0.332	0.565	1.000	0.318	0.001	0.975
HW Attitudes	0.022	0.883	0.088	0.767	0.078	0.780
HW Subjective Norms	0.075	0.784	9.140	0.003**	1.349	0.247
HW Perceived Control	0.863	0.354	0.040	0.841	0.767	0.382
HW Moral Obligation	3.903	0.049*	9.902	0.002**	0.149	0.700
HW Intention	0.604	0.437	6.289	0.012*	0.227	0.634
Neutralization LOG	0.354	0.552	4.556	0.033*	0.200	0.655
SD Keyed	2.563	0.110	4.860	0.028*	0.178	0.674

Note. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001.

Table I3 shows that there was a significant difference between the subjects who did not cheat and those who cheated on homework for intrinsic goal orientation, performance approach orientation, social development goals, social demonstration approach goals, test moral obligation log, test intention log, homework perceived control, homework intention, and neutralization log ( $p < 0.05$ ). A significant difference was found between subjects who did not cheat and those who cheated on tests for extrinsic goal orientation, social demonstration avoid goals, and homework moral obligation ( $p < 0.05$ ).

For non-cheaters versus those who cheated on both homework and tests, a significant difference was found for test subjective norms, test perceived behavioral control, test intention log, homework subjective norms, homework perceived behavioral control, and homework moral obligation ( $p < 0.05$ ). For homework cheaters versus test cheaters, a significant difference was found for only homework moral obligation ( $p < 0.05$ ). For homework cheaters versus respondents who cheated on both homework and tests, a significant difference was found for test subjective norms, test perceived behavioral control, homework subjective norms, homework moral obligation, homework intention, and neutralization log ( $p < 0.05$ ).

Finally, for test cheaters versus respondents who cheated on both homework and tests, a significant difference was found for extrinsic goal orientation, test subjective norms, and test perceived behavioral control ( $p < 0.05$ ). For the variables mentioned above with significant differences, the variances were assumed not to be equal. The variances were assumed to be equal for all of the remaining study variables.

Table I4

*Independent Samples t-Test for the Comparison of Predictor Variables between Subgroups of the Criterion Variables*

Variable	Non-cheater vs. HW cheater			Non-cheater vs. Test cheater			Non-cheater vs. Both		
	t	df	p	t	df	p	t	df	p
Intrinsic motivation	2.197	776.096	0.028*	1.216	806	0.224	4.256	929	0.000***
Extrinsic motivation	-1.813	1142	0.070	-3.618	34.699	0.001**	1.512	927	0.131
Task value	2.451	1134	0.014*	0.874	801	0.382	3.954	920	0.000***
Mastery	0.954	1114	0.340	0.240	787	0.811	2.863	909	0.004**
Performance approach	-0.735	751.343	0.463	-1.495	788	0.135	-2.032	909	0.042*
Performance avoid	-0.609	1120	0.542	-1.548	792	0.122	-2.342	913	0.019*
Social development	-3.115	771.312	0.002**	-1.582	786	0.114	1.426	910	0.154
Social demo. approach	0.426	771.234	0.670	-0.654	790	0.514	-5.036	911	0.000***
Social demo. avoid	-0.194	1117	0.846	0.381	34.709	0.706	-3.127	913	0.002**
Self-efficacy	3.909	1129	0.000***	1.368	797	0.172	5.060	919	0.000***
Control of learning	-0.786	1141	0.432	0.706	805	0.481	2.434	926	0.015*
HW attitudes	-15.767	1109	0.000***	-3.455	779	0.001**	-14.658	900	0.000***
HW subjective norms	-12.764	1097	0.000***	-2.473	763	0.014*	-13.650	228.579	0.000***
HW perceived control	-9.870	824.975	0.000***	-1.327	779	0.185	-5.631	249.407	0.000***
HW moral obligation	-15.145	1110	0.000***	-4.517	30.985	0.000***	-14.707	216.584	0.000***
Test attitudes LOG	-5.998	1128	0.000***	-5.109	798	0.000***	-13.161	920	0.000***
Test subjective norms	-1.927	1114	0.054	-1.431	782	0.153	-10.595	197.114	0.000***
Test perceived control	-2.139	1127	0.033*	-1.490	789	0.137	-6.483	254.998	0.000***
Test moral obligation LOG	-3.301	667.590	0.001**	-3.991	790	0.000***	-13.679	908	0.000***
Neutralization LOG	-11.713	644.571	0.000***	-4.470	776	0.000***	-15.839	897	0.000***
HW intention	-16.845	571.752	0.000***	-3.300	783	0.001**	-18.885	905	0.000***
Test intention LOG	-4.030	689.645	0.000***	-5.394	786	0.000***	-16.669	200.092	0.000***

Table I4 Continued

Variable	Non-cheater vs. HW cheater			Non-cheater vs. Test cheater			Non-cheater vs. Both		
	t	df	p	t	df	p	t	df	p
Intrinsic motivation	0.534	394	0.594	2.721	517	0.007**	0.772	183	0.441
Extrinsic motivation	-2.120	396	0.035*	2.583	517	0.010*	3.973	61.142	0.000***
Task value	0.035	393	0.972	2.118	512	0.035*	0.978	179	0.330
Mastery	-0.086	385	0.932	2.153	507	0.032*	1.093	180	0.276
Performance approach	-1.325	385	0.186	-1.494	506	0.136	0.491	181	0.624
Performance avoid	-1.359	388	0.175	-1.810	509	0.071	0.413	181	0.680
Social development	-0.656	386	0.512	3.513	510	0.000***	2.183	178	0.030*
Social demo. approach	-0.860	388	0.391	-5.300	509	0.000***	-1.773	181	0.078
Social demo. avoid	0.360	386	0.719	-2.813	508	0.005**	-1.805	182	0.073
Self-efficacy	0.061	390	0.951	2.223	512	0.027*	0.936	180	0.351
Control of learning	0.991	396	0.323	2.826	517	0.005**	0.441	181	0.660
HW attitudes	1.936	388	0.054	-2.973	509	0.003**	-3.285	179	0.001**
HW subjective norms	1.736	388	0.083	-3.343	318.716	0.001**	-3.464	178	0.001**
HW perceived control	1.847	386	0.065	1.747	510	0.081	-0.998	176	0.320
HW moral obligation	1.626	36.601	0.112	-2.751	326.904	0.006**	-2.830	178	0.005**
Test attitudes LOG	-3.005	390	0.003**	-8.243	512	0.000***	-1.185	182	0.238
Test subjective norms	-0.801	390	0.424	-8.900	238.139	0.000***	-4.405	52.433	0.000***
Test perceived control	-0.797	392	0.426	-4.198	340.363	0.000***	-0.929	33.071	0.359
Test moral obligation LOG	-2.543	392	0.011*	-9.774	510	0.000***	-2.461	178	0.015*
Neutralization LOG	-0.162	389	0.871	-5.895	293.690	0.000***	-2.701	177	0.008**
HW intention	2.651	389	0.008**	-3.669	301.858	0.000***	-4.578	176	0.000***
Test intention LOG	-3.662	396	0.000***	-13.338	517	0.000***	-2.987	181	0.003**

Note. \*p < 0.05. \*\*p < 0.01. \*\*\*p < 0.001.

## Appendix J

### Factor Analysis Output for the Achievement Goal Variables

The tables presented in this appendix provide supplemental information for the factor analysis of the achievement goal variables. Table J1 presents the initial eigenvalues resulting from the principal axis factoring (PAF) of the achievement goal variables. Figure J1 presents the scree plot that was used to determine the number of factors that needed to be retained. Table J2 compares the eigenvalues produced from PAF with the criterion values obtained from parallel analysis for the achievement goal variables. Tables J3 and J4 present the correlation matrix and the structure matrix for the rotated three-factor solution for the achievement goal variables.

Table J1

*Initial Eigenvalues Resulting from Principal Axis Factoring of Achievement Goal Variables*

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	11.344	40.515	40.515
2	4.732	16.902	57.417
3	1.721	6.148	63.564
4	1.045	3.731	67.295
5	0.857	3.061	70.356
6	0.719	2.567	72.923
7	0.610	2.179	75.102
8	0.570	2.037	77.140
9	0.527	1.881	79.020
10	0.514	1.835	80.856
11	0.495	1.769	82.625
12	0.460	1.644	84.268
13	0.435	1.555	85.823
14	0.425	1.517	87.340
15	0.364	1.300	88.640
16	0.359	1.281	89.921
17	0.341	1.218	91.138
18	0.319	1.138	92.277
19	0.291	1.040	93.316
20	0.277	0.989	94.305
21	0.253	0.903	95.208
22	0.236	0.843	96.051
23	0.221	0.789	96.840
24	0.211	0.752	97.592
25	0.203	0.725	98.317
26	0.168	0.599	98.916
27	0.162	0.579	99.495
28	0.141	0.505	100.000

*Note.* Extraction method: PAF.

Scree Plot

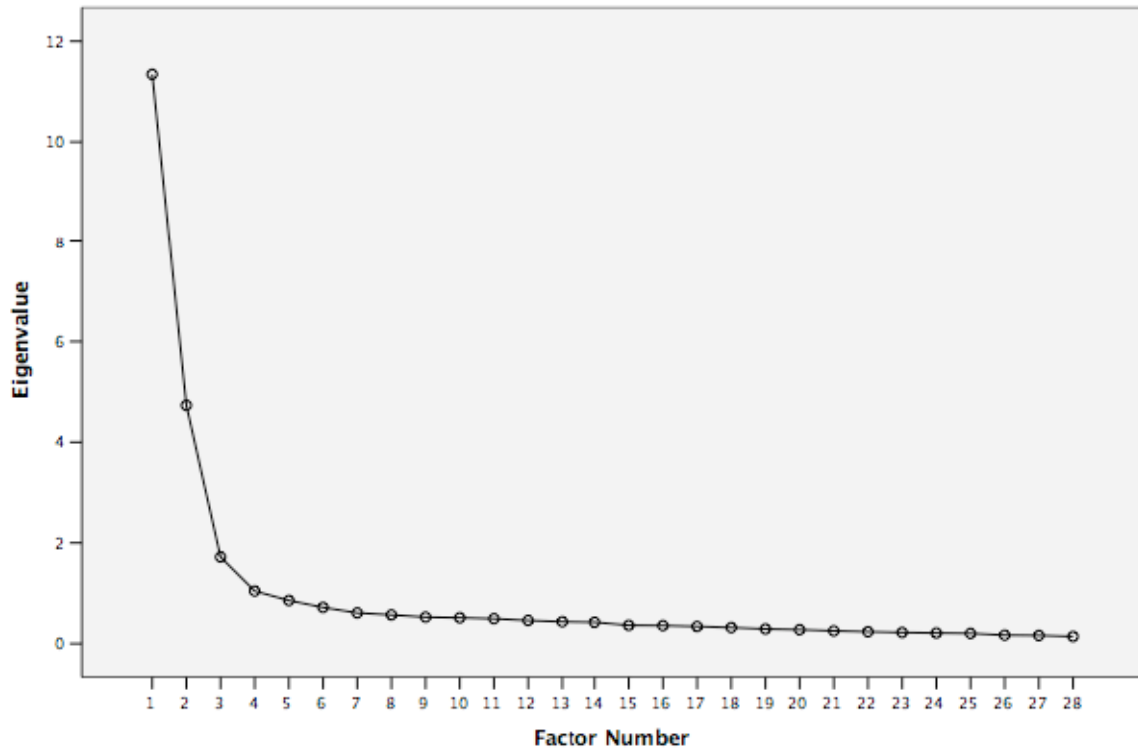


Figure J1. Scree plot resulting from principal axis factoring of the achievement goal variables.



Table J2

*Comparison of Eigenvalues from Principal Axis Factoring and the Corresponding Criterion Values Obtained from Parallel Analysis for Achievement Goal Variables*

Factor	Eigenvalue from PAF	Criterion value from PA <sup>a</sup>	Decision
1	11.344	1.257	Accept
2	4.732	1.224	Accept
3	1.721	1.196	Accept
4	1.045	1.172	Reject

*Note.* <sup>a</sup> Variables = 28. Subjects = 1,505. Replications = 100.

Table J3

*Correlation Matrix for the Three-Factor Solution for the Achievement Goal Variables*

Factor	1	2	3
1	1.000	0.307	0.318
2	0.307	1.000	0.234
3	0.318	0.234	1.000

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table J4

*Structure Matrix for the Oblimin Rotation of the Four-Factor Solution for the Achievement Goal Variables*

Variable	Factor		
	1	2	3
Mastery 3	0.847	0.318	0.401
Task Value 4	0.832		
Task Value 3	0.827		
Mastery 1	0.827	0.337	0.350
Mastery 2	0.819		0.402
Task Value 6	0.815		0.417
Task Value 5	0.791		
Mastery 5	0.774		0.469
Mastery 4	0.774	0.310	0.458
Intrinsic Goal Orientation 3	0.735		0.382
Task Value 1	0.719		
Task Value 2	0.691		0.501
Intrinsic Goal Orientation 4	0.678		
Intrinsic Goal Orientation 1	0.655		
Intrinsic Goal Orientation 2	0.653		
Performance Approach 5		0.880	
Performance Approach 3		0.823	
Performance Approach 4	0.347	0.811	
Performance Avoid 4		0.809	
Performance Approach 2		0.803	
Performance Avoid 1		0.774	
Performance Avoid 2		0.762	
Performance Avoid 3		0.748	
Performance Approach 1	0.361	0.683	0.379
Extrinsic Goal Orientation 1	0.374		0.615
Extrinsic Goal Orientation 4	0.492	0.358	0.597
Extrinsic Goal Orientation 2			0.522
Extrinsic Goal Orientation 3	0.412	0.321	0.508

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

## Appendix K

### Factor Analysis Output for the Social Goal Variables

The tables presented in this appendix provide supplemental information for the factor analysis of the social goal variables. Table K1 presents the initial eigenvalues resulting from the principal axis factoring (PAF) of the social goal variables. Figure K1 presents the scree plot that was used to determine the number of factors that needed to be retained. Table K2 compares the eigenvalues produced from PAF with the criterion values obtained from parallel analysis for the social goal variables. Tables K3 and K4 present the correlation matrix and the structure matrix for the rotated two-factor solution for the social goal variables.

Table K1

*Initial Eigenvalues Resulting from Principal Axis Factoring of the Social Goal Variables*

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	5.129	42.739	42.739
2	2.216	18.468	61.207
3	0.876	7.299	68.506
4	0.673	5.605	74.112
5	0.593	4.942	79.053
6	0.475	3.955	83.008
7	0.457	3.810	86.818
8	0.429	3.576	90.394
9	0.382	3.181	93.575
10	0.323	2.692	96.268
11	0.237	1.977	98.245
12	0.211	1.755	100.000

*Note.* Extraction method: PAF.

Scree Plot

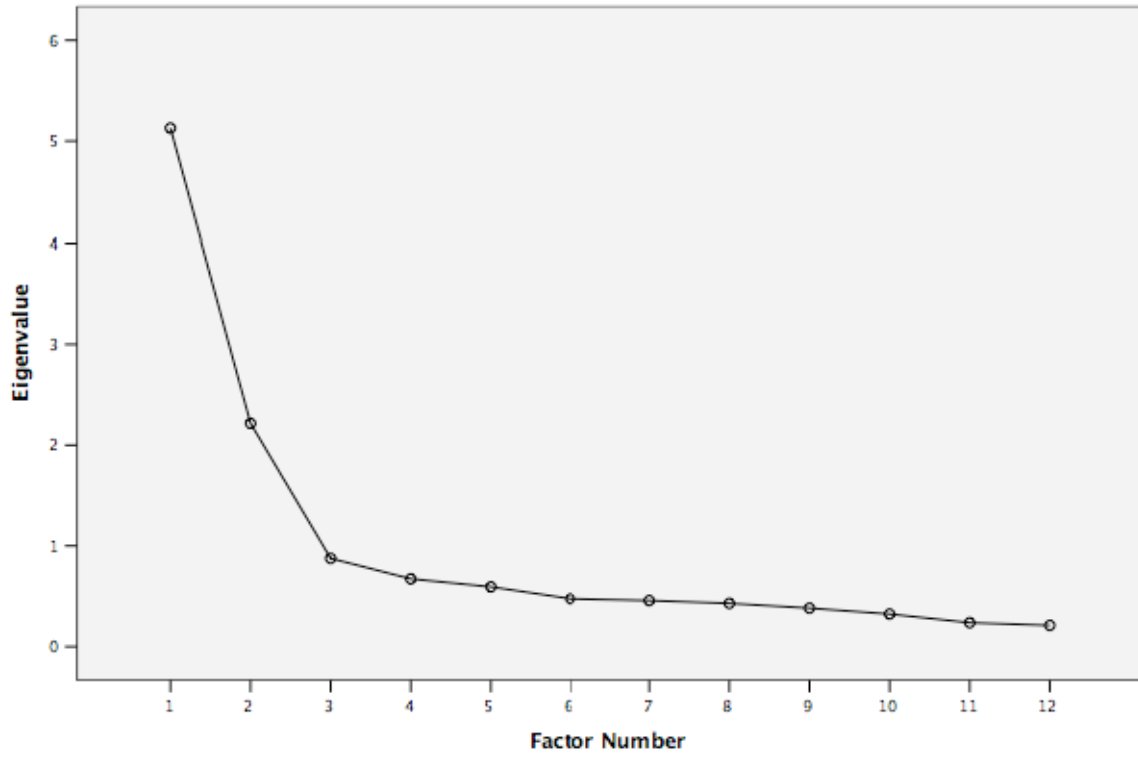


Figure K1. Scree plot resulting from principal axis factoring of the social goal variables.

Table K2

*Comparison of Eigenvalues from Principal Axis Factoring and the Corresponding Criterion Values Obtained from Parallel Analysis for the Social Goal Variables*

Factor	Eigenvalue from PAF	Criterion value from PA <sup>a</sup>	Decision
1	5.129	1.146	Accept
2	2.216	1.110	Accept

*Note.* <sup>a</sup> Variables = 12. Subjects = 1,506. Replications = 100.

Table K3

*Correlation Matrix for the Two-Factor Solution for the Social Goal Variables*

Factor	1	2
1	1.000	0.329
2	0.329	1.000

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.



Table K4

*Structure Matrix for the Oblimin Rotation of the Two-Factor Solution for the Social Goal Variables*

Variable	Factor	
	1	2
Social Demonstration Approach 3	0.876	
Social Demonstration Approach 2	0.847	
Social Demonstration Approach 4	0.825	
Social Demonstration Avoid 3	0.743	
Social Demonstration Approach 1	0.728	
Social Demonstration Avoid 4	0.717	
Social Demonstration Avoid 2	0.656	
Social Development 3		0.739
Social Development 2	0.358	0.727
Social Development 1		0.695
Social Development 4		0.668
Social Demonstration Avoid 1	0.373	0.396

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

## Appendix L

### Factor Analysis Output for the Expectation Variables

The tables presented in this appendix provide supplemental information for the factor analysis of the expectation variables. Table L1 presents the initial eigenvalues resulting from the principal axis factoring (PAF) of the expectation variables. Figure L1 presents the scree plot that was used to determine the number of factors that needed to be retained. Table L2 compares the eigenvalues produced from PAF with the criterion values obtained from parallel analysis for the expectation variables. Tables L3 and L4 present the correlation matrix and the structure matrix for the rotated two-factor solution for the expectation variables.

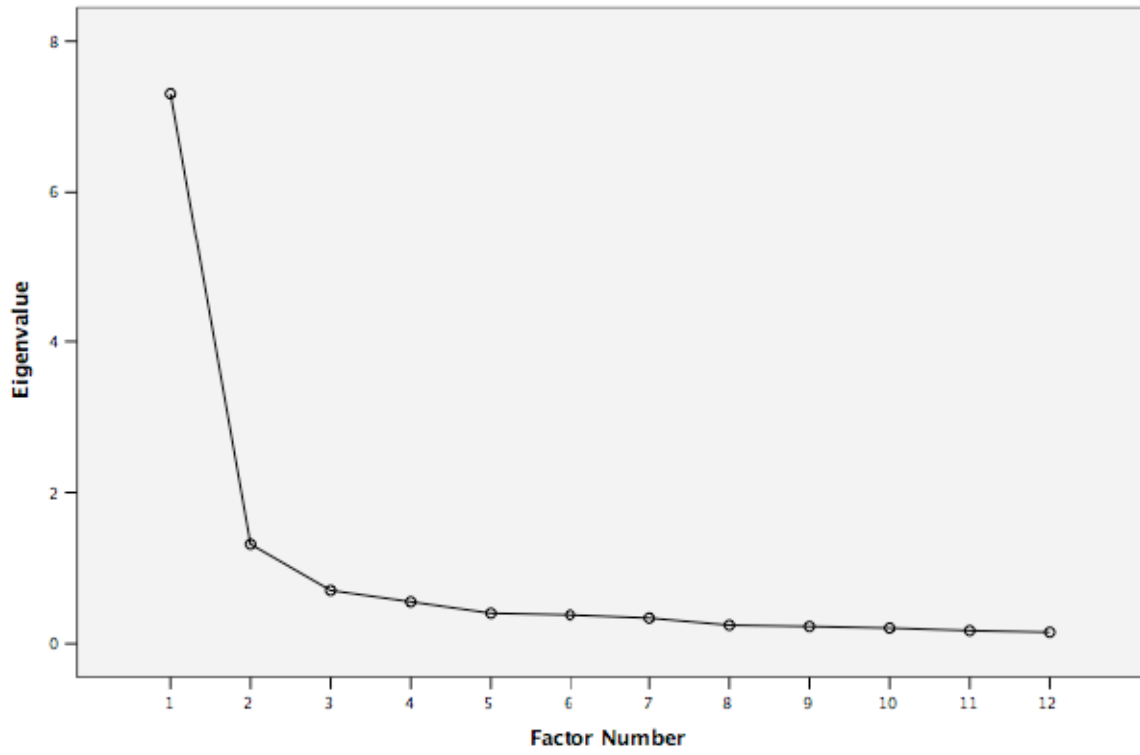
Table L1

*Initial Eigenvalues Resulting from Principal Axis Factoring of the Expectation Variables*

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.305	60.879	60.879
2	1.316	10.970	71.849
3	0.704	5.870	77.719
4	0.554	4.615	82.334
5	0.402	3.351	85.684
6	0.380	3.163	88.847
7	0.339	2.822	91.669
8	0.244	2.037	93.706
9	0.227	1.891	95.597
10	0.206	1.717	97.314
11	0.172	1.432	98.746
12	0.151	1.254	100.000

*Note.* Extraction method: PAF.

**Scree Plot**



*Figure 11.* Scree plot resulting from principal axis factoring of the expectation variables.

Table L2

*Comparison of Eigenvalues from Principal Axis Factoring and the Corresponding Criterion Values Obtained from Parallel Analysis for the Expectation Variables*

Factor	Eigenvalue from PAF	Criterion value from PA <sup>a</sup>	Decision
1	7.305	1.138	Accept
2	1.316	1.103	Accept

*Note.* <sup>a</sup> Variables = 12. Subjects = 1,699. Replications = 100.

Table L3

*Correlation Matrix for the Two-Factor Solution for the Expectation Variables*

Factor	1	2
1	1.000	0.591
2	0.591	1.000

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table L4

*Structure Matrix for the Oblimin Rotation of the Two-Factor Solution for the Expectation Variables*

Variable	Factor	
	1	2
Self-Efficacy 8	0.903	0.521
Self-Efficacy 6	0.899	0.470
Self-Efficacy 5	0.847	0.664
Self-Efficacy 1	0.845	0.440
Self-Efficacy 7	0.777	0.742
Self-Efficacy 4	0.753	0.713
Self-Efficacy 2	0.735	0.667
Control of Learning 3	0.656	0.824
Control of Learning 4	0.358	0.712
Control of Learning 2	0.371	0.708
Control of Learning 1	0.559	0.697
Self-Efficacy 3	0.643	0.674

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

## Appendix M

### Factor Analysis Output for the Homework Cost Variables

The tables presented in this appendix provide supplemental information for the factor analysis of the homework cost variables. Table M1 presents the initial eigenvalues resulting from the principal axis factoring (PAF) of the homework cost variables. Figure M1 presents the scree plot that was used to determine the number of factors that needed to be retained. Table M2 compares the eigenvalues produced from PAF with the criterion values obtained from parallel analysis for the homework cost variables. Tables M3 and M4 present the correlation matrix and the structure matrix for the rotated four-factor solution for the homework cost variables. Tables M5 and M6 present the correlation matrix and structure matrix for the rotated three-factor solution for the homework cost variables.



Table M1

*Initial Eigenvalues Resulting from Principal Axis Factoring of the Homework Cost Variables*

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	9.386	46.930	46.930
2	2.062	10.310	57.240
3	1.511	7.555	64.795
4	1.012	5.059	69.854
5	0.746	3.729	73.583
6	0.649	3.245	76.828
7	0.558	2.789	79.617
8	0.506	2.531	82.147
9	0.482	2.408	84.555
10	0.446	2.228	86.784
11	0.415	2.074	88.858
12	0.394	1.972	90.830
13	0.333	1.666	92.495
14	0.307	1.533	94.029
15	0.292	1.459	95.488
16	0.230	1.149	96.637
17	0.216	1.080	97.718
18	0.198	0.988	98.706
19	0.157	0.784	99.490
20	0.102	0.510	100.000

*Note.* Extraction method: PAF.

Scree Plot

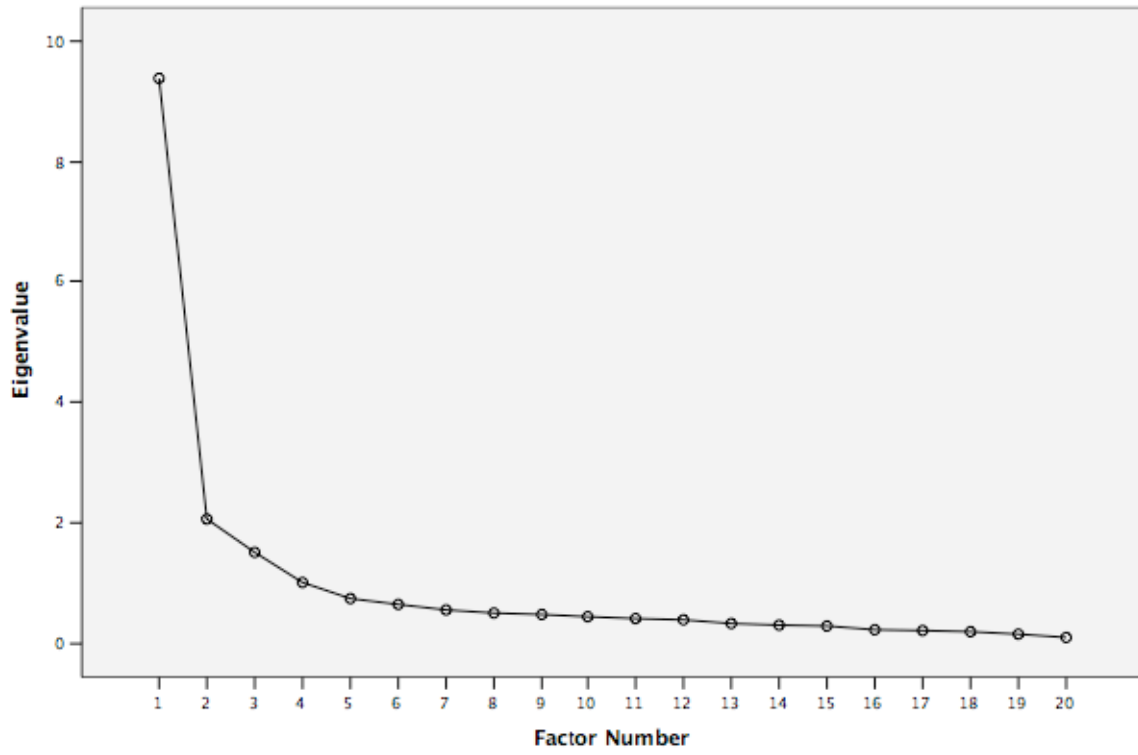


Figure M1. Scree plot resulting from principal axis factoring of the homework cost variables.

Table M2

*Comparison of Eigenvalues from Principal Axis Factoring and the Corresponding Criterion Values Obtained from Parallel Analysis for the Homework Cost Variables*

Factor	Eigenvalue from PAF	Criterion value from PA <sup>a</sup>	Decision
1	9.386	1.220	Accept
2	2.062	1.182	Accept
3	1.511	1.154	Accept
4	1.012	1.129	Reject

*Note.* <sup>a</sup> Variables = 20. Subjects = 1,320. Replications = 100.

Table M3

*Correlation Matrix for the Four-Factor Solution for the Homework Cost Variables*

Factor	1	2	3	4
1	1.000	0.318	0.521	0.691
2	0.318	1.000	0.118	0.304
3	0.521	0.118	1.000	0.506
4	0.691	0.304	0.506	1.000

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table M4

*Structure Matrix for the Oblimin Rotation of the Four-Factor Solution for the Homework Cost Variables*

Variable	Factor			
	1	2	3	4
Attitudes 1	0.939		0.490	0.656
Attitudes 3	0.916	0.323	0.466	0.622
Attitudes 2	0.907		0.502	0.615
Attitudes 4	0.881		0.460	0.585
Attitudes 5	0.479			0.351
Perceived behavioral control 1	0.373	0.769		0.386
Perceived behavioral control 4		0.736		
Perceived behavioral control 2		0.707		
Perceived behavioral control 3	0.324	0.499		0.422
Subjective norms 7	0.555		0.817	0.581
Subjective norms 6	0.495		0.804	0.489
Subjective norms 2	0.572	0.359	0.746	0.614
Subjective norms 4	0.384		0.733	0.368
Moral obligation 1	0.570		0.664	0.514
Moral obligation 3	0.754		0.542	0.821
Moral obligation 2	0.737	0.361	0.460	0.760
Subjective norms 5	0.577		0.604	0.755
Subjective norms 3	0.591		0.544	0.752
Subjective norms 1	0.580		0.513	0.736
Subjective norms 8	0.537		0.430	0.677

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table M5

*Correlation Matrix for the Three-Factor Solution for the Homework Cost Variables*

Factor	1	2	3
1	1.000	0.346	0.625
2	0.346	1.000	0.225
3	0.625	0.225	1.000

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table M6

*Structure Matrix for the Oblimin Rotation of the Three-Factor Solution for the Homework Cost Variables*

Variable	Factor		
	1	2	3
Attitudes 1	0.924	0.316	0.571
Attitudes 3	0.896	0.347	0.542
Attitudes 2	0.883	0.313	0.568
Attitudes 4	0.857		0.525
Moral obligation 3	0.803		0.689
Moral obligation 2	0.779	0.383	0.605
Subjective norms 8	0.589		0.561
Attitudes 5	0.478		
Perceived behavioral control 1	0.381	0.776	0.335
Perceived behavioral control 4		0.737	
Perceived behavioral control 2		0.706	
Perceived behavioral control 3	0.367	0.490	
Subjective norms 7	0.552	0.313	0.838
Subjective norms 2	0.579	0.377	0.796
Subjective norms 6	0.483		0.788
Subjective norms 5	0.635		0.720
Subjective norms 4	0.367		0.688
Moral obligation 1	0.562		0.686
Subjective norms 3	0.646		0.674
Subjective norms 1	0.637		0.643

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

## Appendix N

### Factor Analysis Output for the Test Cost Variables

The tables presented in this appendix provide supplemental information for the factor analysis of the test cost variables. Table N1 presents the initial eigenvalues resulting from the principal axis factoring (PAF) of the test cost variables. Figure N1 presents the scree plot that was used to determine the number of factors that needed to be retained. Table N2 compares the eigenvalues produced from PAF with the criterion values obtained from parallel analysis for the test cost variables. Tables N3 and N4 present the correlation matrix and the structure matrix for the rotated four-factor solution for the test cost variables. Tables N5 and N6 present the correlation matrix and structure matrix for the rotated three-factor solution for the test cost variables.



Table N1

*Initial Eigenvalues Resulting from Principal Axis Factoring of the Test Cost Variables*

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	7.084	35.419	35.419
2	1.985	9.927	45.346
3	1.689	8.443	53.788
4	1.114	5.568	59.357
5	0.908	4.538	63.894
6	0.793	3.966	67.860
7	0.746	3.731	71.592
8	0.683	3.413	75.005
9	0.611	3.056	78.061
10	0.565	2.826	80.887
11	0.549	2.743	83.629
12	0.521	2.607	86.237
13	0.491	2.453	88.690
14	0.423	2.114	90.803
15	0.383	1.916	92.719
16	0.357	1.785	94.504
17	0.333	1.663	96.167
18	0.314	1.570	97.737
19	0.245	1.225	98.963
20	0.207	1.037	100.000

*Note.* Extraction method: PAF.

Scree Plot

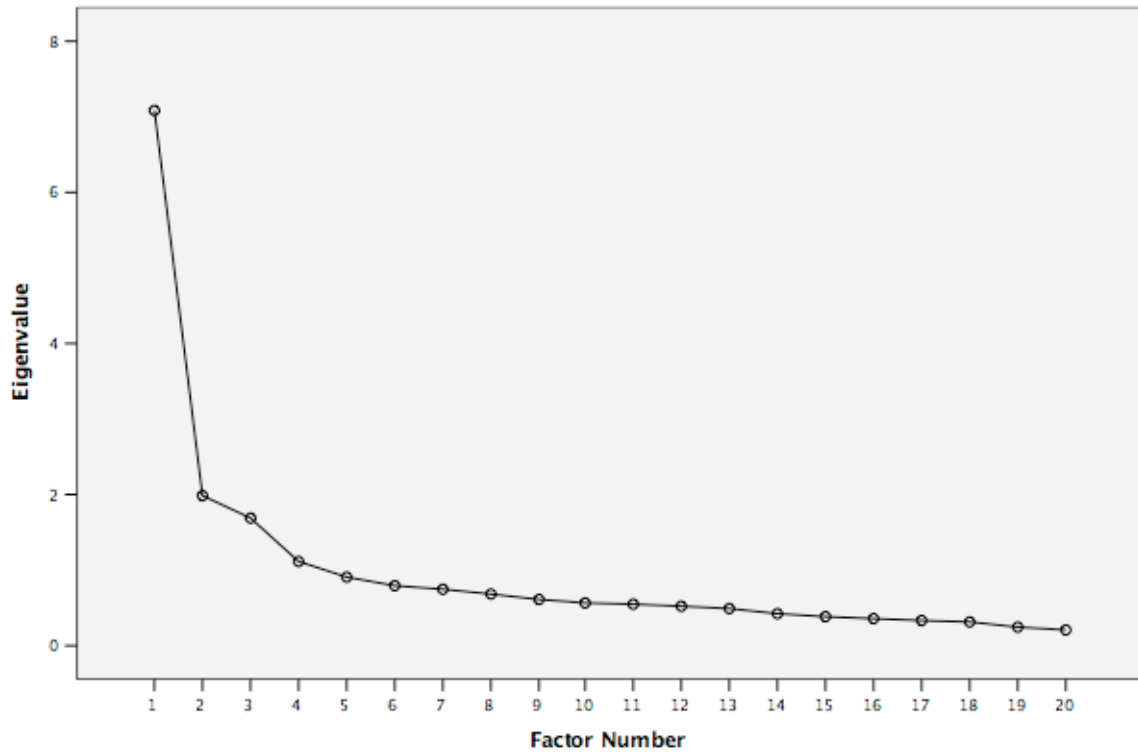


Figure N1. Scree plot resulting from principal axis factoring of the test cost variables.

Table N2

*Comparison of Eigenvalues from Principal Axis Factoring and the Corresponding Criterion Values Obtained from Parallel Analysis for the Test Cost Variables*

Factor	Eigenvalue from PAF	Criterion value from PA <sup>a</sup>	Decision
1	7.084	1.212	Accept
2	1.985	1.175	Accept
3	1.689	1.148	Accept
4	1.114	1.122	Reject

*Note.* <sup>a</sup> Variables = 20. Subjects = 1,434. Replications = 100.

Table N3

*Correlation Matrix for the Four-Factor Solution for the Test Cost Variables*

Factor	1	2	3	4
1	1.000	-0.438	0.265	0.542
2	-0.438	1.000	-0.071	-0.435
3	0.265	-0.071	1.000	0.112
4	0.542	-0.435	0.112	1.000

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table N4

*Structure Matrix for the Oblimin Rotation of the Four-Factor Solution for the Test Cost Variables*

Variable	Factor			
	1	2	3	4
Attitudes 1	0.882	-0.433		0.496
Attitudes 3	0.866	-0.375		0.455
Attitudes 2	0.808	-0.411		0.461
Attitudes 4	0.806	-0.366		0.432
Attitudes 5	0.436			
Subjective norms 7	0.372	-0.766		0.351
Subjective norms 6	0.347	-0.750		0.351
Subjective norms 4	0.306	-0.736		0.329
Subjective norms 2	0.405	-0.632		0.365
Moral obligation 1	0.399	-0.579		0.369
Perceived behavioral control 1	0.366		0.654	
Perceived behavioral control 4			0.600	
Perceived behavioral control 2			0.517	
Perceived behavioral control 3			0.452	0.303
Moral obligation 3	0.670	-0.437		0.709
Moral obligation 2	0.630	-0.388		0.693
Subjective norms 5	0.413	-0.514		0.668
Subjective norms 1	0.444	-0.542		0.585
Subjective norms 3	0.332	-0.446		0.546
Subjective norms 8	0.406	-0.308		0.523

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table N5

*Correlation Matrix for the Three-Factor Solution for the Test Cost Variables*

Factor	1	2	3
1	1.000	-0.526	0.229
2	-0.526	1.000	-0.080
3	0.229	-0.080	1.000

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

Table N6

*Structure Matrix for the Oblimin Rotation of the Three-Factor Solution for the Test Cost Variables*

Variable	Factor		
	1	2	3
Attitudes 1	0.860	-0.467	
Attitudes 3	0.838	-0.406	
Attitudes 2	0.792	-0.442	
Attitudes 4	0.783	-0.395	
Moral obligation 3	0.733	-0.539	
Moral obligation 2	0.693	-0.494	
Subjective norms 8	0.466	-0.389	
Attitudes 5	0.429		
Subjective norms 7	0.376	-0.744	
Subjective norms 6	0.355	-0.732	
Subjective norms 4	0.314	-0.720	
Subjective norms 2	0.413	-0.634	
Subjective norms 1	0.508	-0.609	
Subjective norms 5	0.500	-0.600	
Moral obligation 1	0.411	-0.590	
Subjective norms 3	0.404	-0.517	
Perceived behavioral control 1	0.370	-0.304	0.642
Perceived behavioral control 4			0.616
Perceived behavioral control 2			0.529
Perceived behavioral control 3			0.388

*Note.* Extraction method: PAF. Rotation method: Oblimin with Kaiser Normalization.

## Appendix O

### Regression of Goal and Expectation Variables Predicting Other Cost Variables

This appendix presents the results of the regression analyses conducted to explore the extent to which goals and expectations predict subjective norms and perceived behavioral control of homework and test cheating. Tables O1 and O2 presents results for the subjective norms regression and Tables O3 and O4 present results for the perceived behavioral control regression.



Table O1

*Summary of Multiple Regression Analysis for Goal and Expectation Variables Predicting Perceptions of Homework Subjective Norms*

Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.006	0.029		0.194	0.846
Achievement goals					
Mastery (AR)	-0.041	0.042	-0.040	-0.967	0.334
Performance (AR)	0.030	0.041	0.030	0.734	0.463
Extrinsic (AR)	-0.123	0.030	-0.123	-4.122	0.000***
Social goals					
Social demonstration (AR)	0.210	0.041	0.208	5.159	0.000***
Social development (AR)	-0.010	0.033	-0.010	-0.315	0.753
Expectations					
Expectations (AR)	-0.038	0.041	-0.038	-0.928	0.353

*Note.* N = 1,229. Criterion variable: HW subjective norms (AR).  $R^2 = 0.074$ . \* $p < 0.05$ .

\*\*\* $p < 0.001$ .

Table O2

*Summary of Multiple Regression Analysis for Goal and Expectation Variables Predicting Perceptions of Test Subjective Norms*

Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.000	0.027		-0.007	0.995
Achievement goals					
Mastery (AR)	0.012	0.039	0.012	0.309	0.758
Performance (AR)	-0.101	0.038	-0.101	-2.664	0.008**
Extrinsic (AR)	0.161	0.028	0.160	5.828	0.000***
Social goals					
Social demonstration (AR)	-0.211	0.038	-0.208	-5.584	0.000***
Social development (AR)	0.104	0.031	0.104	3.391	0.001**
Expectations					
Expectations (AR)	0.024	0.038	0.023	0.618	0.536

*Note.* N = 1,354. Criterion variable: Test subjective norms (AR).  $R^2 = 0.129$ . \*\*  $p < 0.01$ .

\*\*\* $p < 0.001$ .

Table O3

*Summary of Multiple Regression Analysis for Goal and Expectation Variables Predicting Perceptions of Behavioral Control of Homework Cheating*

Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.018	0.029		0.619	0.536
Achievement goals					
Mastery (AR)	-0.168	0.042	-0.169	-4.013	0.000***
Performance (AR)	-0.167	0.041	-0.168	-4.075	0.000***
Extrinsic (AR)	-0.049	0.030	-0.049	-1.625	0.105
Social goals					
Social demonstration (AR)	0.063	0.041	0.063	1.551	0.121
Social development (AR)	0.217	0.033	0.218	6.547	0.000***
Expectations					
Expectations (AR)	0.174	0.041	0.174	4.228	0.000***

*Note.* N = 1,229. Criterion variable: HW perceived behavioral control (AR).  $R^2 = 0.062$ .

\* $p < 0.05$ . \*\*\* $p < 0.001$ .

Table O4

*Summary of Multiple Regression Analysis for Goal and Expectation Variables Predicting Perceptions of Behavioral Control for Test Cheating*

Predictors	Unstandardized coefficients		Standardized coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	0.002	0.028		0.061	0.952
Achievement goals					
Mastery (AR)	-0.135	0.040	-0.136	-3.346	0.001**
Performance (AR)	-0.107	0.040	-0.107	-2.702	0.007**
Extrinsic (AR)	-0.080	0.029	-0.081	-2.793	0.005*
Social goals					
Social demonstration (AR)	0.152	0.039	0.152	3.886	0.000***
Social development (AR)	0.127	0.032	0.127	3.971	0.000***
Expectations					
Expectations (AR)	0.161	0.040	0.161	4.066	0.000***

*Note.* N = 1,354. Criterion variable: Test perceived behavioral control (AR).  $R^2 = 0.041$ .

\* $p < 0.05$ . \*\* $p < 0.01$ . \*\*\* $p < 0.001$ .