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Gender, Contingencies of Self-Worth, and Achievement Goals as Predictors of Academic Cheating in a Controlled Laboratory Setting

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This study examined college students' cheating in a controlled laboratory setting in which a peer confederate invited participants to cheat on an academic test. Consistent with past findings, male students cheated more than female students. Moreover, predictors of cheating interacted with gender. For men, basing self-worth on competition and having performance-avoidance goals predicted more cheating, whereas basing self-worth on virtue predicted less cheating. For women, none of the contingencies and goals predicted cheating. In its utilization of a realistic, controlled laboratory setting, the study accounted for problems inherent in observational and self-report techniques.

Cheating is a pervasive and alarming problem among college students. In a survey of 1,800 students at state universities, McCabe and Bowers (1994) found that 70% cheated at least once during tests. Similarly high rates of cheating have been found across different types of schools, both at small rural colleges (e.g., Robinson, Amburgey, Swank, & Faulker, 2004) and urban state universities (e.g., Baird, 1980; Stern & Havlicek, 1986). A comprehensive review of 107 studies on cheating (Whitley, 1998) revealed that this trend exists nationwide, with an average of 70.4% students committing academic dishonesty. Perhaps even more disturbing, the rate of cheating has increased in recent years (Davis, Grover, Becker, & McGregor, 1992; Diekhoff et al., 1996; McCabe & Trevino, 1996; McCabe, Trevino, & Butterfield, 2001a; Schab, 1991). Our study examined how gender, contingencies of self-worth, and achievement goals predicted academic cheating in a controlled laboratory setting.

GENDER AS A PREDICTOR OF ACADEMIC CHEATING

Do men and women equally cheat given the same situational constraints? A meta-analysis of gender differences (Whitley, Nelson, & Jones, 1999) showed that men view cheating more positively than women, report having cheated more, and cheat more often as assessed in classroom observations. However, self-reports can inflate gender differences because of differences in self-presentations, whereas classroom observations can do so by providing men and women different opportunities to cheat (e.g., more men may sit in the back of the classroom where surveillance is low; women may study more for an exam and might feel less tempted to cheat). Surprisingly, only a few studies have examined gender differences in cheating behavior in controlled laboratory settings. To our knowledge, only eight laboratory studies included both genders. Among these, five did not report results on gender (Eisenberger & Masterson, 1983; Eisenberger & Shank, 1985; Flynn, Reichard, & Slane, 1987; Malinowski & Smith, 1985; Schweitzer, Ordonez, & Douma, 2004), two reported no gender difference (Cooper & Peterson, 1980; Covey, Saladin, & Killen, 1989), and one reported women cheating twice as often as did men (DePalma, Madey, & Bornschein, 1995). Our study further explored how gender affects cheating behavior in a controlled laboratory setting.

CONTINGENCIES OF SELF-WORTH AS PREDICTORS OF CHEATING

Contingencies of self-worth represent the domains in which people invest self-esteem; success in these domains

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boosts self-esteem, whereas failure diminishes it (Crocker & Wolfe, 2001). A daily report study of college seniors applying to graduate school showed that academic contingency predicts an increase in self-esteem on days they were accepted to graduate programs and a decrease in self-esteem on days they were rejected (Crocker, Sommers, & Luhtanen, 2002). Because success and failure in domains of contingencies affect self-worth, people who have contingent self-worth seek success and avoid failure in these domains to maintain or boost their sense of self-worth (Crocker & Park, 2004). Among the seven domains of contingencies commonly identified in college students (Crocker, Luhtanen, Cooper, & Bouvrette, 2003), we focused on two—competition and virtue—and hypothesized that the decision to engage in (or resist) cheating might stem from the desire to maintain or boost their self-worth in these domains of contingencies.

Competition encourages cheating (Cooper & Peterson, 1980). Outperforming others and avoiding being outperformed by others are strong motivators, especially for those who base their self-worth on winning competitions. In our study, we told students that the top 10% of scorers would receive 5 points of extra credit, fueling competition among students. Moreover, participants witnessed a confederate copy answers from an answer key, raising the specter of being outperformed by someone who cheated. We therefore hypothesized that basing self-worth on competition would predict more cheating.

Perceiving cheating as a moral violation reduces cheating (Eisenberg, 2004; Malinowski & Smith, 1985; McCabe & Trevino, 1993). Our study challenged students' morality, as the confederate invited participants to engage in a dishonest behavior. Students who base their self-worth on being virtuous should strive to avoid immoral behavior. We thus hypothesized that a virtue contingency would predict less cheating.

ACHIEVEMENT GOALS AS PREDICTORS OF CHEATING

Students' goals influence their academic behaviors, including cheating (Ames, 1992; Midgley, Kaplan, & Middleton, 2001; Pintrich & Schunk, 2002). Several studies (Anderman, Griesinger, & Westerfield, 1998; Anderman & Midgley, 2004; Murdock, Hale, & Weber, 2001; Murdock, Miller, & Kohlhardt, 2004) have shown that cheating correlates positively with performance-approach goals (i.e., demonstrating competence by outperforming others) and negatively with mastery goals (i.e., learning and mastering tasks). Similarly, in self-report studies, cheaters had higher performance goals and lower mastery goals than noncheaters (Jordan, 2001; Murdock et al., 2001). Anderman and Midgley examined students' cheating through the transition from middle to high school and found that cheating increases when students move from high- to low-mastery-oriented classes, or when they move from low- to high-performance-oriented classes. We therefore hypothesized that performance-approach goals would predict more cheating and mastery goals less cheating in the laboratory setting.

In a survey, Schab (1991) found that fear of failure is the most common reason for college students to cheat. Although no studies have directly examined the relationship between performance-avoidance goals (i.e., avoiding performing poorly) and cheating, we anticipated that the goal to avoid appearing incompetent would predict more cheating.

LIMITATIONS OF SELF-REPORTS, CLASSROOM OBSERVATIONS, AND CURRENT EXPERIMENTAL PARADIGMS

In addition to examining how gender, contingencies of self-worth, and achievement goals predict cheating behavior, our study expanded upon current research by addressing the limitations inherent to self-reports and classroom observations. Cheating research typically uses anonymous questionnaires in which students report their past cheating (e.g., Anderman & Midgley, 2004; Genereux & McLeod, 1995; Newstead, Franklyn-Stokes, & Armstead, 1996) or estimate their behavior in hypothetical situations (e.g., Eisenberg, 2004; Jensen, Arnett, Feldman, & Cauffman, 2002; Murdock et al., 2004). Despite its widespread use, self-report has serious limitations when studying sensitive behaviors like cheating. Self-reports underestimate cheating rates (Fox, 2005; Scheers & Dayton, 1987) and produce large errors because of respondents' self-presentational concerns (Bradburn, Sudman, Blair, & Stocking, 1978). These biases could be a serious confound. For example, gender differences in self-reported cheating (e.g., Tibbetts, 1999; Whitley et al., 1999) may simply reflect gender differences in attitudes toward cheating (Jensen et al., 2002) rather than actual occurrence.

Classroom observations eliminate the problems of self-reports but cannot control for extraneous variables, such as peer pressure or the likelihood of getting caught. In a classroom observation, researchers typically keep a copy of students' initial exams and then ask students to grade their own exams to see whether students fail to mark an incorrect answer, change an incorrect answer, or add extra points when calculating their final scores (Antion & Michael, 1983; Spiller & Crown, 1995; Ward, 1986). This methodology, however,

does not tell whether seeing others cheat encourages cheating (DeVries & Ajzen, 1971; McCabe & Trevino, 1993; Stannard & Bowers, 1970), or whether a high perceived risk of getting caught deters cheating (Corcoran & Rotter, 1987; Covey et al., 1989; Eisenberg, 2004; McCabe, Trevino, & Butterfield, 2001b). Moreover, classroom observations do not control for the fact that students in the back rows of a classroom have both a higher chance of witnessing others cheat and a lower chance of being caught, and therefore may experience greater temptation to cheat than those in the front rows.

These extraneous variables could present serious confounds. For example, researchers may find a negative correlation between learning orientations and cheating but may overlook that learning-oriented students tend to sit in the front rows, where cheating temptation is low. It would thus be impossible to tell from their research whether learning-oriented students would resist cheating in a highly tempting situation. In addition, classroom observations do not distinguish whether students cheat because they deliberately choose to cheat, witness other cheaters, or take advantage of low surveillance.

Laboratory experiments have better control of extraneous variables than classroom observations but usually diverge from classroom testing situations in at least two ways. First, participants in these studies are tested alone, whereas in classrooms peers influence student decisions to cheat or not. Second, laboratory studies often do not assess typical classroom cheating behaviors such as copying answers from other students or using crib notes. For example, in past experimental studies, cheating was operationalized as participants putting a plus mark pretending they knew the answer to an anagram (DePalma et al., 1995; Eisenberger & Masterson, 1983; Eisenberger & Shank, 1985), reporting a fake score on a cognitive test (Flynn et al., 1987), an anagram (Cooper & Peterson, 1980; Schweitzer et al., 2004) or a motor task (Malinowski & Smith, 1985), opening eyes while working on a maze (Corcoran & Rotter, 1987; Covey et al., 1989), and not returning cards during a card game (Aronson & Mettee, 1968). The motivation to falsify the actual number of solved anagrams may be quite different from using a crib sheet during a final exam.

Our study addressed the problems inherent in self-reports by observing actual cheating behavior in a laboratory. It also addressed the problems of classroom observations by holding peer pressure and surveillance constant for all participants. Finally, we made the experimental setting more realistic by framing the experimental task as an academic test, offering participants extra-credit points toward course grades, operationalizing cheating as copying answers from an answer sheet, and including a confederate cheater.

METHOD

Participants

Seventy college students (38 male, 32 female) participated in a study of "personality and intelligence" in exchange for partial credit toward their introductory psychology course. The majority (65.7%) identified themselves as White, 11.4% as Asian American, 5.7% as African American, 5.7% as Hispanic, and 11.4% as other or mixed race. Participants were mostly freshmen (42.9%) and sophomores (30.0%), and had a mean age of 19.5 ($SD = 1.44$).

Procedure

Participants and a same-sex confederate sat diagonally across from one another at a rectangular table and first completed the pretest questionnaire. Next, the experimenter handed out an IQ test, explaining that the test reliably predicted students' overall college grade point averages and job competence. To further ensure that participants saw the test as an academic test of real consequence, the experimenter offered five points of extra credit toward their introductory psychology course if participants scored within the top 10% of all test takers. The experimenter then held up the answer key, told participants that they would have the chance to check their answers after the test, placed it on a desk in the corner of the room, and told participants to begin the test.

Unbeknownst to participants, the test contained seven solvable questions (e.g., "If L is three quarters of M, M is two thirds of N, and N is one half of O, what is the ratio of O to L?") and five unsolvable questions (e.g., "What theory was Plastonicus famous for?"). The unsolvable questions served two purposes. First, they ensured that participants felt they were doing poorly on the test. Second, they served as a measure of cheating. If participants' answers to those questions were identical to those in the answer key, we assumed they copied from either the answer key or the confederate.

To create a low surveillance situation, the experimenter answered a fake phone call halfway through the test: instructed participants to continue with the test: and left the room, closing the door.

The confederate then invited participants to cheat on the test. The confederate snatched the answer key from the experimenter's desk and began copying the answers, whispering, "We could probably copy down the answers before the experimenter gets back and then get the extra credit. Do you want to see it? I really need these extra credit points for class." If the participant agreed, the confederate shared the answer key. If not, the

TABLE 1
Means (on Diagonal), Standard Deviations (in Parentheses), and Intercorrelations for Cheating, Gender, Contingencies, and Achievement Goals

Measure	*1*	*2*	*3*	*4*	*5*	*6*	*7*
1. Cheating	.57 (.50)						
2. Gender	−.31*	.48 (.50)					
3. Competition CSW	.15	−.07	4.94 (.92)				
4. Virture CSW	−.14	.22+	−.05	4.97 (1.03)			
5. Approach goals	.04	−.04	.71**	−.13	4.64 (1.05)		
6. Avoidance goals	.03	.26*	.32*	−.05	.41**	4.84 (.83)	
7. Mastery goals	.09	.19	−.04	.23*	.03	−.08	5.24 (.68)

Note. Cheating coded as 0 = *not cheated*, 1 = cheated. Gender coded as 0 = male, 1 = female. All the other measures were rated on 7-point scales from 1 (*strongly disagree*) to 7 (*strongly agree*). CSW = contingencies of self-worth.
$^{+}p < .10$. $^{*}p < .05$. $^{**}p < .01$.

confederate asked the participant a second time, "Are you sure? It's five extra credit points." Regardless of the participant's decision, the confederate copied all the answers and returned the answer key to the experimenter's desk. The confederate then left the room to use the restroom, closing the door behind. Alone in the room, participants had an extra opportunity to look at the confederate's test or the answer key to copy the answers.

The experimenter returned 30 sec after the confederate left the room, shuffling around noisily before entering the room to warn the participants. The experimenter then collected the tests, waited for the confederate's return to show the answer keys, and administered a posttest questionnaire[1] (not reported in this article). To probe for suspicion, participants responded to four open-ended questions ("Are there any questions you would like to ask us?" "What do you think the study was about?" "Was there anything you wondered about, or were curious about?" and "Was there anything that seemed odd or unusual to you?"). If participants mentioned that the study concerned cheating in any of the four questions, we counted them as suspicious. Finally, the experimenter thoroughly debriefed participants regarding the deception used in the study.

Pretest Measures

The Contingencies of Self-Worth Scale (Crocker, Luhtanen, et al., 2003) assesses how much participants base their self-esteem on competition and virtue. Five items (e.g., "I feel worthwhile when I perform better than others on a task or skill") measured competition contingency ($\alpha = .88$) and two items (e.g., "Doing something I know is wrong makes me lose my self-respect") measured virtue contingency ($\alpha = .65$).

[1]The posttest questionnaire included questions assessing students' attitudes toward cheating, their perceived norms about cheating, and reasons for students to cheat.

The Achievement Goal Scale (Elliot & Church, 1997) assesses how much participants endorse performance-approach, performance-avoidance, and mastery goals. Six items measured performance-approach goals (e.g., "I am motivated by the thought of outperforming my peers in my classes" $\alpha = .91$), five items measured performance-avoidance goals (e.g., "I just want to avoid doing poorly in my classes"; $\alpha = .71$), and six items measured mastery goals (e.g., "I want to learn as much as possible from my classes"; $\alpha = .90$). Participants rated each item on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*).

RESULTS

We based our analyses on 67 participants (35 men and 32 women) after excluding data from 3 participants who scored 2 standard deviations above or below the grand mean on two or more pretest measures. Overall, 57% of participants cheated by copying the answer to at least one unsolvable question, suggesting that the situation tempted participants to cheat, without creating overwhelming pressure to cheat.

Gender Differences

The majority of men cheated on the test (71%), whereas less than half of women did (41%), $\chi^2(1, N = 67) = 6.46$, $p = .01$. However, men and women who cheated did not differ in the number of unsolvable questions answered "correctly" as per the answer key. On average, men cheated on 2.84 questions and women on 2.08 questions, $t(36) = 1.58$, $p = .12$.

To examine possible differences in men and women's motivation to cheat, we entered competition and virtue contingencies, performance-approach, performance-avoidance, and mastery goals, gender, and the two-way interactions with gender in a logistic regression. Table 1 shows the intercorrelations among the variables.

Gender interacted significantly with competition contingency (B = 4.23, $p = .05$) and virtue contingency (B = −3.63, $p = .002$), and marginally with performance-approach goals (B = −3.68, $p = .09$). We therefore conducted separate analyses for men and women to examine how contingencies and goals predicted cheating for each gender.[2]

Contingencies of Self-Worth and Achievement Goals

For men, competition contingency predicted more cheating (B = 3.86, $p = .05$) and virtue contingency predicted less cheating (B = −2.53, $p = .01$). Although performance-avoidance goals significantly predicted cheating in the expected direction (B = 1.80, $p = .05$), performance-approach goals (B = −3.55, $p = .08$) marginally predicted *less* cheating and mastery goals (B = 2.12, $p = .07$) *more* cheating for men when other predictors were simultaneously entered in a regression.[3] For women, virtue contingency marginally predicted cheating (B = 1.10, $p = .07$), but none of the other variables predicted cheating.

Suspicion

The posttest questionnaire included two pages of questions assessing students' attitude toward cheating, their perceived norms about cheating, and reasons for students to cheat. We probed participants for suspicion after they completed the questions about cheating, finding that 63% (42 of 67) believed the study concerned cheating.[4] However, suspicion did not influence our main results. Cheating did not differ between those who expressed suspicion (56%) and those who did not (64%; B = −.48, $p = .36$). Men and women did not differ in their level of suspicion (60% vs. 66% for men and women respectively; B = .24, $p = .64$) and suspicion did not moderate gender difference on cheating (B = −.07, $p = .95$). Suspicion did not interact with any of the contingencies and goals for men ($-2.63 < Bs < 6.31$, $ps > .20$) and for women ($-1.31 < Bs < 1.41$, $ps > .20$). These findings suggest that participants were probably not suspicious until they responded to the questions about cheating.

DISCUSSION

Our study examined how gender, contingencies of self-worth, and achievement goals influence students' likelihoods of cheating on an academic test after witnessing a peer copy answers from an answer key. Consistent with self-report studies (Whitley et al., 1999), men cheated more than women. Separate analyses by gender showed that men were more likely to cheat when they based their self-worth on competition or had the goal to avoid doing poorly in class; they were less likely to cheat when they based their self-worth on virtue. For women, none of the contingencies and goals significantly predicted cheating.

Gender Differences

We replicated gender differences previously found in self-reported cheating (Whitley et al., 1999). Our findings suggest that past reports on gender differences were not simply due to self-report bias or men being more frequently exposed to cheating peers than women. Instead, our study suggests the possibility of gender differences in the motivation for cheating.

Contingencies of Self-Worth and Cheating

Our study was the first to investigate the relationship between contingencies of self-worth and cheating. Past studies have often found mixed results as to whether high self-esteem deters cheating (Aronson & Mettee, 1968; Lobel & Levanon, 1988; Ward, 1986). Our findings suggest that, at least for men, contingencies of self-worth are good predictors of cheating. In a domain of self-worth contingencies, people prioritize avoiding failure and achieving success to maintain their feeling of self-worth (Crocker & Wolfe, 2001). Our results indicate that protecting self-worth can motivate or deter cheating.

Consistent with past reports that activating competition increases cheating (Cooper & Peterson, 1980), we found that higher competition contingency among men predicted more cheating. For men basing self-worth on competition, seeing a peer cheat may have signaled

[2] Women were significantly higher on performance-avoidance goals ($M = 5.06$, $SD = .81$) than men ($M = 4.56$, $SD = .99$) but did not differ in any other variables. None of these variables mediated the gender effect on cheating.

[3] Performance-approach goals correlated highly with competition contingency and performance-avoidance goals for men ($rs = .64$ and .45, respectively) and for women ($rs = .84$ and .41), suggesting that multicollinearity could have been a problem (Neter, Kutner, Nachtsheim, & Wasserman, 1996). However, chi-square tests showed similar results. Men who scored above men's median on competition contingency and performance-approach goals were significantly more likely to cheat (94% and 89%, respectively) than those below the median (58% and 59%), χ^2s$(1, N = 35) > 4.0$, $ps < .05$, whereas those above the median on virtue contingency were significantly less likely to cheat (58% vs. 94%), $\chi^2(1, N = 35) = 5.85$, $p = .02$. Unexpectedly, performance-avoidance goals and mastery goals did not predict cheating among men and none of the contingencies and goals predicted cheating among women (χ^2s < 2.0, *ns*).

[4] Among the 42 participants who expressed suspicion, 20 mentioned the experimenter leaving the room, 13 mentioned the confederate, 9 mentioned the extra credit, 8 mentioned the available answer key, and 3 mentioned the IQ test.

that they may lose the competition, motivating them to cheat in order to rise above the cheating peer and maintain self-esteem. In contrast, basing self-worth on virtue predicted less cheating among men. Men high on virtue contingency may have seen the situation as a challenge to their morality and may have tried to maintain self-worth by avoiding dishonest behavior. This finding corroborates past studies in which perceiving cheating as a moral violation deterred cheating (Eisenberg, 2004; Malinowski & Smith, 1985; McCabe & Trevino, 1993).

That virtue contingency predicts less cheating suggests that not all contingencies lead to problematic outcomes. Initial work on contingencies of self-worth (Crocker, Luhtanen, et al., 2003) distinguished external contingencies—which relied on other people for their satisfaction—from internal contingencies, which relied on core and abstract features of the self for their satisfaction. Crocker and colleagues proposed that internal contingencies, such as virtue contingency, would be less problematic than external contingencies. Although most studies have documented the negative consequences associated with external contingencies of self-worth (e.g., Crocker, Karpinski, Quinn, & Chase, 2003; Crocker & Park, 2003; Crocker et al., 2002), very few studies have explored the positive aspects of internal contingencies. Virtue contingency is problematic because violating one's moral value threatens self-esteem. However, our study found that virtue contingency can be beneficial too: It deters people from fraudulent behaviors.

Achievement Goals and Cheating

Consistent with past findings that fear of failure increases cheating (Schab, 1991), performance-avoidance goals predicted more cheating for men. Participants in our study all experienced a threat of failure when struggling with five unsolvable questions. Participants high on performance-avoidance goals may have cheated to alleviate their fear of failure.

Unexpectedly, performance-approach goals did not predict cheating, although past studies (e.g., Anderman et al., 1998; Anderman & Midgley, 2004; Murdock et al., 2001; Murdock et al., 2004) have repeatedly found that a focus on performance predicts high rates of cheating and a more positive attitude toward cheating. We speculate that our failure to replicate past findings stems from the problem of multicollinearity in regression: Performance-approach and avoidance goals were positively correlated ($r = .45$ for men). In line with this reasoning, a chi-square test indicated that men high on performance-approach goal cheated significantly more (89%) than men low on this goal (59%).

Unlike past studies (Anderman et al., 1998; Anderman & Midgley, 2004; Murdock et al., 2001; Murdock et al., 2004), mastery goals did not deter cheating. Our study was the first to examine mastery goals and cheating in a highly tempting situation. Mastery-oriented students may not cheat when alone or with other mastery-oriented students. These students may also study harder for the exam and may not think of the test as very difficult, which might explain their low prevalence of cheating in classroom observations. In contrast, when these students are exposed to a highly tempting situation as in our study—the test seemed impossible to solve without cheating, there was no surveillance, and a peer invited students to cheat—mastery goals may not be sufficient to overcome the desire to cheat.

Women's Motivation to Cheat

Surprisingly, none of the contingencies or goals predicted women's cheating. The majority of women chose not to cheat regardless of their domains of contingencies or their goals. We do not think this was due to a ceiling effect, as 41% of women cheated. We do not know why the variables that predicted men's cheating did not predict women's cheating, but we speculate that women might have been more sensitive to situational constraints. Although the situation encouraged cheating, women may still have felt the risk of being caught, overriding any individual differences. Some studies indicate that women help others cheat by showing them their tests and papers rather than cheat for themselves (Genereux & McLeod, 1995). Future studies should examine whether contingencies of self-worth and achievement goals predict these less blatant cheating behaviors for women.

Importance of Conducting Laboratory Studies

Our study also contributed to the research on cheating by examining cheating behaviors in a controlled laboratory setting. First, unlike most past findings that relied on self-reports and classroom observations, we observed people's behaviors directly. Because participants in our study were not told that the study concerned cheating, we minimized the possibility of bias due to social desirability. Second, we controlled for situational factors, such as test difficulty, amount of surveillance, and peer pressure. A multitude of situational and individual factors determine people's decision to engage in cheating (see McCabe et al., 2001a, for a review). By holding these variables constant across participants, we reduced potential confounds. Third, we created a more realistic situation than past experimental studies, increasing the validity and generalizabilty of the results. Past experimental studies on cheating were either low on mundane realism (e.g., Eisenberger & Masterson, 1983) or did not examine academic cheating per se (e.g., Corcoran &

Rotter, 1987). In contrast, our study introduced the experimental task as an academic test with consequences for participants' course grades. Participants also took the test with another student in the room, as they would in a real exam setting. The presence of others accentuates competition and witnessing a cheating peer increases the temptation to cheat (DeVries & Ajzen, 1971; McCabe & Trevino, 1993; Stannard & Bowers, 1970). Although peer influence has been found to be an important determinant of cheating, previous laboratory studies did not incorporate this aspect.

Limitations

Our study has several limitations. First, we did not ask participants why they cheated, so the motivations underlying cheating are unclear. The confederate may have encouraged participants to cheat by modeling and normalizing cheating, or, specifically for male participants, by coaxing them to defy authority and demonstrate their masculinity or "coolness." We also do not know if participants cheated for the sake of getting the extra credit points or to be in the top 10% of the class. We believe the presence of the confederate played an important role, but the presence of an answer key may have been enough to prompt some participants to cheat. Although we did not ask participants why they cheated, one open-ended question in the posttest questionnaire asked why they think people cheat in general. Among the 52 participants who provided an answer to the question, 54% ($n = 28$) mentioned "grade, credit points, and doing well in school"; 17% ($n = 9$) mentioned "outperforming others, getting ahead, and competition"; 17% ($n = 9$) mentioned "being not prepared/not understanding the content/being helpless"; 15% ($n = 8$) mentioned "easiness" or "laziness"; and 12% ($n = 6$) mentioned "social pressure." Further studies should disentangle what factors or combination of factors encourage or deter cheating.

Second, because we did not manipulate contingencies of self-worth or goals, we cannot conclude from our study whether goals and contingencies *caused* students to cheat. Further studies should attempt to manipulate goals to establish causality. Third, we do not know how many participants were actually suspicious about the purpose of the study when the confederate invited them to cheat. We probed them for suspicion only after they completed two pages of questions about cheating norms and attitudes, inflating their suspicion that the study concerned cheating. Our analyses suggest that their cheating behavior did not depend on whether they later guessed the true purpose of the study. However, future studies should attempt to probe participants for suspicion immediately after the behavioral measure. Finally, despite our effort to make the situation as realistic as possible, participants still knew they were in a psychology study; it is possible that our results may not generalize to actual classrooms. Nonetheless, this study comes closer to a naturalistic setting than previous research by measuring cheating on an academic task with a presence of a peer.

CONCLUSION

In sum, this study shows that cheating among male college students reflects their attempt to enhance or protect their self-worth. For men, competition contingency of self-worth and performance-avoidance goals predicted more cheating, whereas virtue contingency predicted less cheating. For women, none of the contingencies and goals predicted cheating. By observing cheating behavior on an academic task in a laboratory and controlling for surveillance and peer pressure, our study offers a compelling paradigm for cheating research.

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REFERENCES

Ames, C. (1992). Classrooms: Goals, structures, and student motivation. *Journal of Educational Psychology*, *84*, 261–271.

Anderman, E. M., Griesinger, T., & Westerfield, G. (1998). Motivation and cheating during early adolescence. *Journal of Educational Psychology*, *90*, 84–93.

Anderman, E. M., & Midgley, C. (2004). Changes in self-reported academic cheating across the transition from middle school to high school. *Contemporary Educational Psychology*, *29*, 499–517.

Antion, D. L., & Michael, W. B. (1983). Short-term predictive validity of demographic, affective, personal, and cognitive variables in relation to two criterion measures of cheating behaviors. *Educational and Psychological Measurement*, *43*, 467–482.

Aronson, E., & Mettee, D. R. (1968). Dishonest behavior as a function of differential levels of induced self-esteem. *Journal of Personality and Social Psychology*, *9*, 121–127.

Baird, J. S. (1980). Current trends in college cheating. *Psychology in the Schools*, *17*, 515–522.

Bradburn, N. M., Sudman, S., Blair, E., & Stocking, C. (1978). Question threat and response bias. *Public Opinion Quarterly*, *42*, 221–234.

Cooper, S., & Peterson, C. (1980). Machiavellianism and spontaneous cheating in competition. *Journal of Research in Personality*, *14*, 70–75.

Corcoran, K. J., & Rotter, J. B. (1987). Morality-conscience guilt scale as a predictor of ethical behavior in a cheating situation among college females. *Journal of General Psychology*, *114*, 117–123.

Covey, M. K., Saladin, S., & Killen, P. J. (1989). Self-monitoring, surveillance, and incentive effects on cheating. *Journal of Social Psychology*, *129*, 673–679.

Crocker, J., Karpinski, A., Quinn, D. M., & Chase, S. (2003). When grades determine self-worth: Consequences of contingent self-worth for male and female engineering and psychology majors. *Journal of Personality and Social Psychology*, *85*, 507–516.

Crocker, J., Luhtanen, R., Cooper, M. L., & Bouvrette, S. A. (2003). Contingencies of self-worth in college students: Measurement and theory. *Journal of Personality and Social Psychology*, *85*, 894–908.

Crocker, J., & Park, L. E. (2003). Seeking self-esteem: Maintenance, enhancement, and protection of self-worth. In M. R. Leary & J. Tangney (Eds.), *Handbook of self and identity* (pp. 291–313). New York: Guilford.

Crocker, J., & Park, L. E. (2004). The costly pursuit of self-esteem. *Psychological Bulletin*, *130*, 392–414.

Crocker, J., Sommers, S. R., & Luhtanen, R. K. (2002). Hopes dashed and dreams fulfilled: Contingencies of self-worth and admissions to graduate school. *Personality and Social Psychology Bulletin*, *28*, 1275–1286.

Crocker, J., & Wolfe, C. T. (2001). Contingencies of self-worth. *Psychological Review*, *108*, 593–623.

Davis, S. F., Grover, C. A., Becker, A. H., & McGregor, L. N. (1992). Academic dishonesty: Prevalence, determinants, techniques, and punishments. *Teaching of Psychology*, *19*, 16–20.

DePalma, M. T., Madey, S. F., & Bornschein, S. (1995). Individual differences and cheating behavior: Guilt and cheating in competitive situations. *Personality and Individual Differences*, *18*, 761–769.

DeVries, D. L., & Ajzen, I. (1971). The relationship of attitudes and normative beliefs to cheating. *Journal of Social Psychology*, *83*, 199–207.

Diekhoff, G. M., LaBeff, E. E., Clark, R. E., Williams, L. E., Francis, B., & Haines, V. J. (1996). College cheating: Ten years later. *Research in Higher Education*, *37*, 487–502.

Eisenberg, J. (2004). To cheat or not to cheat: Effects of moral perspective and situational variables on students' attitudes. *Journal of Moral Education*, *33*, 163–178.

Eisenberger, R., & Masterson, F. A. (1983). Required high effort increases subsequent persistence and reduces cheating. *Journal of Personality and Social Psychology*, *44*, 593–599.

Eisenberger, R., & Shank, D. M. (1985). Personal work ethic and effort training affect cheating. *Journal of Personality and Social Psychology*, *49*, 520–528.

Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, *72*, 218–232.

Flynn, S., Reichard, M., & Slane, S. (1987). Cheating as a function of task outcome and Machiavellianism. *Journal of Psychology*, *121*, 423–427.

Fox, J.-P. (2005). Randomized item response theory models. *Journal of Educational and Behavioral Statistics*, *30*, 189–212.

Genereux, R. L., & McLeod, B. A. (1995). Circumstances surrounding cheating: A questionnaire study of college students. *Research in Higher Education*, *36*, 687–704.

Jensen, L. A., Arnett, J. J., Feldman, S. S., & Cauffman, E. (2002). It's wrong, but everybody does it: Academic dishonesty among high school and college students. *Contemporary Educational Psychology*, *27*, 209–228.

Jordan, A. E. (2001). College student cheating: The role of motivation, perceived norms, attitudes, and knowledge of institutional policy. *Ethics & Behavior*, *11*, 233–247.

Lobel, T. E., & Levanon, I. (1988). Self-esteem, need for approval, and cheating behavior in children. *Journal of Educational Psychology*, *80*, 122–123.

Malinowski, C. I., & Smith, C. P. (1985). Moral reasoning and moral conduct: An investigation prompted by Kohlberg's theory. *Journal of Personality and Social Psychology*, *49*, 1016–1027.

McCabe, D. L., & Bowers, W. J. (1994). Academic dishonesty among males in college: A thirty year perspective. *Journal of College Student Development*, *35*, 5–10.

McCabe, D. L., & Trevino, L. K. (1993). Academic dishonesty: Honor codes and other contextual influences. *Journal of Higher Education*, *64*, 522–538.

McCabe, D. L., & Trevino, L. K. (1996). What we know about cheating in college: Longitudinal trends and recent developments. *Change*, *28*, 28–33.

McCabe, D. L., Trevino, L. K., & Butterfield, K. D. (2001a). Cheating in academic institutions: A decade of research. *Ethics & Behavior*, *11*, 219–232.

McCabe, D. L., Trevino, L. K., & Butterfield, K. D. (2001b). Dishonesty in academic environments: The influence of peer reporting requirements. *Journal of Higher Education*, *72*, 29–45.

Midgley, C., Kaplan, A., & Middleton, M. (2001). Performance-approach goals: Good for what, for whom, under what circumstances, and at what cost? *Journal of Educational Psychology*, *93*, 77–86.

Murdock, T. B., Hale, N. M., & Weber, M. J. (2001). Predictors of cheating among early adolescents: Academic and social motivations. *Contemporary Educational Psychology*, *26*, 96–115.

Murdock, T. B., Miller, A., & Kohlhardt, J. (2004). Effects of classroom context variables on high school students' judgments of the acceptability and likelihood of cheating. *Journal of Educational Psychology*, *96*, 765–777.

Neter, J., Kutner, M. H., Nachtsheim, C. J., & Wasserman, W. (1996). *Applied linear statistical model* (4th ed.). Columbus, OH: McGraw-Hill.

Newstead, S. E., Franklyn-Stokes, A., & Armstead, P. (1996). Individual differences in student cheating. *Journal of Educational Psychology*, *88*, 229–241.

Pintrich, P. R., & Schunk, D. H. (2002). *Motivation in education: Theory, research, and applications*. Upper Saddle River, NJ: Merrill Prentice Hall.

Robinson, E., Amburgey, R., Swank, E., & Faulker, C. (2004). Test cheating in a rural college: Studying the importance of individual and situational factors. *College Student Journal*, *38*, 380–395.

Schab, F. (1991). Schooling without learning: Thirty years of cheating in high school. *Adolescence*, *26*, 839–847.

Scheers, N. J., & Dayton, C. M. (1987). Improved estimation of academic cheating behavior using the randomized response technique. *Research in Higher Education*, *26*, 61–69.

Schweitzer, M. E., Ordóñez, L., & Douma, B. (2004). Goal setting as a motivator of unethical behavior. *Academy of Management Journal*, *47*, 422–432.

Spiller, S., & Crown, D. F. (1995). Changes over time in academic dishonesty at the collegiate level. *Psychological Reports*, *76*, 763–768.

Stannard, C. I., & Bowers, W. J. (1970). The college fraternity as an opportunity structure for meeting academic demands. *Social Problems*, *17*, 371–390.

Stern, E. B., & Havlicek, L. (1986). Academic misconduct: Results of faculty and undergraduate student surveys. *Journal of Applied Health*, *15*, 129–142.

Tibbetts, S. G. (1999). Differences between women and men regarding decisions to commit test cheating. *Research in Higher Education*, *40*, 323–342.

Ward, D. A. (1986). Self-esteem and dishonest behavior revisited. *Journal of Social Psychology*, *126*, 709–713.

Whitley, B. E. (1998). Factors associated with cheating among college students: A review. *Research in Higher Education*, *39*, 235–274.

Whitley, B. E., Jr., Nelson, A. B., & Jones, C. J. (1999). Gender differences in cheating attitudes and classroom cheating behavior: A meta-analysis. *Sex Roles: A Journal of Research*, *41*, 657–680.