

# Imitation Is the Sincerest Form of Cheating: The Influence of Direct Knowledge and Attitudes on Academic Dishonesty

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What effect does witnessing other students cheat have on one's own cheating behavior? What roles do moral attitudes and neutralizing attitudes (justifications for behavior) play when deciding to cheat? The present research proposes a model of academic dishonesty which takes into account each of these variables. Findings from experimental (vignette) and survey methods determined that seeing others cheat increases cheating behavior by causing students to judge the behavior less morally reprehensible, not by making rationalization easier. Witnessing cheating also has unique effects, controlling for other variables.

Keywords: academic dishonesty, attitudes, cheating

Academic dishonesty is unfortunately a fact of life at many institutions today and thus has become a hot topic of investigation (e.g., McCabe & Treviño, 1997). Although it is interesting to know how much students cheat and what methods they use, our interest is in *why* students cheat. In other words, what are the psychological causes of cheating and what effect does seeing others cheat have on behavior? What prompts so many to do something that is often considered wrong and violates school policies?

Cheating can be viewed as both a moral and a social decision. One might expect that a student's attitude about how right or wrong he or she personally believes cheating to be is considered to be of utmost importance. However, those who believe cheating to be wrong still do it. An example of this phenomenon occurred in a recent study that surveyed 5th- and 6th-year medical students about cheating behavior (Semerci, 2006). The study found that the students viewed cheating as "forgery" and "unlawful," yet these same students admitted to cheating. If these medical students know that cheating is wrong, then why are they still cheating? It seems that stated values are not an adequate predictor of cheating behavior. It is therefore essential that the role of stated moral values in relation to other factors be considered in creating an overall model of cheating behavior.

When cheating is viewed as a social behavior, a student's peers and environment play a substantial role. There are many ways to conceptualize this, but a crucial one is the literal observation

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of others cheating. Having this direct knowledge of cheating is positively correlated with increased cheating behavior (McCabe, Treviño, & Butterfield, 2001; Rettinger & Kramer, 2009), but the causes of this relationship are not yet completely understood. Does direct knowledge have its own direct effect on cheating behavior or is it mediated by a person's attitudes? We expect that the relationship between direct knowledge and cheating is either entirely dependent on these attitudes or at least strongly influenced by them. In this sense cheating would be viewed as a social decision, as it is affected by the actions of peers and knowledge of cheating behavior. We propose that the mechanism of that social influence is our attitudes—particularly neutralizing and valence toward cheating. Our goal is to explain these effects by building a model of cheating that addresses the overall issue of how seeing others cheat affects behavior. This article explores both the social and individual moral factors that influence students' cheating decisions, including ways that those factors interact with one another, using both a survey method and an experimental vignette method.

# CHEATING VALENCE ATTITUDES

Logically, a person's moral attitude toward cheating should affect behavior, because the decision to cheat is considered an ethical one. However, to examine its effects it needs to be operationalized in a variable we call cheating valence attitudes. After reviewing past research on cheating, Whitley (1998) proposed that individuals with a negative attitude toward cheating are less likely to cheat regardless of the ratio of benefits to risks. This means that even if the risk of getting caught is low, individuals with negative attitudes toward cheating still will not cheat. In a recent study conducted by Harding, Mayhew, Finelli, and Carpenter (2007), the theory of planned behavior, developed by Beck and Ajzen in 1991, was extended to apply to academic integrity situations. The original model proposes that behavior is shaped by (a) the attitude toward the behavior, (b) subjective norms about social pressure to perform the behavior, and (c) perceived behavioral control or how successful one will be at completing said behavior. The added moral construct can be defined as either moral obligation or moral reasoning, Moral obligation is the level of responsibility an individual has that influences whether an act is performed. Moral reasoning is whether an individual perceives an action to be morally right or wrong. The study concluded that they were both strong influences in determining an individual's level of intention to cheat.

Harding et al. (2007) were able to show that moral constructs did add to the overall predictive value of their model and the theory of planned behavior and concurred with Whitley's (1998) findings that those with a strong sense of moral obligation will be less likely to cheat. Although multicollinearity hampers strong conclusions, it is intriguing that Harding et al. found that moral factors only accounted for 5% of the variance in cheating behavior over and above other attitudes and behaviors.

Not all researchers agree, however, that conscious moral judgments play a role in the moral decision-making process (e.g., Haidt, 2001). The model that we have postulated thus far is that of the rationalist, meaning that moral decisions are formed by a conscious, rational thought process (after Kohlberg, 1969). An alternative theory is that moral decision making is actually an automatic or intuitive process and reasoning occurs after the fact to provide justification for the decision (Haidt, 2001). This approach emphasizes the influence of social and cultural surroundings and claims that a person's explicit morals come into play only after the decision has been made. We predict that a person's moral attitudes do have a role in a person's decision to cheat based on Whitley's (1998) meta-analysis in which those with a negative attitude toward cheating are less likely to cheat, and the findings from Harding et al. (2007) that level of moral obligation and reasoning contributes to intention to cheat and cheating behavior in Beck and Ajzen's (1991) model. The current study attempts to differentiate these hypotheses by quantifying the strength and valence of participants' attitudes toward cheating into a variable called cheating valence attitudes.

# NEUTRALIZING ATTITUDES

Despite their ethical or moral opposition to cheating, some students still cheat (Semerci, 2006). This conduct can possibly be explained through the presence of neutralizing attitudes, which allow people to justify behavior that they know to be wrong (Haines, Diekhoff, LaBeff, & Clark, 1986; Sykes & Matza, 1957). Neutralizing attitudes have been positively correlated as well as experimentally associated with cheating behavior (Pulvers & Diekhoff, 1999; Rettinger & Kramer, 2009). Attitudes such as "I'll never need to use this material" and "Everyone else is doing it" allow students to relieve themselves of responsibility for their actions. LaBeff, Clark, Haines, and Diekhoff (1990) showed that students who had stronger neutralizing attitudes were more likely to have engaged in cheating behaviors.

To deal with the cognitive dissonance created by acting in a manner contrary to established morality, students rationalize their behaviors (Sykes & Matza, 1957). Rationalization can occur when the student attributes the cause of cheating behavior to an external force. Students often blame the teacher, workload, and other obstacles to justify their own actions (Murdock & Stephens, 2007). The presence of neutralizing attitudes is strongly correlated with academic dishonesty and, through vignette manipulations, has been shown to directly *cause* cheating (Rettinger & Kramer, 2009). However, the mechanism through which this occurs is not clear. It may be that neutralizing attitudes are a moderating factor for other attitudes, like cheating valence. For example, a student with negative cheating valence (i.e., who believes cheating to be wrong) might only cheat in the presence of neutralizing attitudes.

We do not anticipate that cheating valence will only act independently on students' cheating behavior but instead predict interactions with social norms and other attitudes. Most important among those interactions, for our purposes, are neutralizing attitudes (Haines et al., 1986), the excuses a person uses to justify cheating behavior. As one might imagine, these two may be connected. If a person can rationalize behavior away, he or she may not feel the guilt he or she normally would. We would also expect neutralizing attitudes to have little effect on someone with very low cheating valence attitudes (meaning someone who strongly disapproves of cheating) but to have a very strong effect on someone with a high cheating valence attitude.

Previous neutralizing attitude scales (Beck & Ajzen, 1991) have included items such as "I would not feel guilty if I cheated on a test or exam," which sits on the line between neutralizing attitudes and cheating valence attitudes. In this study, six questions were developed that allowed us to measure cheating valence attitudes independently (Anderman, Griesinger, & Westerfield, 1998; Harding et al., 2007). Adding cheating valence attitudes as a variable may shed more light on what causes cheating behavior among college students. We suspect that neutralizing and valence attitudes work in concert and wish to examine their relationship to the social environment.

#### DIRECT KNOWLEDGE

Because attitudes are not formed in a vacuum, we believe that cheating is not just a moral decision and is instead part moral and part social. Cheating as a social decision involves the actions of one's peers, and direct knowledge of peers' cheating is a crucial social signal. Unsurprisingly, seeing others cheat (or having direct knowledge of plagiarism or exam cheating) is an important predictor of one's own cheating behavior (Haines et al., 1986; Jordan, 2001; McCabe & Treviño, 1997).

McCabe and Treviño (1997) hypothesized that seeing one's peers cheat should increase the tendency for the observer to do the same. They discovered that academic dishonesty was positively correlated with perceived levels of cheating among peers. Similarly, McCabe and Treviño (1993) studied academic dishonesty among peers and found that peer behavior had the strongest influence on cheating, even greater than the presence of an honor code, severity of penalties, certainty of being reported, and understanding of the academic integrity policy. They speculated not only that this occurred because students were learning through observation but also that observing cheating among others made it more normative.

A longitudinal study of students at U.S. military academies found that having peers who cheated in the past increased the likelihood that students would cheat in the future (Carrell, West, & Malmstrom, 2005). Essentially, knowing about cheating behaviors firsthand is a risk factor for cheating. Rettinger and Kramer (2009) tested a model of cheating behavior that included direct knowledge, neutralizing attitudes, and learning or grade orientation with the use of vignettes so that each variable could be isolated and manipulated. Using these methods, they found that direct knowledge was the most effective predictor of cheating, indicating its important influence on a student's decision to cheat. By using an experimental vignette, they were able to manipulate observed cheating. Participants read a short fictional scenario about a student in which direct knowledge of classmates cheating, along with other factors known to contribute to cheating, was either present or absent. These experimental results indicate that students believe that seeing others cheat does actually cause an increase in cheating—the fact that cheaters may notice others cheating more is not a sufficient explanation.

The current research seeks to explain how direct knowledge has that effect. We see three possible answers to this question. First, direct knowledge affects behavior indirectly by influencing attitudes, specifically neutralizing attitudes and cheating valence attitudes. Second, direct knowledge has its own direct effect not influenced by the presence of other variables. Finally, there are other, yet unknown variables that may be affecting the relationship between direct knowledge and cheating behaviors. We hypothesize that direct knowledge effects are mediated by cheating valence attitudes, neutralizing attitudes, or both. There is strong evidence that exposure to others cheating leads students to cheat themselves. We propose that the psychological mechanism for the effect of direct knowledge is a change in cheating valence and neutralizing attitudes. In other words, seeing cheating results in changes in cheating valence and neutralizing attitudes, which in turn result in increased cheating behavior. In surveys and experimentally manipulated vignettes the witnessing cheating/attitude change relationship will lead to two-way interactions between the variables. As these attitudes are held constant (experimentally or statistically), direct knowledge would be less associated with cheating behavior. Another possible model is that direct knowledge is moderated by these attitudes (i.e., a direct relationship exists between direct knowledge and cheating behaviors regardless, but it is influenced by the person's attitudes). An interaction between cheating valence and direct knowledge using survey data would provide evidence that the

decision to cheat is affected by both moral and social considerations. Corresponding experimental evidence would support mediation by cheating valence attitudes as a cause of the direct knowl-edge effect.

Previous research on the causal factors of cheating behavior has pointed to such a two-way interaction between direct knowledge and neutralizing attitudes (Haines et al., 1986; Rettinger & Kramer, 2009). Rettinger and Kramer suggested that the use of neutralizing attitudes is strongly influenced by direct knowledge of other students cheating. Using an experimental vignette, Rettinger and Kramer were able to manipulate each of the variables. They found a moderation interaction between direct knowledge and neutralizing attitudes, indicating that seeing others cheat has a stronger effect on students with higher neutralizing attitudes than those with weaker neutralizing attitudes.

From these past findings, we predict that direct knowledge will be mediated by cheating valence and neutralizing attitudes, meaning that direct knowledge has the strongest impact in their presence and that in their absence direct knowledge will have a weaker effect on cheating behavior.

The second possible model is that direct knowledge has its own immediate effect on cheating behavior. In this case, only the presence of direct knowledge is necessary to cause cheating behavior; seeing others cheat literally just makes one cheat more. In this context, we may find moderating effects of attitudes on direct knowledge or vice versa. Seeing others cheat may increase the ability of neutralizing attitudes, for example, to affect cheating. Conversely, more positive cheating valence attitudes may make students more susceptible to the influence of witnessing another cheat. Last, it is possible that direct knowledge has its effect through some other unknown variable that will require further research to uncover.

# SUMMARY AND HYPOTHESES

This article tests two sets of related hypotheses. First is a model of the effects of observing others engaging in academic dishonesty. We hypothesize that observing others cheating causes students to cheat because it increases the ability to neutralize behaviors they believe to be wrong (stronger neutralizing attitudes) and because those behaviors seem less wrong to them (more positive cheating valence). This model predicts that multiple regressions using survey data will show main effects of all three variables individually but that controlling for attitudes will eliminate the effects of direct knowledge. Furthermore, direct knowledge of cheating will have a greater effect on students with a positive attitude toward cheating (i.e., positive cheating valence) and students with stronger neutralizing attitudes.

The second set of hypotheses concerns the importance of cheating valence attitudes. We predict that they will not be as crucial as other variables in predicting cheating behavior (after Haidt, 2001) although students may expect that they will be. Cheating valence effects will also interact with neutralizing attitudes, such that neutralizing attitudes will only predict or be thought to cause cheating for those who have negative cheating valence.

To explore these relationships we employed two methods: (a) a survey of students' attitudes and past cheating behavior, and (b) a vignette experiment that allowed us to isolate and manipulate each variable. The survey provided our study with external validity, because it collected information regarding actual behaviors and attitudes. The vignette, in which participants were asked to rate how likely it was that the protagonist, Alex, would cheat, manipulated the level of each vari-

able and provided our experiment with internal validity that allowed us to demonstrate causality. The vignette represents what students believe affects cheating decisions (not necessarily what they would do themselves), whereas the survey is a self-report of the attitudes and behaviors that affect their cheating behavior.

# METHOD

#### Participants

Eighty-one freshman and 83 upper-class students (fairly evenly distributed among sophomores, juniors, and seniors) from the general campus population of a small liberal arts college were recruited to participate in this experiment. The university maintains a historic and well-publicized student-supervised honor code. The ages of the participants ranged from 17 to 47 years with a mean age of 19.45. The sample included 119 female participants and 46 male participants. For participating, upon completion the upper-class students received a candy bar and an opportunity to enter a raffle for gift certificates to the Apple Store. The 1st-year students participants were treated in accordance with American Psychological Association ethical guidelines, and participation in the experiment was completely voluntary. All responses were kept anonymous to encourage honest responses.

# Materials

The study consisted of a survey and a vignette experiment. The survey portion included questions about the participants' demographics, retrospective questions about participants' personal cheating behaviors, and questions concerning each of the three main variables: neutralizing attitudes, cheating valence attitudes, and direct knowledge of others' cheating behavior. Participants answered a 17-item questionnaire regarding the cheating behavior that they personally had committed during the previous semester (from Jordan, 2001; Rettinger, Jordan, & Peschiera, 2004), with upper-class students reporting on college course work and freshmen on their final semester in high school. These questions never explicitly referred to the behaviors as "Cheating." Participants indicated yes or no if they had engaged in a specific behavior such as "I used unauthorized notes during a take home exam." The same 17-item survey was used to report direct knowledge of cheating behaviors, with participants again responding yes or no if they had witnessed that behavior. A complete list of the items can be found in Table 1.

To determine the participants' neutralizing attitudes, a 12-item questionnaire consisting of personal neutralizing attitudes (Rettinger & Jordan, 2005) was used. Participants responded on a 1-to-5 scale with 1 indicating that cheating is not at all justified and 5 indicating that cheating is completely justified. An example statement of a neutralizing attitude is "The instructor doesn't seem to care if I learn the material." Last, participants' cheating valence attitudes were assessed with a questionnaire that combined items from Harding et al. (2007) and Anderman et al. (1998). Participants were instructed to report on a 1-to-5 scale how much they agreed or disagreed with six statements, which included sentences such as "Cheating on a test or exam goes against my

Behavior	% Reporting Direct Knowledge	% Reporting Cheating
Notes on an in class exam	47.8	10.2
Notes on a take home exam	40.8	20.4
Copied on an in class exam	52.5	19.7
Copied on a take home exam	33.3	13.4
Gave/allowed to copy answers on exam	40.8	17.8
Gave unauthorized information to a later section	58.6	31.8
Received unauthorized information from earlier section	57.3	31.8
Turned in a paper written by someone else	12.8	0.0
Knowingly plagiarized from online source	24.8	31.4
Knowingly plagiarized from printed publication	17.8	6.4
Added items to a bibliography that were not used in the paper	30.8	26.8
Copied homework or lab work	66.9	42.9
Had someone do my homework or lab work	24.2	2.5
Allowed someone to copy my homework or lab work	66.9	52.9
Did someone's homework or lab work	23.1	5.1
Worked with someone on homework or lab work without authorization	51.6	38.9
Invented or altered data	29.3	17.8
M	38.24	21.75

 TABLE 1

 Self-Reported Frequency and Direct Knowledge of Academic Dishonesty Behaviors

principles." Strong disagreement was indicated by a response of 1 and strong agreement was indicated by a response of 5.

Each participant also received a vignette and a two-item questionnaire for the experimental portion of the study. The vignettes, which manipulated the presence or absence of neutralizing attitudes, the presence or absence of observed cheating, and a high or low cheating valence, were set up in a  $2 \times 2 \times 2$  design resulting in eight different versions. All vignettes described a student named Alex (whose sex was matched to that of the participant) who is faced with the opportunity to cheat on an exam. Alex and his or her situation were presented differently in each of eight separate vignettes. Next is an example of the male version containing high neutralizing attitudes, high direct knowledge of cheating, and low cheating valence (negative attitude toward cheating).

Alex is a freshman at your school. He recently began classes and is taking a test today. Alex feels that his teacher has covered too much material for this exam. A friend asked Alex for help cheating on the exam. Alex thinks that cheating in college is a common behavior, and during the last exam Alex witnessed many other students exchanging answers. Alex feels cheating would violate his personal values and he would feel guilty about it.

The accompanying questionnaire asked the participant to make two judgments based on information in the vignette, one about what Alex would do and one about what the participant would do in the given situation. These questions were answered on a 1-to-9 scale, with 1 indicating I/Alex would definitely not cheat and 9 indicating I/Alex would definitely cheat.

The order of vignette and survey presentation was counterbalanced so that half of the participants completed the survey first and half answered the vignette questions first.

# Procedure

Upon entry, participants were randomly assigned to the vignette first or survey first condition. They were handed a randomly assigned vignette facedown and asked to sit at a computer to answer the survey portion of the study. They completed the informed consent and were instructed as a group to complete both the survey at the computer and the vignette using pencil and paper. Each individual participant was then told whether to answer the survey questions first or perform the vignette portion first. The survey, provided through a link on the desktop of each computer, was conducted using SurveyGizmo.com. Once all participants had completed both portions of the study, they were debriefed and given either a candy bar or a slip indicating completion for class credit.

# Analyses

The regression models described below used the total number of items endorsed on the 17-item cheating behavior scale as the dependent variable. This is a useful measure of cheating behavior (Jordan, 2001). Similarly, we used the entire direct knowledge of cheating scale as representative of the construct.

The vignette data consisted of two questions, but only the Alex-cheating variable was analyzed. Previous research (Rettinger et al., 2004; Rettinger & Kramer, 2009) has shown that the projected self-cheating behavior variable shows similar patterns to the Alex-cheating variable but has a smaller effect size because of subject differences. This research has also shown that the self-cheating variable is associated with the participants' values, not the contents of the vignettes, and is therefore a poor dependent variable.

### RESULTS

#### Scale Reliability

Because our measure of cheating valence attitudes combines questions from two different sources (Anderman et al., 1998; Harding et al., 2007), reliability is an issue. To determine that the scale taps into a single construct, reliability analyses were performed. Cronbach's alpha on standard-ized items was .81, although correlations among items ranged from .11 (between "I would not feel guilty if I cheated on a test or exam" and "Cheating on a test or exam violates my morals") to .77 (between "Cheating on a test or exam violates my morals" and "Cheating on a test or exam goes against my principles"). Lowest correlations tended to involve reverse-scored and nonreversed items, implying that this reflects subjects not paying attention to the reversals rather than the involvement of other constructs. This is problematic in that it increases random error variance, resulting in lower power. It does not call into question consistent patterns of results. Exploratory factor analysis using principal component analysis did yield two components with eigenvalues greater than 1 (3.13 and 1.12), although a screen plot test would advocate for a single-factor solution. Furthermore, the second factor differentiated the reverse-scored from the nonreversed items, further supporting a single theoretical construct underlying the scale.

We therefore see two possible explanations for this finding, both leading to the conclusion that the scale is an effective measure of valence attitudes. First is the strong likelihood that the scale is measuring a single construct (valence attitudes) and that the second factor is capturing variance common to negatively phrased items. The second possibility is that the second, reversed factor represents the ambivalence that some respondents feel toward cheating. In either case, the second factor also captures valence attitudes and can be productively collapsed into a single variable representing the moral valence of the participant toward cheating.

Finally, the neutralizing attitudes scale was quite reliable as well. Cronbach's alpha for the 12-item scale was .93. Intercorrelations ranged from a low of .39 between "All the other students seem to be cheating" and "I don't have time to study because I'm working to pay for school" and a high of .80 between "The students sitting around me during an exam make no attempt to cover up their answers" and "The instructor left the room to talk with someone during the exam."

#### Survey Results

**Descriptive statistics.** Our survey asked college student participants to report on their cheating behavior during the previous semester. They were also asked about neutralizing attitudes, direct knowledge of others' cheating behavior, and valence attitudes. There were 78 students (49.7%) who were in high school during the period about which they were queried and 79 students (50.3%) who were in college during that time.

The survey data showed that 127 (80.9%) students admitted to cheating in some form during their last semester. More students in high school cheated (70; 89.7%) than did those in college (57; 72.2%),  $\chi^2(1) = 7.86$ , p = .005, at the time they were describing. The Individual Cheating Behaviors scale revealed that the average student reported engaging in 3.5 behaviors (SD = 2.98). No participants reported turning in a paper written by someone else, whereas 52.9% reported allowing someone to copy lab work or homework. See Table 1 for the breakdown of each behavior and reported direct knowledge of that behavior. The data reported there are comparable to that reported by McCabe and Treviño (1993) for institutions with honor codes.

When direct knowledge of cheating was scored on a binary (yes/no) scale, only 18 people (11.5%) did *not* directly see any cheating in the previous semester. This leaves 88.5% of students who did have direct knowledge of cheating behaviors, indicating how widespread a phenomenon seeing others cheat really is. The behavior with the lowest reported direct knowledge was turning in a paper written by someone else (12.8%), analogous to reports of actual behavior, and the behavior with the highest reported direct knowledge was allowing someone to copy lab work or homework (66.9%). These percentages are all slightly higher than the percentages for reported behavior.

The percentages just presented are collapsed across students answering questions about their high school experience and students answering questions about their college experience. In general, the numbers for high school cheating were slightly higher than those for college cheating. Only three of the cheating behaviors showed significant differences between high school and college students at the .01 level (to account for family-wise error). High school students were more likely to have allowed another student to copy homework (70.5%) as compared to college students (35.4%),  $\chi^2(1) = 19.37$ , p < .001, and more likely to copy homework (59.7%) than were college students (26.6%),  $\chi^2(1) = 17.50$ , p < .001. High school students were also more likely than

college students to pass on (42.3% to 21.5%),  $\chi^2(1) = 7.82$ , p = .005, and to receive (68.8% to 19.0%),  $\chi^2(1) = 10.06$ , p = .002, information from students in other sections.

The neutralizing attitudes scale had 12 items. Each item was rated on a 1-to-5 Likert scale, with 1 indicating that cheating is not justified (M = 1.58, SD = .69). The participants' cheating valence was also scored on a Likert 1-to-5 scale with six items (M = 2.07, SD = .83), where higher scores correspond with more positive attitudes toward cheating.

# Correlations

As Table 2 shows, many of the predictor variables were correlated with cheating behaviors and with one another. The number of reported cheating categories showed strong correlations to neutralizing attitudes, r(153) = .52; cheating valence, r(153) = .53; and direct knowledge, r(153) = .64. As you can see, direct knowledge was most highly correlated with reported cheating behaviors, indicating that as direct knowledge of cheating increases, number of reported cheating behaviors increases. The same pattern is also present for cheating valence and neutralizing attitudes. It is also important to notice that the variables are correlated with each other as well, with the strongest correlation between neutralizing attitudes and cheating valence, r(153) = .60.

# **Regression Models**

Regression modeling was used to determine the relative importance of the predictor variables and to test psychological models of cheating behavior. Because of the small number of variables in the model and because they are all predicted to be related, this model is not a likely candidate for structural equation modeling. Number of reported cheating categories will be used as the criterion variable in regressions as it is representative of the other related variables (Jordan, 2001). Regression analyses allow us to examine not only the relative contributions of the predictors to cheating behavior but also interactions and potential mediation effects. In particular, we wish to examine whether and to what extent direct knowledge effects on cheating behavior were mediated by changes in cheating valence and neutralizing attitudes. We also test the hypotheses that direct knowledge will have different effects for students with differing neutralizing and cheating valence attitudes.

Linear regressions were conducted to determine how well each of the factors (direct knowledge, neutralizing attitudes, and cheating valence) predicts cheating behavior. All variables met the statistical assumptions required for regression with the exception of neutralizing attitudes, which violated the normality assumption. The following analyses were also conducted using a log

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Variable	Cheating Categories	Neutralizing	Direct Knowledge Categorie	
Cheating categories				
Neutralizing	.52*			
Direct knowledge categories	.64*	.26*		
Cheating valence	.53*	.60*	.31*	

TABLE 2 Correlations Between Variables and Amount of Reported Cheating

p < .01 (two-tailed; df = 153).

transformation of this variable. As the patterns of significance were unchanged and parameters changed only slightly, the original analyses are reported here.

The overall model predicting cheating behavior is significant, F(3, 150) = 65.63, p < .001, and accounted for 75.30% of the variance in cheating, with direct knowledge ( $\beta = .51$ , p < .001), cheating valence attitudes ( $\beta = .22$ , p < .001), and neutralizing attitudes ( $\beta = .24$ , p < .001) contributing to the overall significance. Direct knowledge is the best predictor of cheating overall, followed by neutralizing attitudes and cheating valence, respectively. This pattern holds when only exam and paper cheating (not homework or laboratory work) is considered (see Table 3).

Baron and Kenny's (1986) method for testing mediation effects in interactions was employed to determine whether the attitude variables did in fact mediate the direct knowledge/cheating behavior relationship. First, as we saw earlier, cheating behavior is associated with direct knowledge, r(161) = .64, p < .0001. Second, direct knowledge is correlated with both neutralizing attitudes, r(161) = .25, p < .01, and cheating valence attitudes, r(161) = .31, p < .01. Third, both attitude variables predict cheating behavior over and above direct knowledge (neutralizing  $\beta = .37$ ; valence  $\beta = .37$ , both p < .0001). Finally, we see that direct knowledge is partially mediated by the attitudinal variables, as it is still a predictor of cheating over and above each attitude ( $\beta s = .54$  and .53 for neutralizing and cheating valence, respectively). From these findings, a model in which direct knowledge is partially mediated by both neutralizing and cheating valence attitudes is strongly supported.

Interaction models. With respect to the possible moderating effects of attitudes on the direct knowledge/cheating behavior relationship, regression interactions were examined using centered variables (Aiken & West, 1991). The interactions between both direct knowledge and neutralizing attitudes and direct knowledge and valence attitudes were tested (in separate models) so as to infer moderation effects. Although the omnibus model including direct knowledge, neutralizing attitudes, and their interaction was a significant predictor of cheating behavior, the interaction between neutralizing attitudes and direct knowledge was not significant, F(3, 150) = 59.66, p < .0001 (interaction  $\beta = .09$ , p = .14). In a separate model using valence attitudes, direct knowledge, and their interaction term, both the omnibus model and the interaction term were significant, F(3, 150) = 66.19, p < .0001,  $r^2 = .57$  (interaction  $\beta = .20$ , p < .0001). See Table 3. As cheating valence increases (as someone perceives cheating to be less morally wrong) direct knowledge has more influence on the individual's cheating behavior (see Figure 1). In other words, for someone

	Overall Model					
	f	р	df	$r^2$	β Weight	$\beta p Value$
	65.63	0	3	.75		
DK					.51	0
Cheating valence					.22	.001
Neutralizing					.24	0
Neutralizing × DK interaction	59.66	0	3	.54	.09	.14
Cheating Valence × DK interaction	66.19	0	3	.57	.21	0

TABLE 3 Analysis of Variables Predicting Academic Dishonesty

*Note.* DK = direct knowledge.



FIGURE 1 Interaction of direct knowledge and valence attitudes using centered variables. As valence increases, indicating a more positive view of cheating, the effect of direct knowledge increases.

who considers cheating to be more acceptable, the effect of direct knowledge is much greater than for someone who considers it unacceptable and is affected very little by direct knowledge. A Sobel test (3.31, I < .001) demonstrates the statistical significance of this difference (Preacher & Leonardelli, 2003; Sobel, 1982).

The Direct Knowledge × Valence Attitudes interaction was probed using simple regression equations of cheating on the centered variable of direct knowledge at high and low levels of valence attitudes. As Figure 1 demonstrates, direct knowledge has a much greater effect when valence attitudes are high (indicating moral acceptance of cheating). The regression weight for neutralizing attitudes when valence is 2 standard deviations above the mean is large ( $\beta = .85$ , p < .0001). When valence attitudes are 2 standard deviations below the mean, the effect of direct knowledge is no longer significant ( $\beta = .15$ , p = .19)

We also predicted interactions between cheating valence and neutralizing attitudes, (interaction  $\beta = .001, p = .99$ ), as well as between direct knowledge and neutralizing attitudes, (interaction  $\beta = .09, p = .14$ ), but found neither interaction. Although we cannot draw definitive conclusions from null results, a power analysis found 85% power to detect the two-way interactions assuming a small effect size of 5%. We are therefore fairly confident in concluding that there were no interactions between these pairs of variables.

Correlations were conducted to determine if responses on the vignette were related to each of the measured attitudes and direct knowledge. As expected, responses on the question about what Alex would do and what the students themselves would do in the vignette scenario were signifi-

cantly correlated at the .01 level. However, only direct knowledge was significantly correlated with what Alex would do, whereas all three measured variables (direct knowledge, cheating valence attitudes, and neutralizing attitudes) were correlated with what the participant would do. See Table 4 for the correlation matrix. This finding can be explained by the fact that both cheating valence and neutralizing attitudes are personal attitudes about the students' own beliefs and thus should be more strongly correlated with what they personally would do than with what Alex would do. Direct knowledge is correlated with what Alex would do because both are external judgments about others' behavior.

The regression analysis of the overall model indicated that direct knowledge was the most significant predictor of cheating behavior, followed by neutralizing attitudes and cheating valence attitudes, and found few interactions. To determine the direction of causality in each correlation, we conducted the experimental portion of our study using vignettes. This allowed us to manipulate and isolate each variable and more strongly infer causality.

#### Experimental Results

For the experimental vignette portion, participants rated how likely they thought the protagonist, Alex, would be to cheat in a given situation. Means for the likelihood of Alex cheating are presented in Table 5. As you can see, participants rated Alex as more likely to cheat when high neutralizing, positive cheating valence, and direct knowledge were present.

There were significant differences between high and low direct knowledge, F(1, 149) = 10.77, p < .0001,  $r^2 = .07$ ; high and low neutralizing attitudes, F(1, 149) = 26.92, p < .0001,  $r^2 = .15$ ; and positive and negative cheating valence attitudes, F(1, 149) = 259.87, p < .0001,  $r^2 = 0.64$ . This means that vignettes featuring high direct knowledge, neutralizing attitudes, and positive cheating valence attitudes were more likely to elicit participant responses affirming Alex's likelihood to cheat. Note the much larger effect size for cheating valence attitudes than the others. The three-way interaction between neutralizing attitudes, direct knowledge, and cheating valence attitudes was not significant, F(1, 149) = 0.10, p = .75,  $r^2 = .00$  (observed power of 6.2%), nor were any of the other interactions. See Table 6. Note that the interaction between cheating valence and

Correlations of Vignette Responses With Attitudinal Variables and Direct Knowledge				
	I Would Cheat	Neutralizing	Cheating Valence	Direct Knowledge
Alex would cheat	.47*	.09	.24*	.13
I would cheat		.61*	.43*	.54*

TABLE 4

\*p < .01 (two-tailed; df = 162).

	TABLE 5		
Participant's Mean (Standard Deviation)	Ratings of How Lil	ikely Alex Is to	Cheat in Vignette

	Neutralizing	Direct Knowledge	Cheating Valence	
High/Present/Positive	5.40 (2.17)	5.20 (2.21)	6.54 (1.47)	
Low/Absent/Negative	4.32 (2.19)	4.52 (2.24)	3.18 (1.51)	

Vignette Interactions					
	f	df	df	р	$r^2$
Neutralizing × Direct Knowledge × Valence	0.1	1	149	.75	0
Neutralizing × Direct Knowledge	0.56	1	149	.46	0
Neutralizing × Valence	1.18	1	149	.28	.01
Direct Knowledge × Valence	0.32	1	149	.57	0

TABLE 6

direct knowledge that was present in the survey was not found in the vignette results, F(1, 149) = $0.32, p = .57, r^2 = .00$ . The lack of interactions indicates that students do not believe that holding attitudes constant would influence the effect of witnessing cheating on Alex's cheating. This therefore contradicts an argument of mediation from the regression data and raises the question whether is a consequence of low power or students' inability to envision these complex relationships. Using G\*Power (Faul, Erdfelder, Lang, & Buchner, 2007), the sensitivity of this test was determined to be acceptable (partial  $\eta^2 = .08$  for a power of 95%), indicating that even a relatively small effect size would have been detectable.

# DISCUSSION

Results indicated that our model of cheating was fairly effective at determining what factors effect a student's decision to cheat. Our model accounted for 75% of the variance in overall cheating. In addition, our hypothesis that these three variables would be significant predictors of cheating behavior was supported.

First, we hypothesized that direct knowledge would be mediated by cheating valence attitudes and neutralizing attitudes, meaning that if, and only if, neutralizing attitudes and positive cheating valence attitudes were present, a student would be affected by direct knowledge and the level of its influence would be determined by the other two variables. Results indicated, however, that direct knowledge was moderated by only cheating valence attitudes, and that although direct knowledge has its own effect on cheating behavior, the strength of that effect is controlled by the person's cheating valence attitude. For example, direct knowledge has little effect on the cheating behavior of someone very morally opposed to cheating. However, direct knowledge of others cheating has a much bigger impact on the behavior of someone with a high cheating valence attitude, indicating that they are less opposed to cheating. This implies that moral considerations outweigh social ones for our participants with strongly held beliefs, but they are more susceptible to social pressure as those beliefs waver.

This moderation effect is the result of the only interaction we found. The lack of an interaction between direct knowledge and neutralizing attitudes is surprising. It could be that these two variables are simply correlated with each other, as one neutralizing attitude is "everyone else is doing it," which would be directly affected by how much direct knowledge of cheating a person has. Another possibility is that neutralizing attitudes are constructed post hoc, to rationalize one's cheating behavior after it has occurred. This is similar to a cognitive dissonance (Aronson, 1969) approach and a relative of Haidt's (2001) notion that cognition about morality occurs after moral

positions have been taken. Both of these viewpoints would predict that neutralizing attitudes would be correlated with cheating behavior and possibly direct knowledge but not act as a moderator of the relationship between the two. Although definitive conclusions cannot be drawn from null results, we found 85% power to detect the interactions assuming a small effect size of 5%. Such a large amount of power makes us fairly confident that if the interaction were present we would have found it in our data.

What we did find, however, was a surprisingly large main effect of direct knowledge on a student's decision to cheat, consistent with the literature (McCabe et al., 2001). It is particularly interesting that this effect remains when statistically controlling for the effects of neutralizing attitudes and cheating valence attitudes. How can this be interpreted? This unexpected finding suggests that seeing others cheat has a larger influence on cheating behavior than even one's moral attitudes or ability to neutralize. Could this be Bandura's social learning theory at work? Bandura's (1986) theory states that people learn behaviors through observing others and then externalizing that behavior. If a student sees a peer engaging in cheating behavior and benefiting from it, he or she may be motivated to model that behavior and cheat, despite moral standards, and he or she may in fact alter moral standards to incorporate this behavior that provides valuable benefits. So, how does direct knowledge have its effect on cheating behavior? We have tentatively ruled out the hypothesis that direct knowledge effects on cheating are mediated by neutralizing attitudes as an important part of the model, although it seems that cheating valence plays a role in the process. This question is left for future research, as we suspect that it may be through social or emotional processes or through attitude alignment with one's peer group.

A related explanation can be found in the cognitive dissonance literature (Aronson, 1969). If students believe cheating to be wrong but then engage in it, they will later (as in this survey) report that they find the behavior less objectionable. We argue that vignette findings support the claim that differences in attitudes lead to differences in cheating behavior, but this does not negate the claim that behaviors can change attitudes after the fact. Carrell et al. (2005) demonstrated that exposure to cheating changes behavior going forward, and future research that uses similar methodology for attitudes would be useful in resolving this question.

Direct knowledge was not the only variable that yielded interesting results. In the multiple regression models previously reported, our new scale measuring cheating valence attitudes demonstrated that a person's cheating valence attitude is a small ( $\beta$  = .22) but statistically significant predictor of cheating behavior. One possible explanation for this low effect of cheating valence attitudes in the survey results can be explained by Haidt's (2001) theory of moral decision making. He claimed that moral decision making is at its core an intuitive process, a kind of gut reaction, meaning that it would not be affected by moral considerations or reasoning. Justifications and explanations are then added after the decision has already been made and are not actually part of the decision-making process. Using Haidt's model to interpret the current study, cognitive conceptions of any of these variables should not have a direct impact on the decision made, and if they did, cheating valence should be the strongest predictor because it seems most related to an emotional gut reaction. The fact that both neutralizing attitudes and direct knowledge were stronger predictors than cheating valence seems to contradict Haidt.

These findings can be explained in one of two ways. The first explanation is methodological: If Haidt (2001) is correct, then automatic emotional responses determine cheating behavior. In that case, if our measures of direct knowledge and neutralizing attitudes questions correlate best with that emotional reaction and the cheating valence scale is better correlated with post hoc rational-

izations, that would explain why the former predicts cheating behavior whereas the latter does not. Second, it is important to consider that the low scores on the cheating valence scale were not reflective of participants' actual moral values and were simply a result of social desirability. The participants wanted to appear strongly morally opposed to cheating, but this did not reflect the actual attitudes used when making the decision. Our results are in line with the notion that moral attitudes add little relative to direct knowledge and neutralizing attitudes.

Another interesting finding was that a discrepancy exists between the vignette results and the survey results with respect to cheating valence attitudes. In the vignette, participants showed the largest differences in rating Alex's behavior in response to changes in the vignette, indicating that they believed cheating valence attitudes would be the strongest predictor of a student's decision to cheat. However, cheating valence attitudes were actually the weakest predictor of the three variables in the survey as found by the regression. Participants' perceptions of what will affect cheating in the vignette (when asked about the hypothetical behavior of others) are not actually what affect their cheating as found in the survey. Implications of this finding suggest that even though people believe that a moral attitude determines a person's decision to cheat, they do not understand that they are more strongly influenced by other things. Perhaps making them aware of this would help them consider their morals more strongly the next time they are faced with the decision to cheat.

An expected finding from the vignette was that participants thought that the protagonist would be much more likely to cheat than they would in the same circumstances, indicating that students perceive others as cheating more than they themselves do. This claim is supported by the fact that Alex-cheating ratings are more closely tied to estimates of others' cheating than are ratings of one's own behavior, and that survey measures of one's own attitudes and behaviors best predict the "I would cheat" vignette responses (Rettinger & Kramer, 2009).

The alternative explanation for this is simply social desirability. Despite the anonymous nature of the questionnaire, perhaps the participants did not want others to think that they would actually cheat equally or even more so than the protagonist in a given situation, or at all. The differences between survey and vignette responses call the usefulness of vignettes into question. Vignette methodology is extremely common in judgment and decision research (see Hastie & Dawes, 2001, for many examples). However, in the cheating domain it is less common. Perhaps this is appropriate, given the discrepancies found here. We interpret vignette responses as indicative of what participants believe about the variables portrayed in the situation, not necessarily as honest assessments of future behavior. For this purpose, the responses seem quite useful (see Rettinger et al., 2004, for more discussion of this method).

It is also important, from a methodological perspective, to acknowledge the possible contribution of survey context effects to the results reported here. Council (1993) noted that when participants are given multiple survey measures within the same session, even when counterbalanced, the context affects responses to those measures. Although these studies attempted to minimize context effects as much as possible, it may be that the high correlations among measures and between self-reported cheating and the predictors are inflated. However, given the substantial magnitude of effects reported here, we feel confident that those effects are real and robust. With regard to the model of direct knowledge, the complex patterns of correlations are not intuitively obvious a priori to researchers, and we expect that they emerged from honest data rather than participant expectations. This is particularly true for the vignette research, which was conducted between subjects. Results from that experiment are thus a comparison of participant expectations, and interpreted as such. What are the practical implications of these findings? Based on the current research, we propose that levels of direct knowledge need to be lowered and more reporting of cheating needs to occur. If Bandura's (1986) social modeling theory is correct, students engage in cheating behavior because they see others get away with it and benefit from it. Making reporting more public as well as implementing and publicizing penalties for being caught should help deter cheaters. Also, instructors need to be more explicit about what is appropriate for each assignment and what would be considered cheating, as well as encourage their students to report cheating.

Furthermore, it is clear that attitudes are not the sole determinant of cheating behavior. An important variable that was not included in these analyses was the fear that students have of being caught. Whitley and Keith-Spiegel (2002) noted that this factor plays a substantial role in determining students' behavior in real class situations. It is possible, and an issue for further study, that observing others cheat without consequence can reduce a student's fear of being caught, thus increasing cheating behavior. Fear of punishment might also interact with neutralizing attitudes such that fear of punishment can be neutralized, just as moral attitudes are. An example of this would be that "the punishment is 'worth it'" in light of the potential benefits of cheating. Further research on fear of punishment resulting from being caught would be a fruitful addition to this line of inquiry. In light of the recent trend toward emotional and intuitive (Haidt, 2001) conceptions of moral reasoning, we also recommend that future research incorporate both emotional decision factors and more realistic stimuli to elicit intuitive responses to cheating situations.

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# REFERENCES

- Aiken, L. S., & West, S. G. (1991). Multiple regression: Testing and interpreting interactions. Newbury Park, CA: Sage.
  Anderman, E. M., Griesinger, T., & Westerfield, G. (1998). Motivation and cheating during early adolescence. Journal of Educational Psychology, 90, 84–93.
- Aronson, E. (1969). The theory of cognitive dissonance: A current perspective. In L. Berkowitz (Ed.), Advances in experimental social psychology (Vol. 4, pp. 1–34). New York: Academic Press.
- Bandura, A. (1986). Social foundations of thought and action: A social cognitive theory. Englewood Cliffs, NJ: Prentice-Hall.
- Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic and statistical considerations. *Journal of Personality and Social Psychology*, 51, 1173–1182.
- Beck, L., & Ajzen, I. (1991). Predicting dishonest actions using the theory of planned behavior. *Journal of Research in Personality*, 25, 285–301.
- Carrell, S. E., West, J. E., & Malmstrom, F. V. (2005, November). Peer effects in academic cheating (Working Paper). Retrieved September 29, 2007, from SSRN Web site: http://ssrn.com/ abstract= 842224
- Council, J. R. (1993). Context effects in personality research. Current Directions in Psychological Science, 2, 31–33.
- Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G\*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods*, 39, 175–191.
- Haidt, J. (2001). The emotional dog and its rational tail: A social intuitionist approach to moral judgment. *Psychological Review*, 108, 814–834.

- Haines, V. J., Diekhoff, G. M., LaBeff, E. E., & Clark, R. E. (1986). College cheating: Immaturity, lack of commitment, and the neutralizing attitude. *Research in Higher Education*, 25, 342–354.
- Harding, T. S., Mayhew, M. J., Finelli, C. J., & Carpenter, D. D. (2007). The theory of planned behavior as a model of academic dishonesty in engineering and humanities undergraduates. *Ethics and Behavior*, 17, 255–279.
- Hastie, R., & Dawes, R. M. (2001). Rational choice in an uncertain world. Thousand Oaks, CA: Sage.
- Jordan, A. E. (2001). College student cheating: The role of motivation, perceived norms, attitudes, and knowledge of institutional policy. *Ethics and Behavior*, 11, 233–247.
- Kohlberg, L. (1969). Stage and sequence: The cognitive-developmental approach to socialization. In D. A. Goslin (Ed.), *Handbook of socialization theory and research* (pp. 347–480). New York: Rand McNally.
- LaBeff, E. E., Clark, R. E., Haines, V. J., & Diekhoff, G. M. (1990). Situational ethics and college student cheating. Sociological Inquiry, 60, 190–198.
- McCabe, D. L., & Treviño, L. K. (1993). Academic dishonesty: Honor codes and other contextual influences. *Journal of Higher Education*, 64, 522–538.
- McCabe, D. L., & Treviño, L. K. (1997). Individual and contextual influences on academic dishonesty: A multicampus investigation. *Research in Higher Education*, 38, 379–396.
- McCabe, D. L., Treviño, L. K., & Butterfield, K. D. (2001). Cheating in academic institutions: A decade of research. *Ethics and Behavior*, 11, 219–232.
- Murdock, T. B., & Stephens, J. B. (2007). Is cheating wrong? Students' reasoning about academic dishonesty. In E. A. Anderman & T. B. Murdock (Eds.), *The psychology of academic cheating*. San Diego, CA: Elsevier.
- Preacher, K. J., & Leonardelli, G. J. (2003). Calculation for the Sobel test: An interactive calculation tool for mediation tests. Retrieved July 13, 2009, from http://www.people.ku.edu/~preacher/sobel/sobel.htm
- Pulvers, K., & Diekhoff, G. M. (1999). The relationship between academic dishonesty and college classroom environment. *Research in Higher Education*, 40, 487–498.
- Rettinger, D. A, & Jordan, A. E. (2005). The relations among religion, motivation, and college cheating: A natural experiment. *Ethics and Behavior*, 15, 873–890.
- Rettinger, D. A., Jordan, A. E., & Peschiera, F. (2004). Evaluating the motivation of other students to cheat: A vignette experiment. *Research in Higher Education*, 45, 873–890.
- Rettinger, D. A., & Kramer, Y. (2009). Situational and personal causes of student cheating. *Research in Higher Education*, 50, 293–313.
- Semerci, Ç. (2006). Social Behavior and Personality, 34, 41-50.
- Sobel, M. E. (1982). Asymptotic intervals for indirect effects in structural equations models. In S. Leinhart (Ed.), Sociological methodology 1982 (pp. 290–312). San Francisco: Jossey-Bass.
- Sykes, G. M., & Matza, D. (1957). Techniques of neutralization: A theory of delinquency. American Sociological Review, 22, 664–670.
- Whitley, B. E., Jr. (1998). Factors associated with cheating among college students. *Research in Higher Education*, 39, 235–274.
- Whitley, B. E., Jr., & Keith-Spiegel, P. (2002). Academic dishonesty: An educator's guide. Mahwah, NJ: Lawrence Erlbaum.

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