Identifying and Profiling Scholastic Cheaters:
Their Personality, Cognitive Ability, and Motivation

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Despite much research, skepticism remains over the possibility of profiling scholastic cheaters. However, several relevant predictor variables and newer diagnostic tools have been overlooked. We remedy this deficit with a series of three studies. Study 1 was a large-scale survey of a broad range of personality predictors of self-reported cheating. Significant predictors included the Dark Triad (Machiavellianism, narcissism, psychopathy) as well as low agreeableness and low conscientiousness. Only psychopathy remained significant in a multiple regression. Study 2 replicated this pattern using a naturalistic, behavioral indicator of cheating, namely, plagiarism as indexed by the Internet service Turn-It-In. Poor verbal ability was also an independent predictor. Study 3 examined possible motivational mediators of the association between psychopathy and cheating. Unrestrained achievement and moral inhibition were successful mediators whereas fear of punishment was not. Practical implications for researchers and educators are discussed.

Keywords: antisocial, psychopathy, plagiarism, scholastic cheating

Student cheating remains a disconcerting problem for educators. In a typical survey, two thirds of college students report having cheated at some point during their schooling (e.g., Stern & Havlicek, 1986; Cizek, 1999). If anything, the problem appears to have worsened in recent years (Josephson Institute of Ethics, 2008) with lifetime cheating rates as high as 80% in some student samples (Robinson, Amburgey, Swank, & Faulker, 2004). One contributor, the escalating access to the Internet has greatly facilitated plagiarism—especially among computer-savvy students (Ma, Wan, & Lu, 2008; Underwood & Szabo, 2003).

Some investigators argue that situational factors are paramount in the explanation of cheating behavior (see Murdock, Miller, & Goetzinger, 2007). Other researchers have sought to profile predispositions, that is, identify the best individual difference predictors of cheating. To date, the predictors garnering the most support are poor scholastic attitudes and poor academic preparation (e.g., Cizek, 1999; Whitley & Keith-Spiegel, 2002). Those same reviews were pessimistic about the value of personality and cognitive ability measures in predicting cheating.

The present report comprises three studies designed to challenge that pessimism. Our challenge is based on two weaknesses in previous research: First is the omission of key personality predictors. Second is the failure to exploit objective measures of cheating in a meaningful setting. Before detailing our research, a brief review of that earlier research is warranted.

Measurement of Scholastic Cheating

In their taxonomy of academic dishonesty, Whitley and Keith-Spiegel (2002) listed copying, plagiarism, facilitation, misrepresentation, and sabotage. For each variety of cheating, specific methods are in common use for measurement and detection. In scholastic settings, there is a clear trend favoring the use of high-tech to replace traditional low-tech methods (Cizek, 1999). In research settings, a third category of cheating assessment may be added to this list—laboratory cheating.[1] Each of these approaches to cheating measurement involves advantages and disadvantages.

In the case of multiple-choice exams, college instructors have traditionally employed low-tech methods such as direct observation of exam copying or passing answer keys. In the case of plagiarism, instructors have often relied on their ability to detect a familiar source or writing quality unlikely to have been generated by the student. Such methods are rarely used in empirical research.

As new technologies such as the Internet, cellular phones, and personal digital assistants (PDAs) became available, so too did new methods for engaging in scholastic cheating. Fortunately, the instructor's arsenal of cheating detection methods has also benefited from technological innovation. Of particular importance is the availability of new computer software.

For example, software for the detection of *multiple-choice answer copying* includes several commercially available programs; others—notably, Signum (Harpp, Hogan, & Jennings, 1996) and S-Check (Wesolowsky, 2000)—are freely available from their authors. These programs conduct a pairwise comparison of students' responses to multiple-choice tests to search for excessive overlap in the answer patterns. For each possible pair of students, an index of similarity is calculated: Those with suspiciously high overlap (i.e., those that are identified as obvious outliers among the distribution of similarity scores) are flagged as potential cheating pairs (Frary & Tideman, 1997; Harpp & Hogan, 1993; Harpp et al., 1996; Wesolowsky, 2000). The validity of these methods is cor-

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[1] Although many such measures are available (Nicol & Paunonen, 2002), they will not be detailed here. This form of cheating is not scholastic in the sense of being motivated by higher grades.

roborated by the fact that flagged pairs of students are almost invariably found to have been seated adjacent to each other (Nathanson, Paulhus, & Williams, 2006).

For the detection of *essay plagiarism*, another category of anticheating software is available. The most widely used program, Turn-It-In, is accessed via a commercial website (iParadigms, LLC, 2004). It is now the standard plagiarism screen for major academic institutions across the globe (Dahl, 2007; Jones, 2008). The program algorithm compares the text of a submitted paper against the continually updated entries in its comprehensive database. Items in this database range from previously submitted student papers to academic and professional articles, as well as current and previous Internet web pages. The program notes strings of (at least) seven consecutive words that match previous papers and calculates an overall percentage score of plagiarized text. The output includes a copy of the essay with a different color code for each source and the exact citation.

The Turn-It-In program operates on the same principle as the more crude method of inserting essay text into an Internet search engine such as Google (McCullough & Holmberg, 2005). In either case, instructors are able to assess plagiarism rates more objectively and efficiently than could be achieved with instructor judgment alone. Drawbacks include the fact that some programs are costly; others are complicated to use. Some, including Turn-It-In, have triggered legal challenges.

Self-reports.   To estimate cheating rates and their correlates in large samples, the most efficient method is to collect self-reports (e.g., Robinson et al., 2004; Underwood & Szabo, 2003). In the same survey, one could inquire about a wide variety of cheating behaviors. Questions could also cover a substantial time period (e.g., how many times did you cheat during high-school?). Because cumulative self-reports are more reliable than single, or even multiple behavioral measures, they have more statistical power for evaluating individual difference correlates. This traditional survey technique is also the least expensive and labor-intensive (Paulhus & Vazire, 2007).

The obvious concern is the credibility of self-reports (Paulhus, 1991). Questions about a specific recent test ("Did you cheat on the psychology midterm exam?") are of dubious value because students may fear repercussions for admitting the offense. Questions about past cheating (e.g., during high-school) may be of more value because of the time interval and the lack of possible repercussions. It is interesting that high values such as the 80% lifetime cheating rate found by Robinson et al. (2004) suggest that impression management is not a serious concern in anonymous surveys of cheating.

Summary.   Low-tech methods for cheating measurement have rarely been used in research. Self-report and behavioral measures are widely used but each has pros and cons. Depending on the purpose of the research, either one may be appropriate. In the research presented below, we exploited both methods.

Research on Demographic Predictors

Research on demographic predictors of cheating has also raised complexities. One consistent finding is that men are more likely than women to report having cheated (e.g., Jensen, Arnett, Feldman, & Cauffman, 2001; Lobel & Levanon, 1988; Newstead, Franklyn-Stokes, & Armstead, 1996; Szabo & Underwood, 2004).

Yet concrete measures do not confirm such a sex difference (Culwin, 2006; McCabe, Trevino, & Butterfield, 2001; Nathanson et al., 2006; Whitley, Nelson, & Jones, 1999). It is unclear whether this difference is the result of men overreporting their actual cheating, women underreporting, or both.

Differences in cheating across college majors have been reported in a handful of studies. Business students report higher rates than nonbusiness students (McCabe, Butterfield, & Trevino, 2006). Students in science and engineering report higher levels of cheating than those with arts majors (Marsden, Carroll, & Neill, 2005; Newstead et al., 1996). Given the higher rate of males in science and engineering, however, it is not clear whether gender or major is the ultimate source. Whitley and colleagues (1999) argue that major is more important: In a meta-analysis, they showed that women in science and engineering cheat virtually as much as their male counterparts.

Even fewer studies have examined cultural differences in scholastic cheating. Hayes and Introna (2005) reported that, compared to students from the United Kingdom, East Asian students held more tolerant attitudes toward scholastic cheating. However, Nathanson and colleagues (2006) found no behavioral differences between East Asian and European students in behavioral indicators of cheating. Altogether, then, the literature gives little indication of demographic differences in actual cheating behavior.

Research on Personality Predictors

Comprehensive reviews of research on cheating predictors have downplayed the value of personality predictors (Cizek, 1999; Whitley & Keith-Spiegel, 2002). However, a number of personality variables have not yet been given sufficient attention. The reason may simply be that standard measures of these variables have only recently become widely used. Among the overlooked variables are several with obvious relevance to cheating: narcissism, psychopathy, and the Big Five personality dimensions of Agreeableness, Conscientiousness, and Openness to Experience. For possible inclusion in our research, we will address each in some detail.

The Dark Triad.   The constructs of narcissism, Machiavellianism, and psychopathy are commonly referred to as the Dark Triad of personality (Paulhus & Williams, 2002). Narcissists are characterized by grandiosity, entitlement, and a sense of superiority over others (Raskin & Terry, 1988). Such individuals are arrogant, self-centered, self-enhancing (Morf & Rhodewalt, 2001) and ultimately, interpersonally aversive (Paulhus, 1998). Most relevant to cheating, we suspect, is the sense of entitlement (Emmons, 1987). Narcissists feel *entitled* to recognition for their intellectual superiority even when their academic accomplishments are mediocre. Therefore, attaining the plaudits they deserve may require cheating.

Individuals high in Machiavellianism are characterized by cynicism, amorality, and a belief in the utility of manipulating others (Christie & Geis, 1970). A wealth of evidence confirms that these individuals exploit a range of duplicitous tactics to achieve their goals (see Jones & Paulhus, 2009; McHoskey, 2001). All these tendencies increase the likelihood of indulging in scholastic cheating. However, the few studies exploring this possibility have revealed only weak links, at best (Cizek, 1999; Flynn, Reichard, & Slane, 1987).

Psychopathy is characterized by the four key features of erratic lifestyle, manipulation, callousness, and antisocial tendencies (Hare, 2003; Williams, Paulhus, & Hare, 2007). All four suggest that psychopaths are more likely to cheat than are nonpsychopaths. Psychopathy is strongly and consistently associated with a wide range of misconduct in nonoffenders (alcohol and drug abuse, bullying, antiauthority abuse, driving offenses, criminal behavior; Williams & Paulhus, 2004). We predict that this link will extend to scholastic cheating. To date, only one study has investigated the relation between psychopathy and a behavioral cheating behavior (Nathanson et al., 2006): Cheating was predictable from two self-report measures—the Self-Report Psychopathy scale (Paulhus, Neumann, & Hare, in press) and the Psychopathic Personality Inventory (Lilienfeld & Andrews, 1996).

Note that our use of the term *psychopathy* does not imply clinical or forensic levels. Accumulating research suggests that the construct tapped by self-report psychopathy questionnaires is conceptually identical to that tapped by interview methods in clinical/forensic samples (Lebreton, Binning, & Adorno, 2005). Of course, the mean scores in college students are substantially lower than those in clinical/forensic samples (Forth, Brown, Hart, & Hare, 1996; Paulhus, Nathanson, & Williams, in press). Nonetheless, roughly 3% still qualified for a clinical diagnosis of psychopathy. Terms such as "nonoffender psychopathy" or "subclinical psychopathy" are avoided in this paper, in order to minimize the assumption that nonoffender/subclinical psychopathy is qualitatively different from clinical/forensic psychopathy.

The Big Five. The Big Five personality traits—Extraversion, Agreeableness, Conscientiousness, Emotional Stability, and Openness to Experience—are now widely viewed as the fundamental dimensions of personality (Goldberg, 1994; Costa & McCrae, 1992). Extraversion is characterized as the tendency to be sociable, talkative, energetic, and sensation-seeking. Agreeableness involves cooperating with others, and maintaining harmony. Conscientiousness entails ambition, responsibility, and orderliness. Emotionally stable individuals are anxiety-free, well-adjusted, and resilient to stress. Finally, openness entails independent thinking, along with esthetic and intellectual interests.

Given the consensus on their importance, it is surprising how few studies of scholastic cheating have included the Big Five traits. Of the five, only extraversion and stability (vs. neuroticism) have received any attention. Those two factors were studied in depth by Eysenck (e.g., Eysenck, 1970) long before the Big Five became prominent as an organizational unit.

It is unfortunate the studies on extraversion and cheating have yielded equivocal results. Cizek (1999) reported that, in three out of four studies, extraversion showed a small significant positive correlation with cheating. However, Jackson and colleagues recently obtained a negative, albeit weak, association between extraversion and cheating (Jackson, Levine, Furnham, & Burr, 2002). Similarly, studies of stability have shown weak (though consistently positive) correlations with cheating (Cizek, 1999; Jackson et al., 2002).

The three other Big Five factors have yet to be studied in the context of cheating. Low agreeableness (i.e., disagreeableness) seems especially relevant to cheating, given that its central features include confrontation and lack of cooperation (Costa & McCrae, 1992). Current understanding of openness to experience suggests no obvious association with cheating.

The Big Five variable with the closest conceptual connection to cheating is (low) conscientiousness. This trait seems particularly relevant given its contribution to academic preparedness, the broader concept noted earlier. The published research is minimal but some argue that dishonesty has clear conceptual links with conscientiousness (e.g., Emler, 1999; Murphy, 2000). In a study conducted before the Big Five labels became popular, Hetherington and Feldman (1964) showed that students low in trait responsibility were found to be more likely to cheat. Prudence, another construct related to conscientiousness, has been linked (negatively) to self-reported cheating (Kisamore, Stone, & Jawahar, 2007). A wealth of research in industrial settings has shown that those scoring low on conscientious-related traits engage in a persistent pattern of dishonest behaviors such as theft, absenteeism, and bogus claims of worker compensation (Hogan & Hogan, 1989). Such behaviors may be seen as the workplace equivalent of academic cheating.

Overview of the Present Research

Three studies were conducted to investigate possible links between scholastic cheating and the overlooked personality variables noted above. Study 1 examined the role of three demographic and eight personality predictors—including the Dark Triad and the Big Five—in a large-scale survey of self-reported cheating behavior. Study 2 sought to replicate these findings using a behavioral indicator of plagiarism, namely, scores recorded by the Turn-It-In program. Also included was a measure of verbal ability to control for potential overlap between psychopathy and cognitive abilities. In Study 3, motivational mechanisms underlying the personality-misconduct link were evaluated via mediation analysis.

Study 1: Predictors of Scholastic Cheating

The primary goal of Study 1 was to fill in the above-mentioned gaps in the research on personality correlates of scholastic cheating. Based on the literature reviewed above, scholastic cheating should be associated with all of the Dark Triad variables (Hypothesis 1.1) with psychopathy as the strongest predictor (Hypothesis 1.2). Of the Big Five, low scores on agreeableness and conscientiousness should predict cheating (Hypothesis 1.3). Based on the above research, the self-reported cheating rates should be higher in male than in female students (Hypothesis 1.4) but no ethnic differences are expected (Hypothesis 1.5).

Method

Participants. Two-hundred and 49 students in second-year undergraduate psychology classes at the University of British Columbia participated in the study for course credit. 70% were female; the majority of students were of either European (41.4%) or East Asian (32.5%) ethnicity.

Measures and procedure. Participants enrolled by responding to an advertisement to participate in a study examining "Personality and Background Factors." They picked up a take-home questionnaire package that included several personality scales, as well as a variety of misconduct scales embedded in a large-scale survey. Instructions on the cover page cautioned against including any personally identifying information (e.g., name, student num-

ber). Given the sensitive nature of some of the questionnaire items, this procedure was necessary to encourage honest and accurate responses. Students returned their unmarked and sealed questionnaire package in a bin outside the lab; inside, they signed in to receive their credit.

Personality questionnaires. Questionnaires were selected for conceptual relevance and reputable psychometric properties, as detailed below. Unless otherwise specified below, all items were presented in Likert format: 1 = "Strongly disagree" to 5 = "Strongly agree."

Narcissism was assessed with the Narcissistic Personality Inventory (NPI; Raskin & Terry, 1988). The NPI contains 40 forced-choice items such as "I like to be the center of attention." versus "I like to blend in with the crowd." Currently considered the standard measure of subclinical narcissism, the NPI has well-established psychometric properties (Morf & Rhodewalt, 2001). One point was assigned for each narcissistic response.

Machiavellianism was assessed with the 20-item Mach-IV (Christie & Geis, 1970). Items include "Most people are basically good and kind" and "It is hard to get ahead without cutting corners here and there." The Mach-IV is the most widely used measure of Machiavellianism, and is psychometrically robust (for the latest review, see Jones & Paulhus, 2009). In this dataset, items were scored on a 6-point Likert scale ranging from −3 (disagree strongly) to +3 (agree strongly).

Psychopathy was measured using the 64-item Self-Report Psychopathy scale (SRP-III; Paulhus et al., in press). The SRP is patterned after the Psychopathy Checklist-Revised (PCL-R; Hare, 2003), the current gold standard for assessing psychopathy in forensic and clinical settings. The SRP has generated coherent results in psychometric studies covering areas such as concurrent and convergent/discriminant validity (Hicklin & Widiger, 2005), including correlations with measures of general misconduct (Camilleri, Quinsey, & Tapscott, 2009; Williams et al., 2007). Example items include "I have attacked someone with the goal of hurting them" and "I like to have sex with people I hardly know." Total scores on this measure tend to behave similarly to Lilienfeld and Andrew's (1996) Psychopathic Personality Inventory (e.g., Nathanson et al., 2006).

The 44-item Big Five Inventory (BFI; John & Srivastava, 1999) was used to assess the Big Five factors of personality. Example

items (and the Big Five trait they assess) include "is talkative" (extraversion), "is considerate and kind to almost everyone" (agreeableness), "is a reliable worker" (conscientiousness), "remains calm in tense situations" (stability), and "has an active imagination" (openness). Substantial evidence has accumulated for the validity of all five factors (John & Srivastava, 1999).

Scholastic cheating. The two items used to assess cheating were: "I have cheated on school tests" and "I have handed in a school essay that I copied from someone else." Both specifically referred to high-school to preclude concerns about admitting to cheating at our university. A cheating index was calculated as the mean of these two items. To preclude item overlap, the item with similar content ("Only losers don't cheat on tests") was removed from the psychopathy scale.

Results and Discussion

High-school cheating rates were estimated by coding any student with a nonzero score on the two-item index as a cheater. A substantial 73% of students admitted to cheating at least once in high school. That value approximated the median of those values cited in the literature (64%; Cizek, 1999). The reported rate for plagiarism was 38.8%. Apparently, cheating tendencies among college students continue at disturbingly high levels.

Demographics. Hypotheses regarding demographics were supported. Consistent with Hypothesis 1.4, males reported higher cheating rates than females: $t(243) = 3.37$, $p < .01$; $d = .35$. This difference has been remarkably consistent across a spate of studies (Cizek, 1999). Given that the pattern of personality analyses was similar across gender, however, we only report results for the pooled sample. Consistent with Hypothesis 1.5, no ethnic differences were found.

Personality predictors. For purposes other than estimating high-school rates, self-reported cheating was indexed with a continuous measure—the mean of the two self-report items. The item mean was 2.12 ($SD = .99$) on a 5-point scale. Reliability of the composite was .73. Analyses with the individual cheating items showed similar though weaker patterns.

Note from Table 1 that the alpha reliability estimates for the personality scales were sound, ranging from .78 to .89. Also displayed in Table 1 are the correlations among the Big Five and

Table 1

Study 1: Intercorrelations and Descriptive Statistics for Personality Measures and Self-Reported Cheating

	1	2	3	4	5	6	7	8	9
Dark Triad									
1. Psychopathy	(.89)	.53*	.44*	.18*	−.48*	−.33*	.19*	.08	.58* [.66]
2. Machiavellianism		(.78)	.26*	−.09	−.50*	−.36*	−.09	−.01	.39* [.46]
3. Narcissism			(.87)	.48*	−.29*	.12	.24*	.23*	.20* [.24]
Big Five									
4. Extraversion				(.86)	.05	.21*	.35*	.24*	.09 [.11]
5. Agreeableness					(.81)	.31*	.16	.02	−.23* [−.27]
6. Conscientiousness						(.82)	.25*	.12	−.28* [−.33]
7. Stability							(.83)	−.02	.08 [.10]
8. Openness								(.78)	.07 [.08]
Cheating criterion									
9. Self-reported cheating									(.73)

Note. $N = 228$. Values in parentheses are alpha reliabilities. Values in square brackets are disattenuated for unreliability in the criterion.
* Indicates significance at $p < .05$, two-tailed.

Dark Traid personality variables: The pattern is similar to that found in previous studies (e.g., Hicklin & Widiger, 2005; Paulhus & Williams, 2002; Williams & Paulhus, 2004).

Of special interest are the correlations of the personality variables with scholastic cheating. Consistent with Hypothesis 1.1, each of the Dark Triad variables exhibited significant positive associations with scholastic cheating. Consistent with Hypothesis 1.2, psychopathy showed the strongest correlation (.58) followed by Machiavellianism (.39) and narcissism (.20; all $p < .01$). There are plausible mechanisms for each of these personality influences.

Narcissists are known for their arrogance and sense of entitlement (Emmons, 1987). Expecting to achieve more than others, they often underperform (Wallace & Baumeister, 2002). Such ego-threat can lead narcissists to behave in an antisocial fashion (Twenge & Campbell, 2003). Cheating may be necessary to reaffirm their self-perceived superiority. As far as we know, there is no previous evidence confirming this association empirically.

Given their manipulative tendencies, it is not surprising to find that Machiavellian individuals have cheated in academic settings. More surprising, however, is that this association has seen little to no empirical support in previous research (Cizek, 1999; Flynn et al., 1987). Those failures may be attributed in part to weakness in methodology. For example, the Flynn et al. (1987) study used an inferior measure of Machiavellianism, artificially dichotomized students into high- and low-Machiavellian groups, and used a contrived cheating measure. Our improved methodology may have provided a more powerful test of the expected duplicity of Machiavellians.

Regressions. Given the statistical overlap among the personality constructs, multiple regression analysis was conducted to determine the unique contribution of the relevant predictors. Results indicated that, after controlling for the other predictors, only psychopathy, $\beta = .50$, $t(220) = 6.71$; $p < .01$, remained a significant predictor of scholastic cheating.

The Big Five. Consistent with Hypothesis 1.3 were the significant negative correlations with conscientiousness ($-.28$) and agreeableness ($-.23$; all $p < .01$). Aspects of low conscientiousness such as irresponsibility, disorganization, and impulsivity likely contribute to cheating behavior (Hogan & Hogan, 1989). Because they end up less prepared and have poorer study skills, they find themselves in desperate straits (Hogan & Hogan, 1989).

The uncooperativeness inherent in disagreeableness presents a plausible explanation for its association with cheating. Along with conscientiousness, however, agreeableness lost significance in a regression with the Dark Triad members. Presumably, the direct relevance of the Dark Triad to antisocial behavior confers the advantage to those three variables in predicting this narrow criterion.

Unsuccessful cheating predictors. The remaining Big Five predictors—emotional stability, extraversion, and openness—failed to predict self-reported cheating. The results with extraversion and emotional stability are consistent with the previous reviews (Cizek, 1999; Jackson et al., 2002; Whitley & Keith-Spiegel, 2002). The only previous study of openness to experience also failed to produce significant results (Nathanson et al., 2006).

Study 2: Objective Measurement of Scholastic Cheating

Our use of self-report measures in Study 1 was appropriate for exploring new predictors in a large sample survey. However, the limitations of self-report are well-known (e.g., Paulhus, 1991). Although the maximization of anonymity helps minimize impression management, other response biases such as self-deception may magnify associations via common method variance. Along with sexual behavior, scholastic cheating constitutes a sensitive self-disclosure that is vulnerable to underreporting or flat denial among college students. Alternatives such as peer-evaluations have considerable value in some measurement contexts (Paulhus & Vazire, 2007), but are difficult to apply to scholastic cheating.

To provide a behavioral measure of essay plagiarism, the Internet-based computer program Turn-It-In (iParadigms, LLC, 2004) was used in Study 2. As reviewed above, this program compares a submitted paper against the constantly updated entries in its extensive database. Items in the database range from previously submitted student papers to academic and professional articles, as well as current and previous Internet web pages. By examining strings of consecutive words, each paper receives a percentage score that indicates how much of the paper directly matches sources in the databank.

One previous behavioral study reported a link between personality and multiple-choice answer copying (Nathanson et al., 2006), but personality predictors of plagiarism have yet to be studied. Although both are forms of scholastic cheating, multiple-choice answer copying and plagiarism may not have the same personality correlates (Marsden et al., 2005). Consider, for example, that multiple-choice answer copying is typically spontaneous and unplanned whereas plagiarism is more deliberate and effortful. Accordingly, personality traits such as psychopathy and low conscientiousness (given their connection with poor impulse-control) would be more relevant to answer-copying than to plagiarism. Nonetheless, we hypothesize that psychopathy will again be the principal predictor of plagiarism.

The role of cognitive ability. The association between (poor) cognitive ability and cheating has been studied extensively. It appears that students with poorer academic skills tend to cheat more—perhaps to compensate for their shortcomings. It is worth examining the evidence for this argument, which has recently been summarized by three major reviews.

Whitley and Keith-Spiegel (2002) were pessimistic about any link between cognitive ability and cheating but Cizek (1999) concluded that there is a negative association. The most comprehensive review was recently conducted by Paulhus, Nathanson, and Williams (in press). Only behavioral indicators of cheating were considered but measures of ability included various IQ tests, SAT scores, and other aptitude tests. The results were quite consistent across 13 studies: in every case, cheating rates were higher in students with lower cognitive ability. The mean effect size was $-.26$.

The possibility that psychopathic individuals have poorer cognitive ability suggests an alternative explanation for their higher cheating rates. Psychopaths may just be compensating for their low ability. The empirical literature, however, does not support the premise. In several studies, self-report psychopathy scores have been found to be uncorrelated with measures of general intelligence and knowledge in students (Nathanson et al., 2006; Paulhus

& Williams, 2002), community members (Ishikawa, Raine, Lencz, Bihrle, & Lacasse, 2001), and patient/offender samples (Crocker et al., 2005).

On occasion, psychopathy is occasionally found to be negatively correlated with verbal intelligence (e.g., Nathanson et al., 2006). Given the potential for overlap, it behooves us to disentangle their roles with respect to scholastic cheating. Accordingly, we included a measure of verbal intelligence in Study 2. Our decision to measure verbal (as opposed to some other component of) intelligence was its relevance to plagiarism.

Summary. Study 2 would extend Study 1 by turning to a behavioral measure of scholastic cheating, namely, plagiarism scores from Turn-It-In. Using the same set of personality predictors as in Study 1, Study 2 also evaluated the contribution of cognitive ability.

We expect the Turn-It-In plagiarism rate to be lower than that of self-reported cheating (Hypothesis 2.1). Based on previous behavioral research, there should be no sex differences (Hypothesis 2.2) or ethnic differences in behavioral cheating rates (Hypothesis 2.3).

Among the personality variables, we predict that the Dark Triad will be significant predictors of behavioral cheating (Hypothesis 2.4), with psychopathy as the strongest personality predictor (Hypothesis 2.5). Based on Study 1, low agreeableness and low conscientiousness should also predict plagiarism (Hypothesis 2.6). Poor verbal ability will also be related to plagiarism independently of psychopathy (Hypothesis 2.7).

Method

Participants. We solicited participants from two sections of introductory psychology that had an essay requirement. Of the 114 students enrolled in these sections, 107 agreed to participate in a personality survey.[2] Seventy-two (67.3%) of them were female, and the majority of students were of either East Asian (41.0%) or European (43.0%) ethnicity.

Measures and procedure. Participants completed a battery of personality scales through an Internet webpage: It prevented students from reporting any personally identifying information (e.g., name, student number). Instead, students created a random 8-digit student ID, which was used to obtain their credit at a predetermined location upon completing the survey.

Personality and verbal ability scales. The personality questionnaires included on the webpage were identical to those used in Study 1: the Self-Report Psychopathy Scale (SRP-III), Narcissistic Personality Inventory (NPI), Mach-IV, and Big Five Inventory (BFI). One minor difference is that, in contrast to Study 1, the Mach IV scale responses were collected on 5-point (Disagree to Agree) items.

The verbal ability test was based on the Quick Word Test (QWT; Borgatta & Corsini, 1964), a 100-item power vocabulary test. In the past, the QWT has shown strong convergent validity with other standard intelligence tests such as the Wechsler Adult Intelligence Scales (see Bass, 1974). Internal consistency estimates on the full test average .91. The QWT items were updated and the revision, renamed the UBC Word test, has been normed and validated (Nathanson & Paulhus, 2007). Each item is five letters in length and respondents must select the best synonym from four choices. Administration time was set to a maximum of eight minutes. To control for variation in the number attempted, scores

were calculated as the ratio of correct answers to questions answered.

Behavioral cheating measure. Plagiarism scores were based on two essays assigned to the students by their course instructor. The first paper required students to summarize a research project whereas the second paper addressed a personal life experience. Shortly before the essays were assigned, students were given an essay outline that informed students that their papers would be scrutinized by Turn-It-In. The outline also pointed students to various university websites describing Turn-It-In, proper APA format guidelines, and the definition of plagiarism.

As detailed earlier, Turn-It-In examines student essays for plagiarism by comparing each one to an extensive database of written works. This process results in each paper receiving a percentage score that indicates how much of the paper directly matches sources in the databank. The output displays the percentage of overlapping text, which is then categorized and color-coded based on the original text source.

Because Turn-It-In also flagged legitimate overlapping text such as quotes and citations, it was necessary to have research assistants further scrutinize the results (this drawback has been rectified in more recent versions of the program). Discounting instances of legitimate overlap yielded a genuine proportion plagiarized (*the plagiarism index*). Two research assistants showed 100% agreement on the plagiarism index. Note that the Turn-It-In algorithm has since been improved to discount legitimate text citations.

Results and Discussion

Reliability. Note from Table 2 that reliability estimates for the personality scales ranged from .71 to .88. The reliability for UBC-Word test was calculated with an odd-even estimate (.90): This method is considered appropriate for a speeded test (Crocker & Algina, 1986). A reliability estimate for the Turn-It-In index was derived from the correlation of plagiarism scores from the two essays ($r = .41$). The reliability estimate for the composite was .57.

Operationalizing cheating. Plagiarism was defined as any nonzero percentage detected by Turn-It-In (after screening). The mean plagiarism rate was 23% ($SD = 22.5$). A total of 16 students (15.0%) plagiarized on at least one of their essays. To reduce skewness, plagiarism scores were transformed into a dichotomous variable. Students who plagiarized on at least one essay were assigned a score of 1; all others were assigned a zero. Agreement between our two raters was 100%. Similar procedures have been used previously to deal with the highly skewed distributions common in cheating studies (e.g., Daly & Horgan, 2007).

The resulting proportion of cheaters was 15% ($SD = 38$). Consistent with Hypothesis 2.1, rates of Turn-It-In plagiarism were much lower than the self-report cheating rates from Study 1. Consistent with Hypotheses 2.2 and 2.3, plagiarism rates did not differ according to ethnic background [European vs. East Asian;

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[2] However, students were not specifically advised that Turn-It-In results would be used in our research. This procedure was critical to the study, and was approved by the course instructor as well as the ethical review boards at both the departmental and university level. The instructor was free to use the Turn-It-In results to penalize students at her discretion, but did not. Similar procedures have been used by other researchers of behavioral plagiarism (Daly & Horgan, 2007).

Table 2
Study 2: Intercorrelations and Descriptive Statistics for Personality Measures and Plagiarism

	1	2	3	4	5	6	7	8	9	10
Dark Triad										
1. Psychopathy	(.88)	.49**	.33**	.03	−.58**	−.39**	.03	−.04	−.14	.22* [.30]
2. Machiavellianism		(.77)	.23**	−.10	−.45**	−.30**	−.08	−.13	.01	.14* [.19]
3. Narcissism			(.81)	.36**	−.21**	−.06	.19	.17	−.10	.12* [.16]
Big Five										
4. Extraversion				(.88)	.11	.13	.24**	.19	−.04	.08 [.11]
5. Agreeableness					(.77)	.22**	.32**	.22**	−.02	−.20* [−.26]
6. Conscientiousness						(.78)	.22**	.14	.05	−.06 [−.08]
7. Stability							(.80)	.14	.21**	.03 [−.04]
8. Openness								(.71)	.38**	−.07 [−.09]
9. Verbal ability									(.90)	−.14* [−.19]
Cheating criterion										
10. Turn-It-In plagiarism										(.57)

Note. $N = 107$. Values in parentheses are alpha reliabilities. Values in square brackets are disattenuated for unreliability in the criterion.
* $p < .05$, one-tailed.   ** $p < .05$, two-tailed.

$t(72) = −.44, p > .05; d = −.06$] or gender: [$t(105) = −.24, p > .05; d = −.03$].

Predictors of cheating. Having established personality associations in Study 1, we used one-tailed tests of significance for the parallel Study 2 tests. Note from Table 2 that Dark Triad correlates of Turn-It-In plagiarism were all significant, supporting Hypothesis 2.4. The pattern of correlates was comparable to that with self-reported scholastic cheating in Study 1. Supporting Hypothesis 2.5, psychopathy was the strongest predictor. Hypothesis 2.6 was partially supported in that agreeableness but not conscientiousness was a significant predictor.[3]

Consistent with Hypothesis 2.7, low verbal ability was also a significant predictor. To examine the possibility of poor verbal ability as an alternative explanation for the psychopathy-plagiarism link, partial correlations were conducted. Specifically, the correlation between psychopathy and plagiarism was recalculated, controlling for verbal ability. This partial correlation (.21, $p < .01$) was virtually identical to the original correlation (.22, $p < .01$). The lack of a significant change may be traced to the fact that psychopathy and verbal ability were almost completely orthogonal ($r = −.04, p > .05$). This orthogonality of psychopathy and cognitive ability is a consistent finding in both clinical samples (e.g., Hare, 2003) and nonclinical samples (Paulhus & Williams, 2002).

Behavioral indicators. One major advance of Study 2 was the use of a behavioral indicator of cheating. Nonetheless, personality correlates of cheating were similar in Studies 1 and 2. This consistency suggests that both methods detect cheating in meaningful ways. The pattern of correlates echoed a previous study using a behavioral indicator of multiple-choice answer copying (Nathanson et al., 2006).

Together, Studies 1 and 2 have established a robust personality predictor of scholastic cheating, thereby addressing the skepticism of some commentators (e.g., Whitley & Keith-Spiegel, 2002). The impact of psychopathy was strong and consistent across self-report and behavioral assessments of scholastic cheating. An obvious next step is to explore the psychological mechanisms by which the psychopathy-scholastic cheating link operates. In Study 3, the motivational mediators of this link are explored, in an attempt to understand why psychopathic individuals engage in scholastic cheating.

Study 3: Psychological Mediators of Scholastic Cheating

To identify possible mediators, we searched the literature for motivations students have offered for engaging in or avoiding scholastic cheating (e.g., Anderman, Griesenger, & Westerfield, 1998; Cizek, 1999; Rettinger, Jordan, & Peschiera, 2004). Three categories appear repeatedly in the literature. One is a motivation *for* cheating, namely, *unrestrained achievement motivation*: That is, some students strive to attain academic success without regard to fairness. A common motivation reported for *not* cheating is *fear of punishment*: Most students are concerned with repercussions such as suspension or expulsion from school. Another deterrent to cheating may be labeled *moral inhibition*: That is, students who consider themselves honest and principled are less likely to cheat. The first of these three may be considered an approach or incentive motivation, whereas the final two are avoidance or deterrence motivations (i.e., avoiding punishment and guilt, respectively).

There is reason to believe that all three of these motivations are linked to psychopathy. First, unrestrained achievement maps onto the unmitigated agency quadrant of the interpersonal circumplex (i.e., high dominance and low nurturance)—the same quadrant that houses psychopathy (Jones & Paulhus, 2010; Salekin, Trobst, & Krioukova, 2001). Second, insensitivity to punishment was associated with psychopathy as far back as the earliest laboratory research (Hare, 1966). Finally, the impoverished moral identity in psychopaths is also evident from the scientific literature (O'Kane, Fawcett, & Blackburn, 1996; Trevethan & Walker, 1989). In short, their links to both psychopathy and cheating suggest that all three motivations (unrestrained achievement, fear of punishment, moral

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[3] Because the plagiarism scores were non-normal, we repeated the analyses involving demographic variables and psychopathy with chi-square tests of independence and Mann–Whitney tests, respectively. The same results were obtained.

inhibition) are viable candidates to be mediators of psychopathic cheating. Their role will be evaluated statistically via mediation analysis.

The present study. The primary goal of Study 3 was to determine which of the three motivational factors (unrestrained achievement, fear of punishment, moral inhibition) could explain the psychopathy-cheating link. As a first step, a principal components analysis was conducted to organize and simplify a wide range of motivations for academic cheating.

Each of these motivational factors was then evaluated as a psychological mediator using the most recent analytic methods (see Chaplin, 2007). Mediation was determined to occur if the link between psychopathy scores and cheating outcomes could be explained by an indirect path via one of the motivations. Essentially, the impact of the mediator corresponds to the product of (a) the path between the predictor and the mediator and (b) the path between the mediator and the outcome. Significance tests for mediation were conducted using the bootstrap procedures developed by Shrout and Bolger (2002) and programmed by Preacher and Hayes (2004).

In sum, we hypothesize that psychopathy will correlate significantly with each of the motivations for cheating (Hypothesis 3.1). Each of the motivations for cheating will correlate significantly with cheating (Hypothesis 3.2). Each motivation will provide partial mediation of the link between psychopathy and cheating (Hypothesis 3.3).

Method

Participants. Two-hundred and 23 students enrolled in undergraduate psychology classes participated for course credit. One-hundred and 41 (63.2%) were female, and the majority were of either East Asian (44.4%) or European (28.3%) ethnicity. Because gender and ethnic differences were minimal, the analyses were based on the pooled sample.

Measures and procedure. The data collection procedure was similar to Study 2. Students participated by responding to an advertisement listed on the department's Internet-based research participation system. They completed a battery of personality scales on a lab webpage. The procedures were designed to maximize anonymity by advising participants not to report any personally identifying information (e.g., name, student number). Instead, they selected a random 8-digit student ID, which was later used to obtain a course credit of one percent.

Personality and cheating questionnaires. Unless otherwise specified, all items are scored with a five-point Likert scale (1 = "Strongly disagree" to 5 = "Strongly agree"). Again, the Self-Report Psychopathy Scale (SRP-III; Paulhus et al., in press) was used to assess psychopathy (alpha reliability = .89).

Cheating behavior was measured with admission items from the Self-Report Cheating Scale (Paulhus, Williams, & Nathanson, 2004). Twenty-six items assess misconduct behaviors such as "Brought hidden notes to a school test" and "Copied someone else's answers on a school test without them knowing." Eighteen of the items specifically assess cheating behaviors, whereas the remaining eight were fillers measuring general misconduct. When combined to generate an overall self-report cheating score, the alpha reliability of these 18 items was .85.

Potential mediators of cheating were measured using the motivation items of the Self-Report Cheating Scale (Paulhus et al., 2004). Based on results from previous studies and reviews (e.g., Cizek, 1999), 20 items were generated. Respondents were asked to rate various factors that have influenced their decision to cheat (or refuse to cheat) on previous academic tasks, or might influence their decision to cheat (or refuse to cheat) in the future. Example items include "I needed to do it to get (or keep) a scholarship," "I'm not concerned about the punishments involved if I am caught," and "I pride myself in being a good and trustworthy person."

Results

Factoring the motivations for cheating. To structure a manageable number of distinct motivations for cheating, a principal components analysis was conducted on the 20 common motivations for cheating. Maximum Likelihood extraction generated similar results, but Principal Axis Factoring results were not as clear. Given the exploratory nature of this analysis, an oblique rotation (direct oblimin) was used. The first four eigenvalues were 5.32, 1.91, 1.44, and 1.15. Parallel analysis indicated that a three-factor solution was appropriate. We used the interpolation tables provided by Cota, Longman, Holden, Fekken, and Xinaris (1993): The minimal value for a third eigenvalue was 1.41.

Fortunately, three factors were interpretable: They corresponded substantially with the three common motivations for cheating found in the literature. Following common PCA practice, items with pattern matrix coefficients above .30 were retained. The pattern matrix is displayed in Table 3. Seven items loaded above .30 on the first factor: They were combined to form a subscale with an alpha reliability of .71. These items concern the acceptability of cheating to gain some academic goal, for example, high grades, winning a scholarship, or receiving praise. Although most students seek these goals, only a subset feel that cheating is an appropriate strategy for obtaining these and other goals. It is this subset of individuals who are of particular relevance in this context. Accordingly, the first factor was named "Unrestrained Achievement."

Four items loaded at least .30 on the second factor and were combined to form a composite score. The reliability of this subscale was .51. High loading items dealt with concerns about detection by professors and teaching assistants, and punishment such as suspension or expulsion from the academic institute. Accordingly, the second factor was labeled "Fear of Punishment."

Nine items loaded at least .30 on the third factor and were combined to form a composite score with an alpha reliability of .54. This factor involves personal beliefs about one's own character and morals. Some students view themselves as honest individuals who stick to their principles. Presumably, such individuals would be less likely to engage in scholastic cheating. Conversely, individuals who neither value these attributes nor feel they possess them would be more likely to cheat. Other items referred to excuses about their cheating behavior (e.g., test taking surroundings make it too easy to cheat). Example items include "I pride myself in being a good and trustworthy person," and "Being honest and moral is not a high priority for me" (reverse-scored). Accordingly, the third factor was named "Moral Inhibition."

Table 3
Study 3: Pattern Matrix Loadings From Principal Components Analysis of Motivations for Cheating

	Unrestrained achievement	Fear of punishment	Moral inhibition
Unrestrained achievement			
Cheat to get a scholarship	**.73**	.03	.26
Cheat to pass a course	**.71**	−.12	.09
Cheat because exam difficult	**.66**	.08	−.09
Cheat because of social pressure	**.65**	.02	−.05
Cheat to compete	**.64**	−.01	−.18
Cheat to get a high grade	**.62**	.07	−.26
Fear of punishment			
Punishment is severe	.03	**.72**	−.05
Too many TAs	.19	**.63**	−.16
Punishments are empty threats	.38	**−.39**	−.23
Not concerned about punishment	.29	**−.38**	−.18
Moral inhibition			
Cheat because I can	−.04	−.09	**−.68**
Cheat because no one will know	.18	−.17	**−.64**
Don't cheat cause I'm a good person	.21	−.06	**.58**
Cheat because I'm not honest/moral	−.02	−.37	**−.57**
Cheat without thinking	.15	.15	**−.53**
Cheat because everyone does it	.27	.12	**−.51**

Note. N = 223. Factor extraction was followed by a direct oblimin rotation. Bold entries are the highest loading for each item.

Associations among the three motivations were generally small. The exception was a moderate negative correlation between Unrestrained Achievement and Moral Inhibition ($r = −.40$, $p < .01$).

Intercorrelations. Table 4 presents the intercorrelations among psychopathy, self-reported cheating and the potential mediators. Psychopathy correlated significantly with cheating ($r = .55$; $p < .01$), after removing overlapping items. The significant correlations of psychopathy with all three motivations supports Hypothesis 3.1. Hypothesis 3.2 was partially supported in that cheating correlated significantly with Moral Inhibition and Unrestrained Achievement but not with Fear of Punishment.

Mediation analyses. Each of the cheating motivations was evaluated as a potential mediator of the psychopathy-cheating link.

Table 4
Study 3: Intercorrelations and Descriptive Statistics for Psychopathy, Self-Reported Cheating and the Potential Mediators

	1	2	3	4	5
1. Psychopathy	(.89)	.23*	−.20*	−.49*	.55*
Motivation for cheating					
2. Unrestrained achievement		(.71)	−.02	−.40*	.39*
3. Fear of Punishment			(.51)	.01	−.10
4. Moral Inhibition				(.54)	−.61*
Cheating criterion					
5. Self-reported cheating					(.85)
Item mean	2.11	2.42	2.30	3.31	1.95
Standard deviation	.42	.85	.62	.73	.54

Note. N = 223. In the text, hypothesized correlations are couched as one-tailed tests. All items were measured on 5-point scales.
* Indicates significance at $p < .01$ (two-tailed).

Using the bootstrap approach (Preacher & Hayes, 2004; Shrout & Bolger, 2002), 5,000 samples were drawn. This method is considered more powerful than the traditional Sobel (1982) method, given that the sampling distribution of the indirect effect is typically non-normal (Shrout & Bolger, 2002). It also allows for the simultaneous evaluation of multiple mediators. The latter is important for our data because the mediators are intercorrelated.

Figure 1 displays the overall mediation model: The impact of psychopathy on cheating can be seen to drop from .55 to .32 after
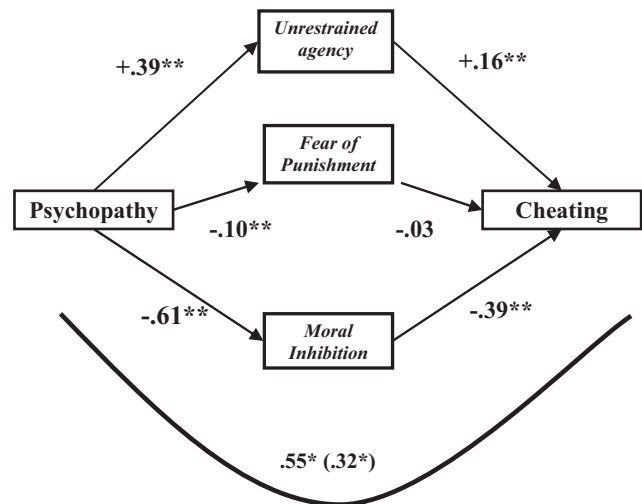

Figure 1. Analysis of three mediatiors of the relation between psychopathy and cheating. All values represent standardized regression coefficients (betas). The lower path indicates the total effect of psychopathy on cheating with the indirect effect in parentheses. ** denotes statistical significance at $p < .01$, two-tailed.

the introduction of the three mediators. Analysis revealed with 95% confidence that the total indirect effect (i.e., the difference between the total and direct effects) of psychopathy on cheating was significant with a point estimate of .23 and a 95% confidence interval of .11 to .35. Hence, the overall mediation was significant. Nonetheless, the direct impact (.32) remained significant ($p < .05$) indicating that the three motivations provided only partial mediation of the association of psychopathy with cheating.

In support of Hypothesis 3.3, two of the motivations appeared to be successful and unique mediators: (1) for unrestricted achievement, the 95% CI of .03 to .09 around the point estimate of .06 did not include zero and (2) for moral inhibition, the 95% CI (.13; .33) around the point estimate of .24 did not include zero. By contrast, the 95% CI (-.22; .28) for the point estimate of fear of punishment (.003) did include zero.

General Discussion

The impetus for the three studies reported here was the widespread skepticism about the value of individual differences in predicting scholastic cheating (Cizek, 1999; Whitley & Keith-Spiegel, 2002). Those two reviews—fully comprehensive at the time—were published before the advent of several highly relevant personality measures.

Study 1 addressed this limitation by measuring the Big Five and Dark Triad traits in a large-scale study of self-reported scholastic cheating. Study 2 revealed a similar pattern using a behavioral criterion and a control for intellectual ability. Although traits such as Machiavellianism, narcissism, disagreeableness, and (low) conscientiousness showed some degree of association, psychopathy was the strongest and most consistent predictor. Indeed, psychopathy stood out as a significant predictor in all three studies reported here. Poor verbal ability also predicted cheating but did not account for the impact of psychopathy.

This robust link between psychopathy and scholastic cheating is consistent with a body of research linking psychopathy to a broad range of misconduct in both offenders and nonoffenders. In offender samples, psychopathy is a notoriously strong correlate of criminal behavior and recidivism (see Hare, 2003). In nonoffender samples (e.g., students), psychopathy is typically measured via self-report, but exhibits a similar pattern of results. For example, Williams, Paulhus, Nathanson, and colleagues (Nathanson et al., 2006; Williams & Paulhus, 2004; Williams et al., 2007) have repeatedly demonstrated associations between psychopathy and a wide range of misconduct indicators, including concrete behaviors. This malevolent personality can be traced to an especially volatile combination of manipulativeness, callous affect, erratic impulsiveness, and antisocial tendencies. Only subsets of this synergistic combination are found in related constructs such as disagreeableness.

These broader implications of the psychopathy-cheating link parallel Blankenship and Whitley's (2000) supposition about an underlying cheating personality: This notion arose from their demonstration that scholastic cheaters were also likely to engage in a wide variety of antisocial behavior including drug use and violence. The present findings complement that research and further promote the view of psychopathy as perhaps the single most destructive personality syndrome. Furthermore, these results provide further evidence for the viability of psychopathy as a construct with conceptual similarity (if not equivalence) in offender and nonoffender samples (Lebreton et al., 2005).

Other Individual Difference Predictors of Cheating

Whereas psychopathy demonstrated strong and replicable associations with cheating, other personality predictors were less effective. The identification of weak or null predictors also contributes to our understanding of cheating behavior. Weak or moderated predictors require further study whereas consistently null predictors can safely be excluded from further research.

Narcissism and Machiavellianism. Of the two remaining Dark Triad constructs, Machiavellianism did show some associations with cheating—although they were fewer and weaker than those with psychopathy. Although often predicted, the empirical association of Machiavellianism with actual cheating behavior has proved to be surprisingly weak (Christie & Geis, 1970; Cizek, 1999; Flynn et al., 1987). We found interesting that association remained even after controlling for psychopathy, narcissism, conscientiousness, and agreeableness. Lacking the impulsive tendency of psychopaths, Machiavellians may be more deliberate in their mischief and more attentive to possible negative consequences (Jones & Paulhus, 2009).

Finally, narcissism was the least successful predictor of cheating among the Triad constructs. Regression analyses demonstrated that any cheating behavior initially attributed to narcissism could be explained by its overlap with psychopathy and Machiavellianism. These results fit with previous research. For example, narcissists' performance motivation is strongly influenced by ego involvement (Wallace & Baumeister, 2002). Specifically, narcissists' performance motivation is enhanced if an opportunity for self-enhancement—such as the publicizing of task results—presents itself. A public posting of grades might have inspired narcissists to cheat. Apparently, their sense of entitlement and need for recognition was insufficient to provoke cheating in our studies.

The Big Five. We offered hypotheses regarding two of the Big Five factors. One was that conscientious students would cheat less. Although this hypothesis was in fact confirmed in Study 1, the association disappeared when other predictors were included in the regression equation. Even conscientiousness failed to work in Study 2.

The rationale for the original hypothesis was that conscientious students tend to be better prepared academically and, therefore, have less need to cheat (Hogan & Hogan, 1989). Note however, that conscientiousness also has a strong ambition component (Costa & McCrae, 1998). This desire to excel may motivate some conscientious individuals to cut corners, no matter how well-prepared they are. In short, conscientiousness combines two components that work in opposite directions: The result was a minimal net effect on cheating. Future research should take advantage of measures that disentangle these two components (e.g., Jackson, Paunonen, Fraboni, & Goffin, 1996).

Similarly, initial associations between disagreeableness and cheating were eliminated after accounting for overlap with the Triad constructs and conscientiousness. These results are most likely attributable to the sizable overlap between agreeableness and the Triad constructs. Of the Big Five traits, only agreeableness overlaps with each of the Triad, and typically to a substantial degree (Paulhus & Williams, 2002). It appears that disagreeable-

ness alone is not sufficient: Only when it operates in combination with other unsavory attributes (as in psychopathy) does cheating occur. Finally, the openness, stability, and extraversion scales were consistently unrelated to cheating behavior.

Low verbal ability. Another hypothesis concerned the association of poor verbal ability with cheating. Several reviews (Cizek, 1999; Paulhus et al., in press) have concluded that the ability-cheating link is a robust one (see also Daly & Horgan, 2007). The underlying principle is that students with poor cognitive ability are less well prepared for tests and essays and therefore choose to compensate by cheating. With respect to plagiarism, we assumed that this link should be even clearer when verbal ability is isolated from more global conceptions of cognitive ability.

The hypothesis was tested and confirmed in Study 2 with a small but significant effect of verbal ability on plagiarism. We believe that link between cheating and intelligence is indirect: Cheating is a method for coping with perceived inadequacies. If we are right, further research may show that those with poor math ability are more likely to cheat on math tests. An appropriate experimental manipulation may confirm this person x situation notion.

Sex differences. The pattern of sex differences in cheating found in Studies 1 and 3 mimicked those of previous research (McCabe et al., 2001; Whitley et al., 1999): That is, self-reported rates of cheating were higher in males than in females. However, this sex difference disappeared in Study 2 when cheating was measured in a more concrete fashion. To date, explanations for the sex difference in self-reported cheating styles have been elusive and largely speculative (Cizek, 1999). Results involving objective cheating rates further support the notion that there is no real sex difference in cheating. Given the confound with academic major, however, our data cannot tease apart the contributions of gender and major.

Explaining the Psychopathy-Cheating Link

Once the unique association between psychopathy and scholastic cheating had been confirmed in Studies 1 and 2, we explored the motivational mediators of this link in Study 3. Our mediation analyses provided a means for quantifying the explanatory power of these three motivations for cheating.

An unrestrained achievement motivation partially explained this association. Incentives such as high grades and scholarships seem to activate dishonesty in these individuals. Callous disregard for others and lack of impulse control encourage cheating as a means for achieving success. Indeed, such mechanisms are activated by psychopathic individuals as methods for achieving all of their life goals—academic or otherwise (Hare, 2003). It is notable that the achievement goals shared by most college students trigger cheating in psychopaths alone.

Also confirmed was a second mediator of psychopathic cheating—a deficit in moral inhibition. The finding is consistent with previous demonstrations of links between psychopathy and morality deficits (Williams et al., 2009). Even if temptations to cheat are activated, most students avoid acting on them because it compromises their self-image. As the final roadblock to cheating, this moral identity may be seen as the ultimate deterrent (Acquino & Douglas, 2003). Psychopaths, however, not only admit to such deficits, they may well devalue society's notion of integrity. In

sum, there are both internal (intrinsic) and external (incentive) factors involved in the thought process underlying psychopathic cheating.

Our expectations about the mediating impact of a third motivation—fear of punishment—were not fulfilled. This failure can be traced to a lack of association between fear and cheating. We caution that this finding not be taken to suggest that fear of punishment has no impact: Indeed, there is a wealth of evidence to suggest that punishment does in fact deter students from cheating (Cizek, 1999). Rather than fear per se, it may be that perceived likelihood of being turned in by a peer is the psychological mediator (McCabe et al., 2006).

Limitations

Our use of a behavioral criterion in Study 2 addressed the limitations of self-report methods, but may have also introduced other limitations. For example, the eligibility requirements necessary for students in Study 2 led to a relatively small sample size, which hampered our ability to confirm significant associations. As expected, the effect sizes (correlations with cheating) were lower with a behavioral criterion compared to the self-report. For example, the .58 correlation of psychopathy in Study 1 fell to .22 in Study 2. Disattenuation of the criterion variables, however, helped reduce this difference. Note that common self-report variance in Study 1 suggests another possible explanation for the high correlation: It may be that psychopaths are more willing to admit their cheating.

Another aspect of Study 2 impaired its power to find significant correlates. The low frequency of plagiarists identified in this dataset (i.e., roughly 7% to 15%) restricted the range in the dependent variable and produced a highly skewed measure of cheating (see Cohen, Cohen, West, & Aiken, 2002). These rates may seem low compared to previous estimates based on self-report (Newstead et al., 1996), which are upward of two thirds of students (Robinson et al., 2004; Stern & Havlicek, 1986). Indeed, our own self-report estimate in Study 1 was 73%.

Such self-report measures, however, cover a wider scope and time: Ours, for example, asked whether the student had cheated at any time in high school. Such self-reports often subsume all varieties of cheating (e.g., answer copying, plagiarism, using hidden notes, etc.). In contrast, our Turn-It-In coverage was restricted to two discrete opportunities to plagiarize essays in one university course: Hence our rates—about 7%—represent typical rates of cheating per opportunity (Lavin, 1965).

This fact highlights one of the trade-offs involved in using Turn-It-In and similar programs. These programs capture naturalistic cheating behavior, as opposed to other behavioral methodologies which, though typically inducing higher frequencies of cheating, require contrived entrapment scenarios, or are otherwise unrealistic (e.g., Hoff, 1940; Leveque & Walker, 1970). Furthermore, the essays used in the Study 2 course were designed to minimally susceptible to cheating: Students were instructed to write about personal experiences rather than a traditional literature review or other essay style that could be plagiarized much more readily. These instructions undoubtedly reduced rates of plagiarism even further. This handicap makes the cheating correlations reported in this study conservative estimates. In that light, our confirmation of significant associations is especially noteworthy.

Causal inferences.   In general, one may be more confident in inferring causality if (a) the measurement of independent variables temporally precedes that of dependent variables, (b) it is empirically demonstrated that changes in the independent variable *lead to* changes in the dependent variable, on average, (c) changes in the dependent variable do not lead to changes in the independent variable, or (d) other potential causal variables are ruled out (Cohen et al., 2002).

As with all correlational studies, causal inferences in the present studies must be qualified. As a general rule, however, it is reasonable to assume that the trait variables studied here temporally precede other variables (see review by Bouchard & Loehlin, 2001). Moreover, the plagiarism measure was collected after the personality measures were collected. It is difficult to argue that cheating tendencies make people less conscientious or intelligent.

However, caution is warranted in conclusions about the mediation analyses conducted in Study 3. The variables were not collected in any distinct temporal order. Those mediators—interpreted as motivations—could be construed as either justifications (which occurred after the cheating behavior) instead of motivations (which occur before the cheating behavior).

However, justifications tend to *reduce* feelings of guilt. Therefore, in the psychopathy-cheating context, it is unlikely that these mediators are justifications because psychopathic individuals experience little guilt (Hare, 2003). Future studies that can establish precise temporal measurement of these mediators may permit a clearer explication of this dynamic process.

Future Directions and Recommendations

Behavioral indicators.   Our findings have implications for researchers of cheating behavior and educators in general. Both groups can benefit from the use of concrete, objective criteria such as the Turn-It-In program used here. Researchers are justifiably concerned about the biases inherent in self-report measures—especially those that assess socially undesirable behaviors such as cheating (Paulhus, 1991). Individuals who admit to cheating may also admit to undesirable personalities: Spurious correlations are the result. Software indices are more objective, unobtrusive, and can be used to capture cheating at naturalistic rates in naturalistic settings.

Nonetheless, the similarity of the results obtained from self-report (Studies 1 and 3) and computer-based criteria (Study 2) suggests that both methods have their place as cheating indicators. Such convergence and replication substantiates our claims about the personality correlates of self-reported cheating.

Given the option, behavioral outcomes tend to be more convincing to many behavioral scientists. The success of our research with programs such as Turn-It-In and S-Check suggests that behavioral indicators of other forms of misconduct would be ideal in future studies. However, the logistics of using such measures may prove difficult, if not impossible, among nonoffender samples. Forensic measures such as criminal records are unworkable, given that most students and community members have no offenses. Obtaining ethical approval and student consent for the use of such measures would also be complicated. Some researchers have been creative in their efforts to obtain behavioral indicators of misconduct, including the collection of official university records and workplace reports (e.g., Gustafson & Ritzer, 1995). Again, use of these measures entails several trade-offs compared to self-report measures (e.g., sample size, time considerations).

Beyond the Big Five.   In future research, we recommend the exploration of several other individual difference variables. As noted earlier, Lee and Ashton (2005) have recently expanded the Five-Factor Model of personality to include a sixth factor—Honesty-Humility (H-H)—as part of their HEXACO model of fundamental personality traits. H-H captures characteristics such as "sincerity, fairness, and modesty versus slyness, pretentiousness, and greed" (Lee & Ashton, 2005; p. 1573). H-H demonstrates strong negative correlations with each of the Dark Triad (Lee & Ashton, 2005) as well as self-reported scholastic cheating (Marcus, Lee, & Ashton, 2007). Future research may determine the independent contributions of H-H and the Triad constructs in predicting scholastic cheating.

Implications for educators—contending with cheating. Educators have to deal with cheating at both the abstract and practical levels. First, they must continually revisit the meaning of the construct as interpreted by students and test administrators (Chambliss et al., 2010; Harris, 2001; Murdock & Stephens, 2007). They are also on the front lines in contending with cheating and, when it occurs, about documenting the offense (Whitley & Keith-Spiegel, 2002). The present research supports the interpretation of a high Turn-It-In score as cheating by linking it to individual difference variables, namely, psychopathy and poor ability, which have previously been linked with cheating. The use of such software can help overcome some of the problems with traditional techniques. When suspected for other reasons, confirmation of plagiarism via computer software is an invaluable tool. In fact, simply publicizing the fact that such techniques are in use should reduce the prevalence of cheating on any given exam.

Effecting improvements in students' cognitive ability and character is a more challenging goal: To the extent such changes are even possible, they seem beyond the mandate of the typical educator. Psychopathic individuals are notoriously unresponsive to treatment interventions applied by highly trained clinicians, and sometimes become even more dangerous following treatment (Rice, Harris, & Cormier, 1992). Instead, a preventative approach to cheating is more likely to be fruitful. There is no shortage of useful techniques for preventing cheating, such as alternate exam forms, clear warnings about the use of cheating detection programs, banning cell-phones and other electronic devices, random or assigned seating arrangements, and assigning essays that involve writing about personal experiences that could not be easily plagiarized from external sources (Cizek, 1999; Gulli, Kohler, & Patriquin, 2007; Whitley & Keith-Spiegel, 2002).

More generally, educators should benefit from awareness that the most probable cheaters are those low in scholastic preparedness and high in psychopathy. Attention to the first group requires redoubling efforts to prevent students from falling behind. Another approach may be to reduce the degree of competitiveness among the students. By creating an environment where relative achievement is de-emphasized, the disadvantaged students would feel less threatened and less likely to resort to cheating. Such thinking is hardly new among educators but it might help to acknowledge that scholastic unpreparedness has its roots in basic traits.

Dealing with those high in psychopathy, on the other hand, raises more fundamental pedagogical issues. The fact that cheating is just one in their history of antisocial behaviors suggests that

psychopaths top the "most likely to be expelled" list. Yet early diagnosis and surveillance of such individuals is problematic. It seems unlikely that school boards and university senates would approve of mass prescreening of students for psychopathy. Any attempt to determine probability-of-expulsion in advance suggests an unsavory "guilty until proven innocent" approach.

Even if prescreening were to be approved, there is no established cutoff score for psychopathy in nonoffender populations. Although some researchers have argued that psychopaths form a distinct group in student samples (Harris, Rice, & Quinsey, 1994), recent evidence has supported a normal distribution of psychopathy scores—even among offenders (Edens, Marcus, Lilienfeld, & Poythress, 2006; Lilienfeld & Andrews, 1996; Nathanson et al., 2006). Either way, the diagnosis of psychopathy in a nonoffender population is a comparatively more subjective endeavor than that in a clinical or forensic context. Even if scores were kept confidential, labeling could be extremely harmful to the student. The surveillance of high scoring individuals would be highly problematic ethically and practically. Indeed, it is possible that such labels might translate into self-fulfilling prophecies. Furthermore, our examination of potential mediators, combined with the results of several forensic studies (see Hare, 2003), suggests that threats of punishment are likely to go unheeded by psychopathic individuals. On the whole, our character analysis suggests that the only way to eliminate cheating among psychopaths is to make it impossible.

Overall, these cheating reduction strategies may be grouped into two main categories: Altering teaching philosophy and modifying test administration techniques. The former, which includes reducing the competitive nature of the classroom environment, may be most effective for reducing cheating stemming from cognitive ability deficits. The latter, which includes the use of alternate test forms, should be most beneficial in eliminating cheating by psychopathic individuals. Ideally, a combination of philosophical and methodological approaches may be most effective in abolishing cheating.

Conclusions

Our challenge to previous skepticism about profiling scholastic justified cheaters appears to have paid off. This series of studies on key personality variables eventuated in the isolation of subclinical psychopathy as a powerful predictor. The replication of this association across three studies was essential for confirmation. The association held up whether self-report or computer-scored behavioral indices of cheating were used as operationalizations. Associations also held up when the Big Five personality variables were partialed out. Had we studied Machiavellianism, narcissism, agreeableness, conscientiousness or verbal ability on their own, each would have yielded a significant link: The unique role of psychopathy would not have been so apparent.

In addition, our comparative analyses of the Turn-It-In scores with self-report cheating provide mutual support for the validity of each method Although behavioral and self-report measures both have inadequacies, the converging pattern of correlates with psychological variables raises confidence in both approaches.

Our conclusions may apply to misconduct in other nonoffender samples. In the business world, for example, it may be that psychopaths commit other acts of misconduct—such as fraud or assault—in order to achieve goals such as promotions, wealth, or power. Although many strive to attain such goals, psychopathic individuals are most likely to believe that such devious and aggressive tactics are acceptable as means to ambitious ends. It is also possible that psychopathic individuals' self-image as tough, deceitful and callous explains their general tendencies toward misconduct. Indeed the dynamics uncovered here may apply to all psychopathic misconduct. A frank analysis may eventuate in successful strategies for preventing, or reducing such behavior.

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