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Big Five personality and academic dishonesty: A meta-analytic review

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ABSTRACT

Academic dishonesty is widespread within secondary and higher education. It can include unethical academic behaviors such as cheating, plagiarism, or unauthorized help. Researchers have investigated a number of individual and contextual factors in an effort to understand the phenomenon. In the last decade, there has been increasing interest in the role personality plays in explaining unethical academic behaviors. We used meta-analysis to estimate the relationship between each of the Big Five personality factors and academic dishonesty. Previous reviews have highlighted the role of neuroticism and extraversion as potential predictors of cheating behavior. However, our results indicate that conscientiousness and agreeableness are the strongest Big Five predictors, with both factors negatively related to academic dishonesty. We discuss the implications of our findings for both research and practice.

1. Introduction

The prevalence of academic dishonesty among high school and college students is well-documented. In a recent survey of over 20,000 American high school students (Josephson Institute, 2012), 51% admitted to cheating on a test, 74% had copied another student's homework, and 32% had copied an Internet document for a classroom assignment. Whitley's (1998) review of cheating among college students indicated that approximately 43% had cheated on exams, 41% had cheated on homework, 47% had plagiarized, and 70% had engaged in at least one form of academic dishonesty. More recent evidence confirms earlier estimates. McCabe (2005) surveyed over 64,000 undergraduates at U.S. and Canadian institutions from 2002 to 2005. Self-reports of cheating ranged from 3% to 42%, depending on the specific cheating behavior. Clearly academic dishonesty remains a significant issue on both high school and college campuses.

Research on academic dishonesty (e.g., Crown and Spiller, 1998; McCabe and Trevino, 1997; Whitley, 1998) has focused on understanding the individual and contextual factors that influence it. For example, individual characteristics such as gender, age, ability, personality, and extracurricular involvement as well as situational factors such as honor codes, penalties, and risk of detection have been shown to relate to cheating. Within personality, researchers have examined a number of traits, including locus of control and Type A personality.

Over the past few decades, the five-factor (Big Five) model has emerged as one of the dominant models of personality (Digman, 1990). The Big Five factors include neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness. The five-factor model has been widely used to predict both academic performance (Poropat, 2009) and job performance (Shaffer & Postlethwaite, 2012). Williams, Nathanson, and Paulhus (2010, p. 295) observe that "given the consensus on their importance, it is surprising how few studies of personality and scholastic cheating have included the Big Five traits. Of the five, only extraversion and stability (vs. neuroticism) have received any attention." Long before the five-factor model emerged, researchers examined the roles extraversion (Brownell, 1928) and neuroticism (Campbell, 1933) play in college cheating. Despite this early interest, it has not been until the last decade that all of the Big Five traits have received regular attention in the cheating literature.

However, there is significant variability in the research results. For example, extraversion has been found to be both positively (r = +.13; Gallagher, 2002) and negatively (r = −.21; Salgado et al., 2014) related to academic dishonesty. While most studies have found negative relationships between conscientiousness and cheating, these estimates have spanned the range from −.08 (Clause, 2004) to −.37 (Curtis, 2013). Similar variability is evident with neuroticism, openness, and agreeableness. Taken together, this variability impedes the ability to draw meaningful conclusions regarding the true relationship between the Big Five factors and academic dishonesty.

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Meta-analysis (Schmidt & Hunter, 2015) is an ideal tool to synthesize seemingly divergent findings. By combining results across studies, meta-analysis corrects for bias due to sampling error. Further, it allows results to be corrected for bias due to measurement error and other statistical artifacts. Thus, meta-analysis provides more accurate estimates of relationships between constructs than any single primary study.

In the current study, we meta-analyze the relationship of each of the Big Five personality traits with academic dishonesty. As the first meta-analysis of these relationships, our study fills a void in the literature by providing more precise and accurate estimates than are currently available. As such, our results contribute to a better understanding of the individual factors that influence unethical behavior. We begin by developing a theoretical rationale for how each of the Big Five traits relates to academic dishonesty. Next, we present the results of our meta-analysis. We conclude by discussing the implications of our findings for research and practice.

2. Relationships of personality with academic dishonesty

In the section that follows, we discuss the nature of each Big Five trait and how it theoretically and empirically relates to academic dishonesty. We also draw on related research from work and criminology that may inform our expectations regarding these relationships. Previous research (e.g., Salgado, 2002) has established the usefulness of the Big Five for predicting counterproductive behavior in the workplace, that is, "any intentional behavior on the part of an organization member viewed by the organization as contrary to its legitimate interest" (Sackett & DeVore, 2001). This can include theft, property damage, and organizational rule breaking. Universities likely find academic dishonesty as contrary to their interest in student learning and achievement. Poropat (2009, p. 331) finds that "with respect to the role of personality, 'school' becomes more like work as students progress through their academic careers." Indeed, students who cheat in an academic context are more likely to do so at work (Blankenship & Whitley, 2000; Nonis & Swift, 2001; Stone, Jawahar, & Kisamore, 2011). Similarly, research in the field of criminology (e.g., Miller and Lynam (2001)) has demonstrated the role of certain Big Five factors in predicting anti-social behavior such as delinquency, crime, and violence.

2.1. Neuroticism

Neurotic individuals have a tendency to experience negative emotional states such as anxiety, guilt, insecurity, and self-pity. Their moods also tend to be volatile and their behavior impulsive. They are more susceptible to psychological stress, as they "are likely to interpret ordinary situations as threatening, and can experience minor frustrations as hopelessly overwhelming" (Widiger, 2009, p. 129). Neurotic individuals also cope poorly with stress. Neuroticism is associated with coping strategies such as denial, withdrawal, and wishful thinking (Carver & Connor-Smith, 2010).

The neuroticism trait emerged prior to the advent of the five-factor model. In an early example, Campbell (1933) found that neurotic individuals were more likely to cheat on exams, engaging in behaviors such as using prepared notes, using a textbook, or exchanging answers with other students. Such behavior is not surprising given what we now understand about neurotic individuals. Those high in neuroticism are likely to interpret difficult assignments and exams not as a challenge, but as a threat, and may be easily overwhelmed by the demands. Unfortunately, their favored coping strategies may provide a temporary escape from stress, but are not effective long term. Carver and Connor-Smith (2010, p. 686) note that "the longer one avoids dealing with the problem, the more intractable it becomes and the less time is available to deal with it when one finally turns to it." Indeed, previous meta-analytic research has shown that neurotic individuals are more likely to procrastinate ($\rho = .28$, $k = 59$; Steel, 2007).

Thus, as a due date looms, neurotic individuals may now have insufficient time to properly prepare and complete the assignment or exam successfully. Under pressure, they may view cheating as an alternate path to achievement, particularly given that neurotic individuals are more concerned with performance than they are with learning. Neuroticism is the Big Five trait with the strongest relationship with performance goal orientation (Payne, Youngcourt, & Beaubien, 2007), specifically for gaining favorable assessments ($\rho = .32$, $k = 10$) and avoiding negative assessments ($\rho = .37$, $k = 5$) of their performance.

Consistent with this theoretical rationale, many studies (e.g., Clark, 2011; Nguyen & Biderman, 2013; Stone, Jawahar, & Kisamore, 2010) have reported a small to modest positive relationship between neuroticism and academic dishonesty. However, some studies have found a small negative relationship (e.g., Clariana, 2013; Williams et al., 2010) or no relationship at all (Curtis, 2013; Salgado et al., 2014). Meta-analytic evidence outside the academic context shows that neuroticism is positively related to deviant workplace behavior ($\rho = .06$, $k = 15$; Salgado, 2002) as well as anti-social behavior ($r = .12$, $k = 14$; Miller & Lynam, 2001). Consequently, we expect neuroticism to demonstrate a positive relationship with academic dishonesty.

2.2. Extraversion

Individuals high in extraversion enjoy being in social situations. They are characterized by warmth, positive affect, high energy, assertiveness, and an outgoing nature. Some conceptualizations of extraversion (e.g., Costa & McCrae, Cattell) also include facets related to excitement-seeking, while others (e.g., Hogan, Tellegen) include facets related to ambition (Watson & Clark, 1997). Like neuroticism, extraversion was conceptualized prior to the advent of the Big Five, and thus, has a history of investigation with respect to academic dishonesty (e.g., Brownell, 1928).

The excitement-seeking facet of extraversion provides the strongest rationale for linking this trait to cheating. Individuals high in excitement-seeking are risk-takers who seek out thrills and stimulating environments (de Bruin & Rudnick, 2007). Indeed, de Bruin and Rudnick (2007) found that higher excitement seeking related to higher frequencies of cheating on exams. However, there is more direct evidence on the related construct of sensation-seeking (e.g., Zuckerman, 1979) and academic dishonesty.

Aluja, García, and García (2003) have shown that sensation-seeking is related to extraversion ($r = .34$) and, in particular, its facet of excitement-seeking ($r = .58$). Like individuals high in excitement-seeking, individuals high in sensation-seeking require strong environmental stimulation and will take risks to meet this need. In part, this is because they view risk differently. They tend to appraise situations as less risky and threatening than those low in sensation-seeking (Roberti, 2004). Thus, while some students may see engaging in academic dishonesty as a risky behavior likely to result in penalties, high sensation-seekers would perceive reduced risk, leading to increased cheating. In an experiment with undergraduates, DeAndrea, Carpenter, Shulman, and Levine (2009) found sensation seeking predicted cheating on an extra credit task. McTernan, Love, and Rettinger (2014) found sensation seeking predicted both academic and non-academic cheating in a general population sample.

Empirical results regarding extraversion and academic dishonesty as well as other forms of deviant behavior are varied. Most studies (e.g., Gallagher, 2002; Karim, Zamzuri, & Nor, 2009; Williams et al., 2010) have reported a small positive relationship

between extraversion and academic dishonesty, but two studies have found a modest negative relationship (Curtis, 2013; Salgado et al., 2014). However, meta-analytic evidence shows that extraversion is unrelated to deviant workplace behavior ($\rho = .01$, $k = 12$; Salgado, 2002) as well anti-social behavior ($r = .00$, $k = 14$; Miller & Lynam, 2001). These varied results may be due to the fact that excitement-seeking is a peripheral, rather than a central, component of extraversion (Watson & Clark, 1997), as the facet is not present in all extraversion scales. Thus, we make no hypothesis regarding the relationship between extraversion and academic dishonesty.

2.3. Openness to experience

Individuals high in openness to experience "actively seek out experience and are apt to be particularly reflective and thoughtful about the ideas they encounter" (McCrae & Costa, 1997, pp. 829–830). They are intellectually curious and imaginative individuals who enjoy "the process of exploring and the novelty of discovery" (McCrae & Costa, 1997, p. 839). In some Big Five models (e.g., Goldberg, 1990), the openness factor is labeled as intellect; however, McCrae & Costa (1997) caution that this is neither a suitable label nor an appropriate interpretation of the factor. Although openness is the Big Five factor most highly correlated with cognitive ability ($\rho = .22$; Judge, Jackson, Shaw, Scott, & Rich, 2007), they are distinct constructs.

Williams et al. (2010, p. 295) note that "current understanding of openness to experience suggests no obvious association with cheating." However, the relationship between openness and other constructs may offer insight. Research has shown students with higher cognitive ability are less likely to cheat (Paulhus, Nathanson, & Williams, 2004; Williams et al., 2010). Given the positive relationship between cognitive ability and openness, students high in openness may also be less likely to engage in academic dishonesty. Likewise, openness is the Big Five trait with the strongest relationship to learning goal orientation ($\rho = .44$, $k = 10$; Payne et al., 2007). Those high in openness may be less likely to cheat because they tend to be more concerned with learning rather than grade outcomes.

However, other research suggests open individuals may be more likely to cheat. There is a positive relationship between openness and sensation seeking (Aluja et al., 2003). This is consistent with recent meta-analytic evidence (Parks-Leduc, Feldman, & Bardi, in press) revealing a positive relationship between openness and the values construct of stimulation. Further, openness is negatively related to the value of conformity ("controlling impulses to fulfill others' expectations").

Empirical evidence regarding openness and academic dishonesty is mixed. Two studies have found a small, positive relationship (Gallagher, 2002; Williams et al., 2010); however, most studies (e.g., Aslam and Nazir, 2011; Clark, 2011; Nguyen and Biderman, 2013) have reported a small to modest negative relationship between openness and cheating. Meta-analytic evidence from other fields also shows conflicting results. Although openness has a slight negative relationship with anti-social behavior ($r = -.03$, $k = 14$; Miller & Lynam, 2001), it is positively related to deviant workplace behavior ($\rho = .14$, $k = 8$; Salgado, 2002). Based on the equivocal nature of the theoretical and empirical evidence, we make no hypothesis regarding the relationship.

2.4. Agreeableness

Agreeableness is the Big Five trait concerned with how individuals approach interpersonal relationships. Agreeable individuals are likeable, warm, trusting, and concerned with the welfare of others. Thus, it is not surprising that they are both cooperative and helpful (Graziano & Tobin, 2009). With respect to conflict, highly agreeable individuals tend to perceive less conflict as well as elicit less conflict from others (Graziano, Jensen-Campbell, & Hair, 1996). Consequently, students high in agreeableness may be less likely to engage in academic dishonesty in an effort to avoid potential conflict with teachers and other authority figures. Further, agreeable individuals may perceive that dishonest academic behavior adversely impacts other students given that grades are used for important decisions regarding admissions, scholarships, and employment. This is consistent with recent meta-analytic evidence that demonstrates a strong relationship between agreeableness and the values constructs of benevolence ("promoting the welfare of people you are close to") and universalism ("promoting the welfare of all people") (Parks-Leduc et al., in press).

Empirical evidence supports this rationale, with most studies (e.g., Clariana, 2013; Salgado et al., 2014; Williams et al., 2010) reporting a negative relationship between agreeableness and academic dishonesty. Meta-analytic evidence also shows that agreeableness is negatively related to deviant workplace behavior ($\rho = -.20$, $k = 9$; Salgado, 2002) as well as anti-social behavior ($r = -.41$, $k = 15$; Miller & Lynam, 2001). Taken together, we expect agreeableness to be negatively associated with academic dishonesty.

2.5. Conscientiousness

Conscientiousness is the tendency to be planful, organized, goal-directed, to delay gratification, and to follow norms and rules (Roberts, Jackson, Fayard, Edmonds, & Meints, 2009). Conscientiousness is consistently beneficial for predicting both academic (Poropat, 2009) and job performance (Shaffer & Postlethwaite, 2012). It may be particularly relevant for predicting academic dishonesty, as it is the Big Five personality trait with the "closest conceptual connection to cheating" (Williams et al., 2010, p. 295). Conscientious students who want to do well on an assignment or exam will likely plan the necessary steps to do so (e.g., read, research, study) and execute them in the face of temptation to do otherwise (e.g., play video games or attend parties). In contrast to neurotic individuals, research has shown that conscientiousness individuals are unlikely to procrastinate ($\rho = .75$, $k = 20$, Steel, 2007).

Should they anticipate not doing well on an assignment or exam, conscientious students would be less likely to violate rules against academic dishonesty as an alternative route to success. Indeed, conscientiousness displays a positive relationship with the values construct of conformity (i.e., self-discipline, obedience; Parks-Leduc et al., in press).

While two studies have found a small, positive relationship (Gallagher, 2002; Noel & Carey, 2008), the great majority of studies (e.g., Clariana, 2013; de Bruin & Rudnick, 2007; Williams et al., 2010) have reported a negative relationship between conscientiousness and academic dishonesty. Additionally, Bratton and Strittmatter (2013) found that conscientious students made more ethical judgments in academic honesty scenarios. Meta-analytic evidence also shows that conscientiousness is negatively related to deviant workplace behavior (Salgado, 2002; $\rho = -.26$, $k = 13$) as well anti-social behavior ($r = -.25$, $k = 14$; Miller & Lynam, 2001). Thus, we expect conscientiousness to be negatively associated with academic dishonesty.

3. Method

3.1. Literature search

We conducted an extensive search for both published and unpublished studies using multiple databases including PsycINFO,

ERIC, ProQuest Dissertations and Theses, and Google Scholar. We searched keywords including *personality*, *Big Five*, *neuroticism*, *extraversion*, *openness*, *agreeableness*, *conscientiousness*, *emotional stability*, *academic dishonesty*, *cheating*, *academic integrity*, *academic misconduct*, and *plagiarism*. We also examined the reference lists from reviews of academic cheating (e.g., Crown & Spiller, 1998; Whitley, 1998) and from all articles identified for inclusion.

3.2. Inclusion criteria

We examined each English-language study identified in the literature search for potential inclusion in the meta-analysis. To qualify for inclusion, a study must have included (1) an explicit measure of at least one of the Big Five personality factors, (2) at least one measure of self-reported academic dishonesty, (3) a sample of high school or university students, and (4) the zero-order correlation, or the necessary data to calculate the correlation, between personality and academic dishonesty.

To maximize construct validity, we excluded studies (e.g., Jackson, Levine, Furnham, & Burr, 2002) that utilized a personality measure that was not explicitly designed to measure the Big Five. This is consistent with the approach taken in other recent Big Five meta-analyses (Hurtz & Donovan, 2000; Shaffer & Postlethwaite, 2012). To help ensure uniformity of the criterion, we also excluded studies (e.g., Nathanson, Paulhus, & Williams, 2006) that employed behavioral, experimental, or peer measures of academic dishonesty. Some studies included the variables of interest but did not provide the appropriate data. In these instances we contacted authors via e-mail to request the needed data.

Overall, 17 studies (10 published studies, 4 theses, 2 conference presentations, and 1 working paper), which included 18 independent samples, met the inclusion criteria. Studies included in the meta-analysis are marked with an asterisk in the reference section. A summary of relevant data from these studies is presented in Table 1.

3.3. Coding procedure

Each author independently coded each of the studies identified for inclusion. We coded studies for publication status, sample characteristics, personality and criterion measures used, criterion timing, reliabilities of the measures, and the correlation(s) between the Big Five factors and academic dishonesty. Any disagreement was resolved through discussion between the authors.

3.3.1. Composite calculation

Several studies included multiple measures of academic dishonesty without combining them into an overall measure. For example, Stănescu and Iorga (2013) included measures of fabrication, plagiarism, fraudulation, unauthorized help, and misconduct. In these cases, we calculated a composite correlation between the multiple criteria measures and the personality factor of interest using the methods described in Schmidt and Hunter (2015).

3.4. Meta-analytic procedure and artifact correction

We analyzed our data using the meta-analytic methods developed by Schmidt and Hunter (2015). We corrected correlations for attenuation due to measurement error. Because not all studies reported reliability values, we computed separate artifact distributions for each predictor and the criterion. For personality, we constructed artifact distributions using the factor reliabilities in our dataset whenever these were reported. For studies that did not report a reliability, we used the noncontextualized meta-analytic reliabilities reported in Shaffer and Postlethwaite (2012), Table 2. The resulting personality reliabilities are as follows: neuroticism (α = .83), extraversion (α = .83), openness (α = .77), agreeableness (α = .76), and conscientiousness (α = .82). For academic dishonesty, we constructed artifact distributions using the criterion reliabilities in our dataset (α = .83, k = 11, N = 3448). These reliability estimates (α) are internal consistency reliability estimates, which do not correct for transient error. Thus, our results may be biased downward (Schmidt, Le, & Ilies, 2003).

In the results section which follows, we report three different types of correlations. Mean observed correlations (r) are sample-size weighted correlations which have not been corrected for predictor or criterion unreliability. Mean operational validities (ρ_{op}) are sample-size weighted correlations which have been corrected for unreliability only in the criterion. Operational validities are used in both academic and personnel selection contexts.

Table 1
Studies included in the meta-analysis.

Study	Pub status	Country	Student level	Big Five measure	Sample size	N	E	O	A	C
Aslam and Nazir (2011)	P	Pakistan	UG/GR	BFI-10	932	−.03	.07	−.09	−.05	−.17
Clariana (2013)	P	Spain	UNIV	BFI-10	620	−.13	.08	−.02	−.16	−.24
Clark (2011)	U	USA	UG	IPIP	220–235	.17	.03	−.18	−.29	−.32
Clause (2004)	U	USA	UG	Goldberg	142					−.08
Curtis (2013)	U	USA	UG	BFI	29	.00	−.20	−.23	−.38	−.37
Donat et al. (2014) – Sample 1	P	Germany	HS	BFI-Short	179	−.04				
Donat et al. (2014) – Sample 2	P	India	HS	BFI-Short	203	.03				
Fezatte (2009)	U	Canada	UNIV	NEO-PI-R	308	−.03	.07	−.14	−.24	−.24
Gallagher (2002)	U	USA	UG	NEO-FFI	205	.17	.13	.18	.04	.03
Giluk and Postlethwaite (2010)	U	USA	UG	IPIP	377	.02	.06	−.11	−.13	−.14
Karim et al. (2009)	P	Malaysia	UNIV	Goldberg	252	.11	.08	−.04	−.11	−.16
Nguyen and Biderman (2013)	U	USA	UG	IPIP	278	.13	.10	−.11	−.08	−.17
Noel and Carey (2008)	U	USA	UG/GR	BFI	302	.03	.01	−.07	.09	.05
Salgado et al. (2014)	P	Western Europe	UNIV	NEO-PI-R + IP/5F	406	.00	−.21	−.01	−.14	−.19
Siaputra (2013)	P	Indonesia	UG	IPIP	362					−.21
Stănescu and Iorga (2013)	P	Romania	UG/GR	NEO-PI-R	252	.12	.03	−.03	−.10	−.21
Stone et al. (2010)	P	USA	UG	HPI	241	.14				−.25
Williams et al. (2010)	P	Canada	UG	BFI	228	−.08	.09	.07	−.23	−.28

Note: Column content is as follows: study = study citation; Pub status = publication status (P = published, U = unpublished); country: country of sample; student level = educational level of study participants (HS = high school, UG = undergraduate; GR = graduate/postgraduate; UNIV = university, unspecified); Big Five measure: Big Five measure administered; sample size = number of study participants; N (neuroticism) – E (extraversion) – O (openness to experience) – A (agreeableness) – C (conscientiousness) = correlation between Big Five factor and academic dishonesty; personality measures: BFI (Big Five inventory), BFI-10 (Big Five inventory, 10-item version), BFI-Short (Big Five inventory – short version), Goldberg (Goldberg Adjectives), HPI (Hogan Personality Inventory), IP/5F (Inventario de personalidad de cinco factores), IPIP (International Personality Item Pool), NEO-FFI (NEO Five-factor inventory), NEO-PI-R (NEO Personality Inventory – revised).

True-score correlations (ρ_{ts}) are sample-size weighted correlations corrected for unreliability in both the predictor and criterion and are used to examine construct–level relationships. We also report both 80% credibility intervals and 95% confidence intervals around ρ_{ts} (Schmidt & Hunter, 2015). Credibility intervals are a measure of variability in the distribution of correlations across studies. Confidence intervals express the likely amount of variability in the mean correlation (ρ_{ts}) due to sampling error.

4. Results

Our meta-analytic results are reported in Table 2. Consistent with our expectations, conscientiousness (ρ_{ts} = −.22, k = 16, N = 5154) and agreeableness (ρ_{ts} = −.14, k = 13, N = 4423) were negatively related to academic dishonesty. Of the Big Five, these traits displayed the strongest relationships with the criterion. The confidence and credibility intervals for both traits excluded zero.

In contrast, neuroticism (ρ_{ts} = +.02, k = 16, N = 5045), extraversion (ρ_{ts} = +.05, k = 13, N = 4424), and openness to experience (ρ_{ts} = −.07, k = .13, N = 4424) displayed smaller relationships with academic dishonesty. The 95% confidence interval for openness to experience (−.12 to −.02) excluded zero, indicating a non-zero relationship. However, the 80% credibility intervals for each of these traits included zero (neuroticism, −.08 to +.13; extraversion, −.05 to +.15; openness, −.16 to +.02) suggesting that the relationship of the Big Five trait and academic dishonesty does not fully generalize across situations. Likewise, the 95% confidence intervals for neuroticism (−.03 to +.07) and extraversion (−.01 to +.11) included zero, indicating that the mean true score correlation (ρ_{ts}) could plausibly be any of the values within the interval, including zero. We also examined the possibility of publication bias by treating publication status as a moderator. Across the Big Five, neither published nor unpublished studies demonstrated consistently higher correlations with academic dishonesty.

5. Discussion

Our study provides the first meta-analytic investigation of the Big Five personality traits and academic dishonesty. Our results show that, of the Big Five factors, conscientiousness and agreeableness have the strongest relationships with academic dishonesty. Students high in conscientiousness and agreeableness are less likely to cheat than students who are low in these traits. Although early research emphasized the role of neuroticism and extraversion, our results do not support the relevance of these traits for academic dishonesty. These traits displayed relationships of smaller magnitude with academic dishonesty, and more importantly, we cannot rule out the possibility that the true effect size is zero. Although openness to experience did display a small, non-zero relationship with cheating, this relationship cannot be distinguished from zero across situations.

Our findings are consistent with what we know about conscientiousness and agreeableness. To achieve their academic goals, conscientious individuals will plan and complete the necessary work rather than engage in dishonest behaviors. Similarly, agreeable individuals will refrain from cheating in an effort to avoid conflict, preserve relationships, and minimize harm to others. Our results are also consistent with meta-analytic evidence on deviant workplace behavior (Salgado, 2002) and anti-social behavior (Miller & Lynam, 2001) in that conscientiousness and agreeableness were the two strongest Big Five predictors of these criteria.

5.1. Implications for research

Our results may have implications for understanding dishonest behavior in other contexts. For example, university applicants may cheat on standardized tests (e.g., SAT, GRE, MCAT; Zwick, 2002) or falsify their qualifications in order to increase their chances for admission to competitive educational institutions. Likewise, job applicants may fabricate or exaggerate their education and experience in order to appear more attractive to employers (Kidwell, 2004). As noted earlier, students who cheat in an academic context are also more likely to do so at work (Blankenship & Whitley, 2000; Nonis & Swift, 2001; Stone et al., 2011). Such behavior could range from journalistic plagiarism, to financial fraud, to scientific misconduct. These types of unethical behavior have implications for society as a whole. For example, fabrication of scientific data may have dire consequences including inappropriate clinical decisions, misdirected effort toward unproductive research avenues, and undermined public support for science. Future research should determine the extent to which personality predicts these types of unethical behaviors.

A review of our meta-analytic results and data set indicates significant variability in the correlations across studies. Likewise, effect sizes are relatively small. There are several potential reasons for this on both the predictor and criterion sides. With respect to the predictor, in some of these cases, it could be certain facets that are driving the relationship with academic dishonesty. For example, the excitement-seeking facet of extraversion relates to academic dishonesty (e.g., de Bruin & Rudnick, 2007); however, not all conceptualizations of extraversion include this facet (Watson & Clark, 1997). Likewise, the facets of openness are the most loosely related of any of the five factors (McCrae & Sutin, 2009), therefore, use of a short scale may not measure all aspects of the trait. If the scale used to measure the factor does not capture the relevant facet(s), then meta-analytic estimates will be underestimated and/or variability will be increased. Although we restricted our meta-analysis to explicit measures of the Big Five, primary study authors used factor scales of varying length and conceptualization. Future research should pay careful attention to measurement. It also may be beneficial to dedicate more attention to the relationship of Big Five facets with academic dishonesty.

Table 2
Big Five personality and academic dishonesty.

Analysis	k	N	r	SD_r	ρ_{op}	$SD\rho_{op}$	ρ_{ts}	$SD\rho_{ts}$	80% CV		95% CI	
									Lower	Upper	Lower	Upper
Neuroticism	16	5045	.02	.09	.02	.07	.02	.08	−.08	.13	−.03	.07
Extraversion	13	4424	.04	.09	.05	.07	.05	.08	−.05	.15	−.01	.11
Openness to Experience	13	4424	−.06	.08	−.06	.06	−.07	.07	−.16	.02	−.12	−.02
Agreeableness	13	4423	-.11	.09	−.12	.08	−.14	.10	−.27	−.02	−.21	−.08
Conscientiousness	16	5154	−.18	.09	−.20	.08	−.22	.08	−.32	−.11	−.27	−.16

Note: Column content is as follows: k = number of correlations; N = total sample size; r = sample size weighted mean observed correlation; SDr = sample size weighted standard deviation of observed correlations; ρ_{op} = mean operational validity corrected for criterion reliability only; $SD\rho_{op}$ = standard deviation of the mean operational validity; ρ_{ts} = mean true score correlation corrected for predictor and criterion unreliability; $SD\rho_{ts}$ = standard deviation of the true score correlation; 80% CV = lower and upper limits of the 80% credibility interval for ρ_{ts}; 95% CI = lower and upper limits of the 95% confidence interval for ρ_{ts}.

There was an even greater lack of uniformity with respect to criterion measures. Scales varied in length from single item to 26-item measures and included both established and study-specific scales drawn from a wide variety of sources. This is characteristic of the academic integrity literature. In addition, while a minority of studies specified a timeframe for self-reported dishonest academic behaviors (e.g., cheating during the past two years versus over one's lifetime), most studies did not. Timeframe is relevant because it may affect students' responses, and in turn, correlation strength. For example, students are more likely to admit to past cheating as compared to current cheating because fear of repercussion is minimized (Williams et al., 2010). Future research in this area would benefit from consistent use of established scales with defined timeframes. This would permit moderator analysis by criterion scale as well as subscale (e.g., exam cheating, plagiarism), which was not possible in the current meta-analysis. A new direction has been the development of scales to measure counterproductive academic behavior, which encompasses behaviors such as indolence, substance abuse, and low personal standards in addition to cheating (e.g., Hakstian, Farrell, & Tweed, 2002). Researchers (e.g., Holtrop, Born, de Vries, & de Vries, 2014; Marcus, Lee, & Ashton, 2007) are just beginning to examine the role of personality in counterproductive academic behaviors.

It is also likely that other personality traits may offer incremental explanatory power beyond the Big Five. Veselka, Shermer, & Vernon (2012, p. 417) have noted the five-factor model "has faced criticism for inadequately capturing the full range of existing traits, particularly those reflecting anti-social behavior." Indeed, the Dark Triad of personality (i.e., the constructs of narcissism, Machiavellianism, and psychopathy; Paulhus & Williams, 2002) has been found to predict a number of anti-social behaviors (e.g., Furnham, Richards, & Paulhus, 2013; O'Boyle, Forsyth, Banks, & McDaniel, 2012). Researchers have begun to explore the Dark Triad and its components as predictors of academic dishonesty. Initial results are promising (e.g., Brunell, Staats, Barden, & Hupp, 2011; Nathanson et al., 2006; Williams et al., 2010).

Additionally, although research has examined the link between sensation-seeking and academic dishonesty (e.g., DeAndrea et al., 2009; McTernan et al., 2014), little work has been done at the facet level (thrill and adventure seeking, experience seeking, disinhibition, boredom susceptibility). For example, the link between sensation-seeking and academic dishonesty may be largely driven by the disinhibition facet. Persons high in disinhibition have lower social inhibitions (Zuckerman, 1979). Disinhibition has been positively associated with deviant behavior (e.g., illegal acts, confrontational behavior; Newcomb & McGee, 1991). With respect to cheating, disinhibited individuals may be more likely to cheat because they lack the control mechanism that would constrain such behavior. Although there is limited empirical research in this area, Etter, Cramer, and Finn (2006) found that individuals low in disinhibition rated academically dishonest behaviors as being more serious than did those high in disinhibition.

Additionally, the HEXACO model (Ashton & Lee, 2007) is similar to the Big Five, but includes a sixth factor of Honesty–Humility. Individuals high in Honesty–Humility are fair, sincere, and modest versus sly, greedy, and pretentious. Like the Dark Triad, Honesty–Humility has been found to predict anti-social behavior. For example, using samples in three countries, Lee, Ashton, and de Vries (2005) found that Honesty–Humility consistently predicted workplace delinquency and integrity more effectively than any of the Big Five factors. In fact, each of the Dark Triad constructs is strongly negatively correlated with Honesty–Humility (Lee & Ashton, 2005). Early research (e.g., de Vries, de Vries, & Born, 2011; Holtrop et al., 2014) investigating Honesty–Humility in the university context demonstrates that it does predict counterproductive academic behaviors.

There are a number of relevant constructs that may moderate personality–academic dishonesty relationships. First, given that women have been found to cheat less than men (e.g., Whitley, Nelson, & Jones, 1999), gender may moderate the relationship between personality and cheating. Due to gender differences in socialization and moral reasoning (Whitley et al., 1999), personality traits may indeed function differently for males and females with respect to academic dishonesty. Next, it may be useful to examine the extent to which other traits and constructs moderate Big Five-cheating relationships. Big Five personality traits/facets may interact with one another (e.g., Carlo, Okun, Knight, & de Guzman, 2005), other personality traits (e.g., Dark Triad, Honesty–Humility; Oh, Lee, Ashton, & de Vries, 2011), or cognitive ability (e.g., Postlethwaite, Robbins, Rickerson, & McKinniss, 2009). Research on cognitive buffering suggests that high levels of cognitive ability may mitigate the adverse effects of neuroticism or low conscientiousness (e.g., Perkins & Corr, 2006; Postlethwaite et al., 2009). For example, individuals with high levels of cognitive ability may be less likely to cheat even if they are low in agreeableness because they are better able to perceive the consequences of dishonest behavior for themselves and others. Finally, framing of scale items or instructions may moderate personality–academic dishonesty relationships. In the work (Shaffer & Postlethwaite, 2012) and academic (Holtrop et al., 2014) domains, research has found that contextualized personality measures, in which the scale items or instructions refer to a specific context (e.g., work, school), demonstrate stronger criterion validity than general measures.

5.2. Implications for practice

Some researchers (e.g., Cizek, 1999; Whitley & Keith-Spiegel, 2002), however, have questioned the value of studying individual differences with respect to academic dishonesty. Cizek (1999, p. 124), for example, states that "the reader interested in preventing, detecting, or responding to cheating will almost certainly not make much progress toward those goals by studying the demographic or psychological correlates of cheating." We respectfully disagree. Understanding individual difference variables predictive of academic dishonesty allows one to control for these effects when examining contextual influences. Likewise, understanding the characteristics of those most likely to cheat may allow academic institutions to design prevention, detection, or response strategies effective for those individuals.

Our results provide some impetus for practical considerations for academic institutions. There is a growing trend toward the use of noncognitive predictors in the academic admission process to achieve goals such as "increased minority admissions, improved prediction of student performance, and increased college retention of all students, but minorities in particular" (Thomas, Kuncel, & Credé, 2007, p. 636). Personality is one such noncognitive variable. For example, incorporating conscientiousness into the student selection process may result in higher academic performance (Poropat, 2009) and a lower incidence of academic dishonesty. Indeed, work organizations have a long history of utilizing personality data when making employee selection and promotion decisions. As the use of noncognitive predictors is a nascent trend in the academic arena, particularly with regard to academic dishonesty, institutions are urged to proceed cautiously. Most importantly, they must adopt valid measures and ensure their appropriate use and interpretation.

Alternatively, there are a variety of interventions to reduce cheating. To date, most of these have focused on situational factors such as honor codes, penalties, or seating arrangements. However, academic institutions may also consider appropriate interventions targeted toward specific individual differences. For example, low conscientiousness has been linked to a variety of risky health

behaviors (Bogg & Roberts, 2004). Researchers in public health are just beginning work on interventions to reduce the impact of low conscientiousness (Chapman, Hampson, & Clarkin, 2014; Magidson, Roberts, Collado-Rodriguez, & Lejuez, 2014). Hampson, Edmonds, Goldberg, Dubanoski, and Hillier (2013), p. 928 note that "in childhood when personality is least stable, intervening to increase conscientiousness (e.g., by teaching broadly applicable self-control strategies) may lead to a wide range of downstream benefits on health. In adulthood, when traits are less malleable, training specific behaviors to compensate for low levels of conscientiousness may be more effective." Thus, interventions specific to individual differences related to academic dishonesty should consider the developmental stage of the student. Nevertheless, given that personality is a relatively stable individual difference, there may be limits to what institutions can accomplish with such interventions.

Mindfulness training offers one potential avenue to enhance ethical behavior in students with low conscientiousness. Mindfulness refers to one's tendency to pay attention to the present moment, on purpose and without judgment (Kabat-Zinn, 1994). Mindfulness is positively related to conscientiousness ($\rho = .44$; Giluk, 2009); the traits both focus on self-discipline and self-regulation as well as thoughtful and deliberate response (Giluk, 2009). Mindfulness has also been found to influence ethical decision making. Ruedy and Schweitzer (2010) found that participants high in mindfulness reported that they were more likely to act ethically, and indeed, in an experimental activity, mindful individuals cheated less. Importantly, mindfulness is a skill that can be learned and developed through instruction and practice (Kabat-Zinn, 1990).

5.3. Limitations

Our study is not without limitations. First, our meta-analytic results are based on a relatively small number of studies. However, our data set includes both published and unpublished studies from a number of different countries. Additionally, a meta-analysis of even a few studies provides more accurate relationship estimates than any individual primary study (Schmidt & Hunter, 2015). Second, we constructed artifact distributions for both personality and academic dishonesty measures, as many studies failed to report reliability data. However, the artifact distribution procedure has been shown to be generally accurate and is preferable to only correcting for sampling error (Schmidt & Hunter, 2015). Third, our results may not generalize to behavioral or experimental measures of cheating given that our sample was restricted to self-report criterion measures. Future research may want to examine this possibility when a sufficient number of studies is available.

6. Conclusion

Academic dishonesty remains a concern within secondary and higher education. In the last decade, there has been increasing interest in the role personality plays in explaining unethical academic behaviors. We meta-analyzed the relationship between each of the Big Five personality factors and academic dishonesty. As the first meta-analysis of these relationships, our study fills a void in the literature by providing more precise and accurate estimates than are currently available. Additionally, our study also provides a more comprehensive theoretical rationale for how each of the Big Five traits relates to cheating behavior than earlier work in this area. Our results indicate that conscientiousness and agreeableness are the strongest Big Five predictors, with both factors negatively related to academic dishonesty. As such, our review contributes to a better understanding of the individual factors that influence unethical behavior and underscores the utility of personality for researchers and educators who are concerned with cheating. However, much remains to be done to fully understand the role of personality in this domain.

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