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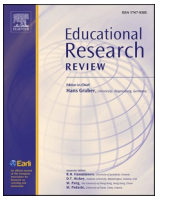

Review

Academic dishonesty and its relations to peer cheating and culture: A meta-analysis of the perceived peer cheating effect

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ABSTRACT

Academic cheating is a worldwide problem, which is exacerbated by perceived peer cheating. The present review of the literature quantitatively examined this *perceived peer cheating effect*. This meta-analysis included studies reporting correlations between students' own cheating and their perception of cheating in peers. The sample consisted of 43 effect sizes (38 studies) based on a total sample size of 24,181 demographically diverse participants from multiple countries (65% female) from papers published from 1941 to 2021. Results showed a perceived peer cheating effect of intermediate effect size (r = 0.37, 95% CI = 0.35 to 0.39), and that perceived peer cheating is among one of the strongest factors known to be associated with students' academic cheating. Moderator analyses using country level measures revealed this effect to be stronger in cultures that are high in power distance, collectivism, long-term orientation, restraint, and low in uncertainty avoidance and religiosity. The present findings indicate that the behavior of peers plays an important role in students' academic cheating, suggesting that effective strategies to promote academic integrity will need to consider peer influences as well as the culture in which students are socialized.

1. Introduction

Academic dishonesty is a serious problem worldwide that has negative consequences for individuals, institutions, and society at

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large (Anderman & Murdock, 2011; Cizek, 1999; Lupton et al., 2000; Murdock & Anderman, 2006; Nucci & Turiel, 2009; Sims, 1993). It is defined as intentionally carrying out forbidden behaviors to gain an unfair advantage in an academic context (Zhao et al., 2021), and it includes behaviors such as cheating on examinations, copying others' homework or assignments, and plagiarism (Anderman & Murdock, 2011; Cizek, 1999; Rettinger, 2017; Waltzer & Dahl, 2020; Waltzer et al., 2021). The present study focused on the link between students' academic dishonesty and their perception of cheating behavior in peers, which we call *the perceived peer cheating effect*.

Scientific research on academic dishonesty began in the early 1900s (e.g., Barnes, 1904; Hartshorne & May 1928; Voelker, 1921) shortly after educational research was established as a scientific discipline. Since then, researchers have investigated the prevalence of academic dishonesty and the factors that are associated with it. Peer socialization has emerged as a particularly important influence, and it is a key component of several theoretical approaches (e.g., Haynie & Osgood, 2005).

One theoretical approach that points to the importance of peers in understanding academic dishonesty is social learning theory (Bandura, 1986, 1989). This theory posits that many human behaviors and attitudes are learned through the process of observational learning. This account suggests that a person who witnesses socially significant individuals engaging in and benefiting from a behavior is more likely to engage in similar behaviors themselves, even if the behavior violates societal norms (O'Rourke et al., 2010). Thus, according to this theory, students will be more likely to cheat if they observe their peers engaging in academic cheating.

Another theoretical approach which points to the importance of peers in understanding academic dishonesty is neutralization theory. According to this theory, individuals adopt neutralization techniques to justify violating social norms in order to maintain a positive self-image (e.g., Pulvers & Diekhoff, 1999; Rettinger & Kramer, 2009; Sykes & Matza, 1957). One neutralization technique that is especially common in cheating contexts is the notion that "everyone else is doing it" (e.g., Haines et al., 1986). This neutralization technique reduces or displaces one's own responsibility by attributing the causes of behavior to others or to external factors (Stephens, 2017). Thus, when students observe cheating among their peers, they may use it to justify their own cheating. However, it should be noted that neutralizing ones' moral concerns does not necessarily mean that individuals are disengaging from moral principles about honesty and integrity (Waltzer & Dahl, 2022). For example, after using neutralization to justify their own cheating, most students still evaluate their past cheating behaviors negatively.

A third theoretical approach focuses on academic motivation from a social-cognitive perspective. For example, Anderman and Koenka (2017) proposes that cheating is influenced by one's goals, competence beliefs, and perceptions of the costs associated with cheating. This approach also leads to the prediction that there should be a perceived peer cheating effect because students who perceive cheating to be common may believe they are at a competitive disadvantage if they do not cheat and may believe that the consequences of cheating are low if a lot of people get away with doing so.

To date, many individual empirical studies have found that the perception that one's peers are cheating (which we will refer to as *perceived peer cheating* for short) is positively correlated with student's own academic cheating (Ghanem & Mozahem, 2019; Hard et al., 2006; McCabe & Trevino, 1993, 1997; Meiseberg et al., 2016; Whitley, 1998). Several narrative reviews have also concluded that perceived peer cheating is one of the most important factors in academic dishonesty (see Anderman & Murdock, 2011 and Cizek, 1999, for examples). Although there have been several meta-analyses on academic dishonesty (Cuadrado et al., 2021; Giluk & Postlethwaite, 2015; Krou et al., 2020; Lee et al., 2020; Paulhus & Dubois, 2015; Whitley, 1998; Whitley et al., 1999), none have specifically examined its associations with perceived peer cheating.

The present study aimed to provide the first quantitative analysis of the perceived peer cheating effect. We had two primary goals. First, we estimated the size of the perceived peer cheating effect by integrating the relevant empirical findings from studies conducted in many countries. Many existing studies have reported a significant correlation between students' academic dishonesty and their perception of peer cheating. It is necessary to conduct a meta-analysis not only to synthesize quantitively the existing findings and to rule out potential publication bias, but also to provide a statistical estimation of the effect size of the perceived peer cheating effect. Such an estimation will allow for comparing the relative importance of the perceived peer cheating to other factors (e.g., personality, motivation), the effect sizes of which have already been meta-analyzed (e.g., Krou et al., 2020; Lee et al., 2020).

Second, we investigated potential factors that moderate the relations between perceived peer cheating and self-cheating, or the perceived peer cheating effect. Although we examined a wide range of moderating factors, cultural values were of central interest because many theoretical accounts point to their role in social development (e.g., Hinde, 1987). More specifically, there is strong evidence that cultural values can moderate the influence that peers have on one's behavior (e.g., Liu et al., 2017). Here we specifically examined whether cultural values at the country level moderate the perceived peer cheating effect.

Although prior research has looked at the perceived peer cheating effect among individuals from different cultural backgrounds (Chapman & Lupton, 2004; Cicognani, 2019; McCabe et al., 2006; Salter et al., 2001), none has examined specific cultural values that prior theoretical and empirical work suggests might be important in this context (e.g., Aljurf et al., 2019; Chen et al., 2015; Zhang & Yin, 2019). To fill this gap in the literature, we focused on six specific cultural values that are largely derived from theoretical and empirical work in cultural psychology (Hofstede, 1980; Inglehart & Baker, 2000; Minkov, 2007; Triandis, 1995).

The first of these cultural dimensions is individualism-collectivism. It is well established that in collectivist cultures such as China and Japan there is a greater focus on the goals of the group, whereas in individualistic cultures such as United States and Canada there is a greater focus on self-reliance and independence (Hofstede, 1980, 2001; Hofstede et al., 2010). There is evidence that people from collectivist societies are more influenced by peer behaviors because they tend to be more motivated to follow group norms than are people from individualistic societies (Hofstede, 1980; Liu et al., 2017; Oyserman et al., 2002; Triandis, 1995). However, another possibility is that students from collectivist cultures may be more motivated than students from individualistic cultures to enforce accepted social norms by acting with integrity in response to the perceived threat that their peers may be violating these norms.

The second cultural dimension is power distance, or the extent to which it is socially recognized and accepted that power is

unequally distributed in the institutions or organizations. Individuals from high power distance cultures tend to value dependence relationship, while those from low power distance cultures have a limited dependence relationship (Hofstede et al., 2010). Thus, students from high power distance cultures may be more influenced by their peers than students from low power distance cultures. However, an alternative prediction is that in high power distance cultures, individuals are influenced by their superiors who have more power rather than by their peers who have a similar power level. Consequently, students from high power distance cultures may be less influenced by their peers than those from low power distance cultures.

The third cultural dimension is long-term/short-term orientation, or the extent to which individuals tend to focus on the future or the present (Hofstede et al., 2010; Hofstede & Minkov, 2010). Individuals from cultures with a long-term orientation tend to focus on whether their current behaviors will have a significant impact on their well-being in the future, whereas individuals from cultures with short-term orientation tend to focus on the immediate consequences of their behaviors. It is well established that individuals from cultures with a short-term orientation tend to view peer relationships as fluid and changeable, and are more inclined to withdraw from relationships that do not serve their immediate needs, whereas individuals from cultures with a long-term orientation tend to consider peer relationships as stable (Cialdini et al., 1999; Oyserman et al., 2002). Thus, people from a culture with a long-term orientation might be inclined to change their own behavior to stay in alignment with peers, whereas people from a culture with a short-term orientation might be more influenced by their peers if it serves the immediate needs of friendship maintenance.

The fourth cultural dimension we examined was indulgence-restraint. Indulgent societies place a greater emphasis on happiness, freedom of choice, and leisure, whereas restrained societies emphasize the regulation of people's behavior via social norms (Hofstede et al., 2010). This dimension has been found to be related to the cultural looseness-tightness construct (Masuda et al., 2020; Uz, 2015). There is evidence that restrained societies are tighter and to have stronger social norms than indulgent societies (Hofstede et al., 2010; Uz, 2015). Restrained societies maintain strong values of group uniformity, solidarity, and homogeneity, whereas there is greater tolerance of variation in indulgent cultures (Gelfand et al., 2011; Triandis, 1990). Thus, people in restrained cultures may be more inclined to behave in ways that conform to the norms of the affiliated group than those from indulgent cultures. Alternatively, it is possible that individuals from restrained cultures may be less influenced by peers who violate social rules.

The fifth cultural dimension we examined is uncertainty avoidance, which is defined as the degree to which people feel threatened by ambiguous situations and unexpected risks (Hofstede et al., 2010). People in strong uncertainty avoidance societies tend to minimize risks and avoid the unexpected, whereas those in weak uncertainty avoidance societies are less risk averse. One way those in strong uncertainty avoidance societies avoid risk is by conforming to the behaviors of others (McCabe et al., 2002; Nouri & Traum, 2011). Thus, people from strong uncertainty avoidance societies may be more influenced by their peers than those from weaker uncertainty avoidance societies (Young, 2013). Alternatively, people from strong uncertainty avoidance societies may be less influenced by their peers because they rely more on what they perceive the costs and benefits to be than on what they think their peers are doing.

The sixth cultural dimension we examined was religiosity that includes religious beliefs and attitudes (King & Furrow, 2004). Some prior work suggests that individuals from societies with high religiosity are more likely to engage in norm-conforming behaviors than individuals from societies with low religiosity (e.g., Scales & Leffert, 2004). Nasim et al. (2007) further found that there was a significant protective effect of religiosity on social and academic problems within the context of negative peer behaviors. Given these findings, students from high religiosity cultures may be less influenced by perceived peers' cheating behaviors than students from low religiosity cultures because the former's behaviors are more strongly guided by religious beliefs and attitudes than by peers. However, it may also be that individuals from high religiosity cultures are less affected by perceived peer cheating because they are more likely to rely on their religious beliefs as an internal reference when faced with conflict situations.

To estimate the moderating effects of these six cultural dimensions, we for the first time used country level measures to assess the association between the perceived peer cheating effect and cultural values. More specifically, measurements of five cultural dimensions scales came from the Hofstede National Culture Dimension Indexes (Hofstede, 2001; Hofstede et al., 2010). We used them to characterize dimensions of the different countries in which the existing studies were conducted: individualism-collectivism, power distance, long-term/short-term orientation, indulgence-restraint, and uncertainty avoidance. We also used the Gallup International Religiosity Index (Gallup International Survey, 2014) to characterize the sixth cultural dimension: a country's religiosity.

Based on a review of the literature, we hypothesized that perceived peer cheating would be positively correlated with students' academic dishonesty (Anderman & Murdock, 2011; Cizek, 1999; Crown & Spiller, 1998). Based on the extensive literature about cross-cultural differences in peer relationships (Chapman & Lupton, 2004; Cicognani, 2019; McCabe et al., 2006; Salter et al., 2001), we also hypothesized that this association is moderated by these six cultural dimensions.

2. Method

2.1. Literature search

Between May 2020 and December 2021, we conducted an extensive search of relevant published and unpublished literature. We used three strategies to identify relevant publications. First, computerized searches in psychology, education, and other disciplines were conducted for both published and unpublished literature (e.g., dissertations, conference papers, research posters, and book chapters) through multiple electronic databases. The inclusion of published and unpublished papers served to address, to some extent, the file drawer problem (Rosenthal, 1979). These electronic databases included PsycINFO, ERIC, Web of Science, Taylor & Francis, SpringerLink, Wiley Online Library, Google Scholar and CNKI (China National Knowledge Infrastructure). We also searched a second round on these electronic databases to seek out more studies from different countries, to ensure that the geographic distribution of the

included subjects would be as wide as possible. For the unpublished literature (e.g., dissertations, conference papers, research posters, and book chapters), we searched through ProQuest Dissertations and Theses. The following keywords were used to conduct the search: academic cheating, academic dishonesty, academic integrity, academic misconduct, unethical academic behavior, plagiarism, cheating, cheat, dishonesty, and honesty. Second, we examined the reference lists from the existing narrative reviews (e.g., Anderman & Murdock, 2011; Bucciol & Montinari, 2019; Cizek, 1999; Crown & Spiller, 1998; Whitley, 1998) to identify any papers that were not found using the first strategy. Third, we examined the studies that have been included in the existing meta-analysis papers that were not identified by the first two strategies (i.e., Cuadrado et al., 2021; Giluk & Postlethwaite, 2015; Krou et al., 2020; Lee et al., 2020; Paulhus & Dubois, 2015; Whitley, 1998; Whitley et al., 1999). We also examined the reference lists and citations of all the studies cited above to search for ones we had missed.

Our systematic search yielded 1,580 records. Preliminary assessments of these records led to the elimination of many irrelevant

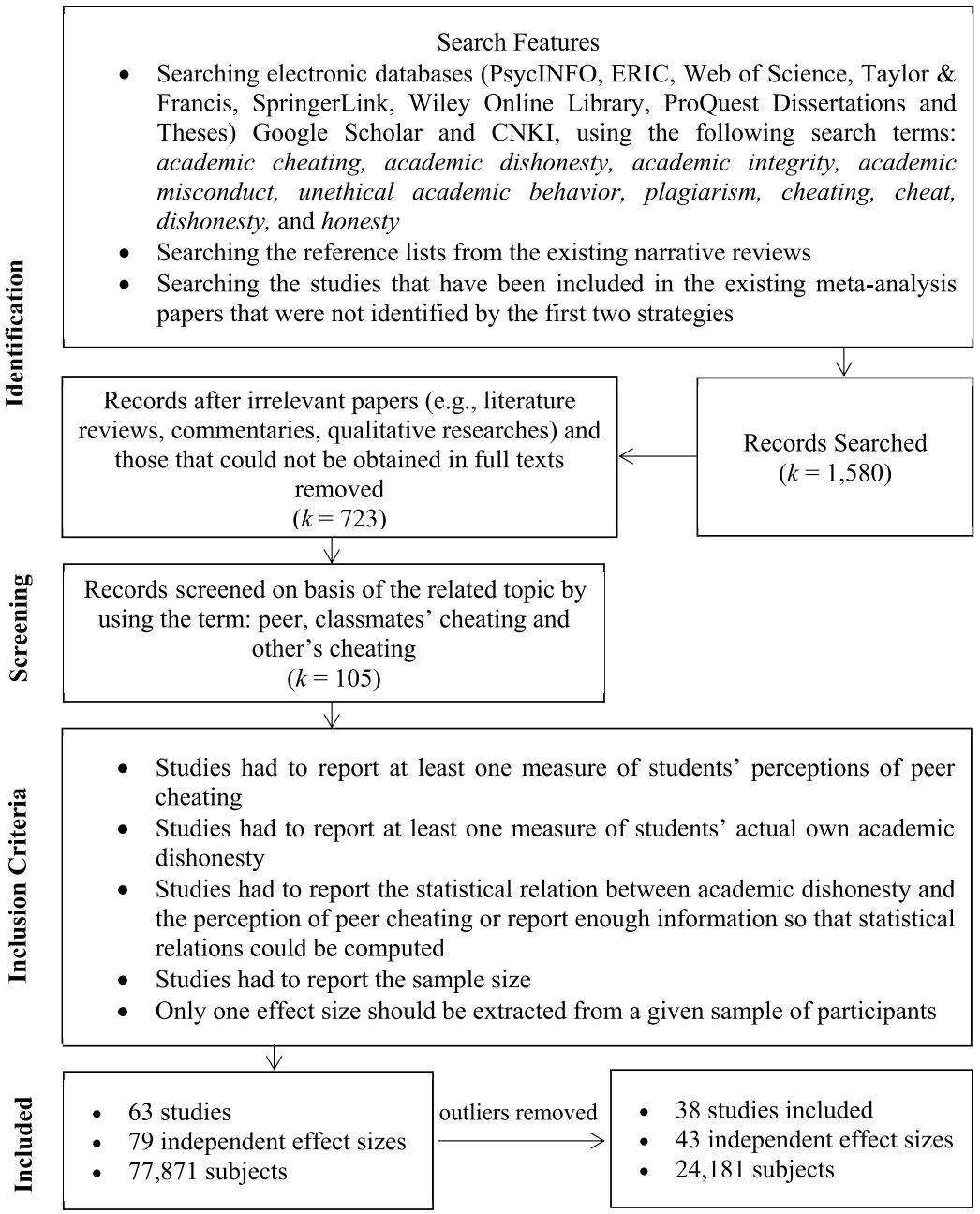

Fig. 1. Flow chart of the literature search and study selection procedure.

papers (e.g., literature reviews, commentaries, qualitative research) and those that could not be obtained as full texts. After excluding these papers, we were left with 723 studies. Detailed records were developed for each of these studies that included the following information: (a) study characteristics (author, year, title, journal, publication status, region in which studies conducted); (b) sample characteristics (sample size, educational level, number of females and males); (c) information referring to academic dishonesty (research method, correlates of academic cheating, type of academic dishonesty). We identified 105 studies that specifically examined the association between academic dishonesty and perceived peer cheating by using the following keywords based on 723 studies: peer, classmates' cheating, and others' cheating. We further narrowed down the number of studies to 63 after applying the following inclusion criteria:

(1) Studies had to report at least one measure of students' perceived peer cheating. We excluded 13 studies for not reporting any such measures.
(2) Studies had to report at least one measure of students' actual own academic dishonesty. We excluded nine studies which only reported students' attitude or intention toward academic dishonesty.
(3) Studies had to report the statistical relation between academic dishonesty and perceived peer cheating or report enough information so that statistical relations could be computed. We excluded 21 studies on this basis.
(4) Studies had to report the sample size. We excluded one study for not reporting the sample size.
(5) Only one effect size should be extracted from a given sample of participants. We excluded three studies for overlapping participants because the authors used the same dataset to publish three papers.

The 63 studies that met inclusion criteria included a total of 77,871 subjects and yielded 79 independent effect sizes. After removing outliers based on assessing the extend of heterogeneity of the 79 effect sizes by using Q and I^2 statistics (see below), we obtained a final set of 43 effect sizes (38 studies) based on a total sample size of 24,181 subjects from papers published from 1941 to 2021.

See Appendix A and Table A1for the studies included in the meta-analysis. See Fig. 1 for the literature search and study selection procedure.

2.2. Coding procedure

Two graduate students independently coded each of the studies. The interrater reliabilities for the coded variables and the effect sizes were both 100%. We selected the correlation coefficients as the effect size index to assess the relation between academic dishonesty and perceived peer cheating. We coded the correlation coefficient r as positive when the report of academic cheating increased as perceived peer cheating increased.

Among the studies included in the meta-analysis, a total of 65 effect sizes were obtained from studies that reported original correlation coefficients directly. For those studies using regression analysis without reporting correlation coefficients ($k = 5$), we converted standardized β coefficients to r (Peterson & Brown, 2005). We excluded seven studies that only reported unstandardized β coefficients as they are rarely meta-analyzed (Van Rhee et al., 2015). For studies using multiple statistical methods (e.g., reported both correlation coefficient and standardized β coefficient), we gave priority to the correlation coefficients, following the suggestion of Peterson and Brown (2005). Some studies used t-tests or F tests ($k = 3$) to compare the perceptions of peer cheating for cheaters versus non-cheaters. Some studies also conducted chi-square tests ($k = 4$) for attitude towards each peer cheating behavior question and the self-reported academic cheating behavior to determine if the two variables are related. Because some studies only reported group-level comparisons between students' own academic cheating and their perceptions of peer cheating, we converted standardized mean differences (Cohen d) to biserial correlations ($k = 1$). In these cases, we used a web application to calculate and transform the effect size (computation of different effect sizes such as d, f, r, and transformation of different effect sizes: https://www.psychometrica.de/effect_size.html#transform).

Several studies contained multiple measures of academic dishonesty or perceived peer cheating, or reported different correlation coefficients without aggregating them into a composite correlation coefficient. For example, Yang (2012) examined academic dishonesty in terms of fraudulence, falsification, delinquency and plagiarism. In these cases, we calculated the composite effect size by using the Fisher z transformation ($k = 1$) (Borenstein et al., 2009).

For the studies not reporting the statistical relation between academic dishonesty and perceived peer cheating or lacking enough information to calculate the effect size ($k = 22$), we contacted the authors in an effort to obtain the original data. Although most did not reply ($k = 17$), several authors responded that there was no further data available ($k = 3$). We received the original data sets from two authors, and added them to our records (Bucciol et al., 2017; Mensah et al., 2018).

2.3. Analysis of moderators

The aim of the moderator analysis was to explore a potential interpretation for the variance in effect sizes (Cooper et al., 2009). Detailed information about moderator variables in each study is shown in Appendix A (see Table A2).

Of primary interest was examining the role of the cultural values: individualism-collectivism, power distance, long-term/short-term orientation, indulgence-restraint, uncertainty avoidance, and religiosity in moderating the perceived peer cheating effect. It should be noted that we also obtained the index for the sixth Hofstede National Culture Dimension Index-masculinity-femininity. However, because we did not have any theoretical or empirical basis for predicting the moderating role of this dimension, we only

report these results in the appendix. There were no studies measuring these variables at the individual level, so we obtained country-level indexes as moderators, which were all continuous variables. For the first five cultural values, we used scores from Geert's Database (http://geert-hofstede.com/) for countries in which the studies were carried out. We used the Gallup International Religiosity Index (Gallup International Survey, 2014) to measure the religiosity of a country. Three studies were excluded from this analysis because they were conducted in multiple countries and did not include separate effect sizes for each country.

We included four additional moderator variables: geographical region, source of data, academic dishonesty type, and year of publication. We coded geographical region into two levels: North America (e.g., the United States and Canada; $k = 25$) and Others (i.e., outside North America; $k = 18$) as about half of the studies meeting the inclusion criteria were conducted in North America. We coded source of data as collected in the classroom ($k = 15$) or out of the classroom, such as an online survey ($k = 24$). Four studies were excluded from this analysis because this information was not reported. For academic dishonesty type, we used two different classification methods: exam cheating versus all other cheating, as well as individual cheating versus collaborative cheating. First, we coded academic dishonesty type into two levels: cheating on some form of test ($k = 6$), and cheating on homework or other assignments ($k = 2$). Thirty studies that assessed both of these types of academic dishonesty were excluded from this analysis because separate effect sizes were not reported. Five studies that did not identify the academic dishonesty type were also excluded from this analysis. We coded academic dishonesty type into another two levels: individual cheating ($k = 4$), and collaborative cheating ($k = 2$). Thirty-seven studies that assessed both of these types of academic dishonesty were excluded from this analysis because separate effect sizes were not reported. We coded publication year as the continuous variable. No studies were excluded from this analysis. No studies reported the effect sizes for males and females separately, so we were not able examine the moderating effect of gender on the perceived peer cheating effect. We also explored the effects of the following other potentially confounding national level moderator variables: GDP per capita, unemployment index, school enrollment (tertiary) index, adult literacy rate, adult education level (tertiary) index, and public spending on education (tertiary) index (see Appendix C for details).

2.4. Meta-analytic procedures

For the quantitative meta-analysis, we used the Meta-Essentials workbooks (Version 1.4) developed by Hak et al. (2016), and took the following five steps. First, we used the correlation coefficient to index effect sizes of the possible relation between academic

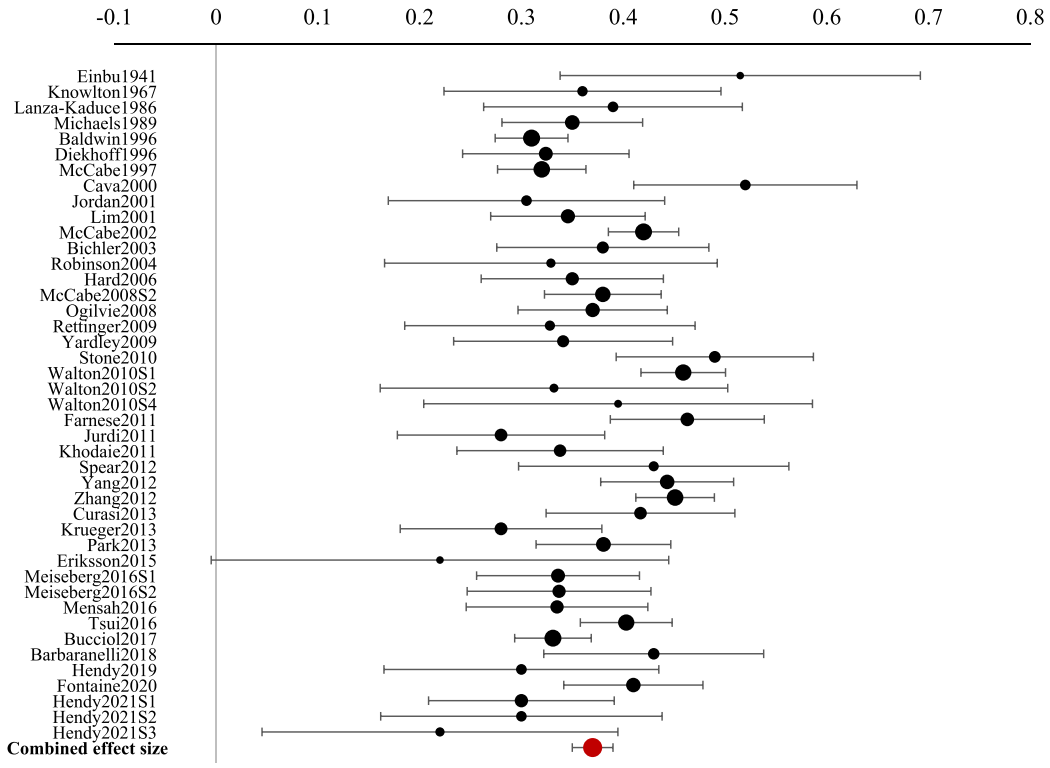

Fig. 2. Effect sizes of each included study (excluding outliers). Correlations (dots) and 95% confidence intervals are displayed for all effects entered into the meta-analysis. For studies with multiple independent samples, the result for each sample (S1, S2, etc.) is reported separately. The relative size of each bullet is proportional to the study's weight in generating the meta-analytic result.

Table 1
Mean effect sizes of the perceived peer cheating effect and other effect sizes from all other meta-analyses of academic dishonesty ($n = 51$).

Study	Variables	Number of studies	Number of effect size	Total sample size	Effect size (r)	95%*CI*		Significance with the present study	Effect size rank $n = 51$
						Lower	Upper		
Lee et al. (2020)	Neutralization	19	/	5,324	0.43	0.34	0.53	n.s.	1
Lee et al. (2020)	Psychopathy	4	/	1,088	0.40	−0.06	0.85	n.s.	2
Lee et al. (2020)	Impulsivity	5	/	2,484	0.39	0.14	0.65	n.s.	3
The present study	**Perceived Peer cheating**	**38**	**43**	**24,181**	**0.37**	**0.35**	**0.39**	/	**4**
Lee et al. (2020)	Marital status	3	/	1,254	−0.35	−0.65	−0.05	n.s.	4
Lee et al. (2020)	Morality/honesty	6	/	1,371	−0.31	−0.46	−0.16	n.s.	6
Krou et al. (2020)	Extrinsic goal	14	21	/	0.31	0.16	0.46	n.s.	6
Lee et al. (2020)	Social desirability	5	/	1,302	−0.30	−0.35	−0.24	n.s.	8
Lee et al. (2020)	Academic self-efficacy	3	/	1,546	−0.28	−0.44	−0.13	n.s.	9
Cuadrado et al. (2021)	Conscientiousness	/	77	31,473	−0.28	−0.31	−0.25	$p < .05$	9
Paulhus and Dubois (2015)	Cognitive ability	20	22	3,817	−0.26	−0.58	−0.04	n.s.	11
Lee et al. (2020)	Religiosity	3	/	1,240	−0.26	−0.47	−0.05	n.s.	11
Krou et al. (2020)	Attainment value	2	3	/	−0.26	−0.75	0.41	$p < .05$	11
Lee et al. (2020)	Conscientiousness	18	/	6,368	−0.25	−0.31	−0.17	$p < .05$	14
Lee et al. (2020)	Locus of control	3	/	667	−0.24	−0.41	−0.07	n.s.	15
Krou et al. (2020)	Achievement motivation	7	10	/	0.23	0.14	0.31	$p < .05$	16
Giluk and Postlethwaite (2015)	Conscientiousness	16	16	5,154	−0.22	−0.27	−0.16	$p < .05$	17
Lee et al. (2020)	Grade orientation	7	/	2,017	0.22	0.04	0.39	n.s.	17
Lee et al. (2020)	Learning orientation	7	/	2,017	−0.21	−0.29	−0.14	$p < .05$	19
Krou et al. (2020)	Mastery goal structure	11	16	/	−0.21	−0.27	−0.15	$p < .05$	19
Lee et al. (2020)	Greek membership	6	/	3,441	0.20	0.14	0.25	$p < .05$	21
Lee et al. (2020)	Narcissism	7	/	1,607	0.19	0.11	0.27	$p < .05$	22
Cuadrado et al. (2021)	Intelligence	/	55	30,052	−0.19	−0.22	−0.16	$p < .05$	22
Lee et al. (2020)	Age	20	/	11,836	−0.18	−0.27	−0.08	$p < .05$	24
Lee et al. (2020)	Academic performance	17	/	8,797	−0.17	−0.22	−0.11	$p < .05$	25
Krou et al. (2020)	Intrinsic motivation/ value	23	32	/	−0.17	−0.23	−0.1	$p < .05$	25
Krou et al. (2020)	Mastery approach goal	30	55	/	−0.17	−0.21	−0.14	$p < .05$	25
Krou et al. (2020)	Self-efficacy	27	67	/	−0.16	−0.2	−0.11	$p < .05$	28
Lee et al. (2020)	Type A	4	/	618	−0.15	−0.27	−0.03	$p < .05$	29
Krou et al. (2020)	Utility value	5	6	/	−0.15	−0.23	−0.07	$p < .05$	29
Giluk and Postlethwaite (2015)	Agreeableness	13	13	4,423	−0.14	−0.21	−0.08	$p < .05$	31
Cuadrado et al. (2021)	Agreeableness	/	56	24,436	−0.14	−0.16	−0.12	$p < .05$	31
Lee et al. (2020)	Agreeableness	16	/	5,253	−0.13	−0.2	−0.06	$p < .05$	33
Krou et al. (2020)	Internal locus of control	12	43	/	−0.13	−0.22	−0.04	$p < .05$	33
Lee et al. (2020)	Self-esteem	6	/	1,266	−0.11	−0.28	0.07	$p < .05$	35
Lee et al. (2020)	Gender	14	/	7,772	0.09	0.05	0.14	$p < .05$	36
Krou et al. (2020)	Performance avoidance goal	10	19	/	0.09	−0.02	0.19	$p < .05$	36
Krou et al. (2020)	Subjective task value	4	5	/	−0.08	−0.29	0.14	$p < .05$	38
Cuadrado et al. (2021)	Openness to experience	/	50	23,420	−0.08	−0.1	−0.06	$p < .05$	38
Giluk and Postlethwaite (2015)	Openness to Experience	13	13	4,424	−0.07	−0.12	−0.02	$p < .05$	40
Lee et al. (2020)	Openness to Experience	14	/	4,940	−0.07	−0.12	−0.01	$p < .05$	40
Lee et al. (2020)	Neuroticism	19	/	6,025	0.06	0.02	0.1	$p < .05$	42
Giluk and Postlethwaite (2015)	Extraversion	13	13	4,424	0.05	−0.01	0.11	$p < .05$	43

(*continued on next page*)

Table 1 (*continued*)

Study	Variables	Number of studies	Number of effect size	Total sample size	Effect size (*r*)	95%*CI*		Significance with the present study	Effect size rank *n* = 51
						Lower	Upper		
Krou et al. (2020)	Extrinsic motivation	7	7	/	0.05	−0.07	0.18	$p < .05$	43
Lee et al. (2020)	Extraversion	16	/	5,308	0.04	−0.03	0.11	$p < .05$	45
Giluk and Postlethwaite (2015)	Neuroticism	15	16	5,045	0.02	−0.03	0.07	$p < .05$	46
Krou et al. (2020)	Mastery avoidance goal	2	6	/	−0.02	−0.14	0.1	$p < .05$	46
Krou et al. (2020)	Performance goal structure	12	19	/	0.02	−0.1	0.13	$p < .05$	46
Cuadrado et al. (2021)	Extraversion	/	59	25,151	0.02	0	0.04	$p < .05$	46
Cuadrado et al. (2021)	Emotional stability	/	61	25,207	−0.01	−0.03	0.01	$p < .05$	50
Krou et al. (2020)	Performance approach goal	18	31	/	0.003	−0.05	0.06	$p < .05$	51

Note. 95% *CI* = 95% confidence interval of correlation (*r*). Effect sizes (*r*) without 95% confidence intervals were excluded from the table. Neutralization is a tendency to justify the unethical behavior as acceptable by rationalizing a variety of reasons. Slashes indicate missing information.

dishonesty and perceived peer cheating. Following our inclusion criteria and coding systems, we extracted only one effect size from a given sample of participants to obtain an independent effect size. Second, we examined potential outliers by applying the criteria which defined outliers based on the 95% *CI*. The presence of outliers may lead to a biased estimation of the amount of variability in actual effect sizes (Hunter & Schmidt, 2004). We defined outliers as studies in which the 95% *CI* did not overlap with the 95% *CI* of the average effect size (Cuijpers, 2016, pp. 95–113).

Third, we analyzed the effect sizes to use the random effects model that assumed that effect sizes were different from each other because of random error. Then we calculated the average effect size with its 95% *CI* and estimated the extent of heterogeneity by using *Q* and I^2 statistics. The I^2 statistic, which ranges from 0% to 100%, is equal to the proportion of true variance between studies in total variance (see Borenstein et al., 2009). It is generally accepted that a percentage of I^2 of 25% represents low heterogeneity, of 50% represents moderate, and of 75% represents high heterogeneity (Higgins et al., 2003). After removing outliers using the 95% confidence intervals we found a moderate proportion of heterogeneity in the effect sizes, Q ($df = 42$) = 112.08, $p < .001$, $I^2 = 60.53\%$, enabling us to perform the moderating analyses with results that were sufficiently robust without being swayed by outliers.

Fourth, we used moderator analyses to examine potential categorical and continuous variables that might moderate the relation between academic cheating and perceived peer cheating. Fifth, we performed a set of analyses to address the possibility that publication bias might affect the true average effect size by concealing null or small effects. We used three different methods to detect potential publication bias: funnel plot with trim-and-fill, Rosenthal's fail-safe N test, and Egger's regression.

3. Results

3.1. Overall effects of perceived peer cheating

There were 38 studies that met all the inclusion criteria after excluding the outliers whose 95% *CI* was not within the range of average effect size's 95% *CI*. These studies yield 43 effect sizes based on a total sample size of 24,181 subjects. For detailed information, including the study characteristics, sample characteristics, moderator characteristics and effect sizes of studies included in this meta-analysis, see Table A1 and Table A2 in Appendix A.

The meta-analytic average effect size was significant ($r = 0.37$, 95% $CI = 0.35$ to 0.39, $p < .001$). According to Cohen (1988), this effect size is intermediate. When including all the aberrant effect sizes, the overall effect of this meta-analysis did not change significantly ($r = 0.40$, 95% $CI = 0.35$ to 0.44, $p < .001$). After excluding the outliers, there was only one effect size (2.33%) that was not significantly different from zero. The remaining 42 effect sizes (97.67%) were significantly distinct from zero and positive (Fig. 2). Thus, these findings were consistent with our expectations, suggesting the existence of a significant perceived peer cheating effect whereby students tend to engage in academic dishonesty to a greater extent when they observe more cheating behavior among their peers.

We also statistically compared the mean effect size of the perceived peer cheating effect with those of other factors that have been examined in the existing meta-analysis studies (Cuadrado et al., 2021; Giluk & Postlethwaite, 2015; Krou et al., 2020; Lee et al., 2020; Paulhus & Dubois, 2015; Whitley, 1998; Whitley et al., 1999). These included 50 effect sizes involving 36 factors related to personality, attitude, and demographics (Note that some effect sizes were examining the same factors). As shown in Table 1, the mean effect size of the perceived peer cheating effect was ranked fourth in terms of effect size, and did not differ significantly from the top three ranked factors: neutralization, psychopathy, and impulsivity. Further, the effect size of the perceived peer cheating effect was significantly higher than 27 of the factors.

It should be noted, however, that we excluded the meta-analyses by Whitley (1998) and Whitley et al. (1999) because they did not

provide 95% confidence intervals of their mean effect sizes. For this reason, we could not statistically compare the effect sizes found in their meta-analyses and the present one.

3.2. Moderator analyses

We computed the Pearson correlational coefficients of the cultural value indexes. As shown in Table 2, some of the indexes were highly correlated (e.g., individualism-collectivism vs. power distance; long-term/short-term orientation vs. indulgence-restraint), whereas others were moderately correlated (e.g., individualism-collectivism vs. religiosity) or not significantly correlated (e.g., indulgence-restraint vs. religiosity). We also computed related Pearson correlations between the cultural values and country variables. As shown in Table 3, the correlational coefficients were generally not high.

We then conducted the moderator analysis of these indexes on the perceived peer cheating effect. The results of all the moderators are shown in Fig. 3, and a summary of results of each cultural value is presented in Table 4. Six cultural values were all significant moderators of the perceived peer cheating effect (individualism-collectivism, power distance, long-term/short-term orientation, indulgence-restraint, uncertainty avoidance, and religiosity). These results revealed that the perceived peer cheating effect was stronger in cultures that tended to be high in collectivism, high in power distance, high in long-term orientation, high in restraint, and low in uncertainty avoidance and religiosity.

Results of other moderator variables are presented in Appendix C. They included the sixth Hofstede National Culture Dimension Index-masculinity-femininity, and the potentially confounding national level moderator variables of GDP per capita, unemployment index, school enrollment (tertiary) index, adult literacy rate, adult education level (tertiary) index, and public spending on education (tertiary) index. None of these were significant, suggesting that the perceived peer cheating effect was stable regardless of any of these country-level differences.

We found no significant effect of the other moderator variables. This included the region where the study was carried out, $Q^*(1) = 0.01$, $p = .939$: for studies that were conducted North America, the average correlation of the perceived peer cheating effect was $r = 0.37$, 95% $CI = 0.34$ to 0.40, and for studies conducted in other regions, the average correlation was $r = 0.37$, 95% $CI = 0.34$ to 0.40 (see Table 5). In addition, we found no evidence that the perceived peer cheating effect was significantly influenced by the source of data ($Q^*(1) = 0.0037$, $p = .951$): for studies that collected data out of the classroom, the average correlation was $r = 0.37$, 95% $CI = 0.34$ to 0.39, and for studies that collected data in the classroom, the average correlation was $r = 0.36$, 95% $CI = 0.32$ to 0.40. We also found that academic dishonesty type was not a statistically significant moderator ($Q^*(1) = 2.86$, $p = .091$): for studies that focused on cheating on some form of test, the average correlation was $r = 0.34$, 95% $CI = 0.30$ to 0.37, and for studies that focused on cheating on homework and other assignments, the average correlation was $r = 0.41$, 95% $CI = -0.12$ to 0.76. For another coding that divided cheating types into individual vs. collaborative cheating, academic dishonesty type was not a statistically significant moderator ($Q^*(1) = 1.52$, $p = .217$): for studies that focused on individual cheating, the average correlation was $r = 0.43$, 95% $CI = 0.35$ to 0.51, and for studies that focused on collaborative cheating, the average correlation was $r = 0.37$, 95% $CI = -0.24$ to 0.77. However, this result should be interpreted with caution because the cell sizes in each of the subgroups of academic dishonesty type were small (Williams, 2012). Finally, we found that the year of publication was not a significant moderator ($b = 0.00081$, $SE = 0.00066$, 95% $CI = -0.00052$ to 0.0021, $Q(1) = 1.50$, $p = .221$), suggesting that the perceived peer cheating effect was stable over time.

3.3. Publication bias analyses

3.3.1. Funnel plot with trim-and-fill

The trim-and-fill method is one of the main statistical methods and is based on the fixed-effect model (Duval & Tweedie, 2000). It is used to determine whether there is a publication bias whereby researchers fail to publish their papers because their results are inconsistent with the existing prevailing findings and views (e.g., file drawer problem; Iyengar & Greenhouse, 1988; Rosenthal, 1979). In other words, if there was a publication bias, the effect sizes of these papers would be missing in a meta-analysis, which would bias the conclusion. To counter this problem, the trim-and-fill method uses the existing effect sizes and their distributions to statistically estimate the number of missing publications and impute the extent of the missing effect sizes. This method uses the funnel figure to illustrate its findings. As shown in Fig. 4, the trim-and-fill method revealed that the distribution of the published effect sizes is nearly symmetrical and only one study was potentially missing due to publication bias (the green data point), suggesting that a publication

Table 2
Pearson correlations between the cultural values indexes.

Cultural values	Individualism-collectivism	Power distance	Long-term/short-term orientation	Indulgence-restraint	Uncertainty avoidance	Religiosity
Individualism-collectivism	–					
Power distance	−0.84**	–				
Long-term/short-term orientation	−0.74**	0.56**	–			
Indulgence-restraint	0.78**	−0.74**	−0.79**	–		
Uncertainty avoidance	−0.21	0.18	0.30	−0.39*	–	
Religiosity	0.65**	−0.54**	−0.57**	0.31	0.07	–

Note. Significance levels: **$p < .01$; *$p < .05$ (two-tailed).

Table 3
Pearson correlational coefficients between cultural values and country variables.

Cultural values	GDP per capita	Unemployment rate	School enrollment, tertiary	Adult literacy rate	Adult education level, tertiary	Public spending on education, tertiary
Individualism-collectivism	0.63**	0.24	0.46	0.70**	0.08	0.12
Power distance	−0.66**	−0.08	−0.56*	−0.63**	−0.19	−0.18
Long-term/short-term orientation	−0.17	−0.31	0.04	−0.05	−0.34	−0.18
Indulgence-restraint	0.44**	0.01	0.27	0.47*	0.57**	0.45*
Uncertainty avoidance	0.08	0.26	0.23	0.001	−0.43*	−0.38
Religiosity	0.02	0.32	−0.08	0.31	−0.51**	−0.31

Note. Significance levels: $^{**}p < .01$; $^{*}p < .05$ (two-tailed).

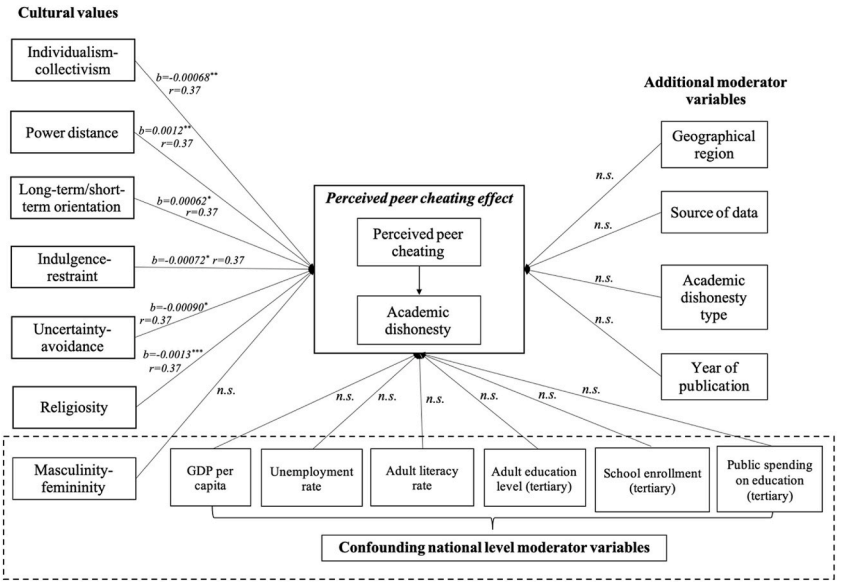

Fig. 3. Results of all the moderators of the perceived peer cheating effect. Moderators within the dotted box are reported in the Appendix. Beta coefficients and effect sizes are shown for each significant moderator. $^{***}p < .001$; $^{**}p < .01$; $^{*}p < .05$; *n.s.* = non-significant.

Table 4
Results of continuous moderator analyses for the relationship between perceived peer cheating and academic dishonesty.

Continuous variables		*k*	*r*	*b*	*SE*	95% *CI*		*Q*	*df*	*p*
						Lower	Upper			
Cultural values	Individualism-collectivism	42	0.37	−0.00068	0.00023	−0.0012	−0.00022	8.97	1	0.003
	Power distance	42	0.37	0.0012	0.00042	0.00037	0.0021	8.44	1	0.004
	Long-term/short-term orientation	43	0.37	0.00062	0.00024	0.00013	0.0011	6.49	1	0.011
	Indulgence-restraint	43	0.37	−0.00072	0.00035	−0.0014	−0.000020	4.29	1	0.038
	Uncertainty avoidance	42	0.37	−0.00090	0.00040	−0.0017	−0.00011	5.23	1	0.022
	Religiosity	40	0.37	−0.0013	0.00035	−0.0020	−0.00062	14.42	1	0.000
Year of publication		43	0.37	0.00081	0.00066	−0.00052	0.0021	1.50	1	0.221

Note. k = number of effect size; r = average effect size.

bias, if it existed, would not significantly affect the conclusion of our meta-analysis. To confirm this, we included the imputed effect size in the meta-analysis to obtain an adjusted mean effect size. We then compared it to the actual mean effect size without the imputation. We found that the two mean effect sizes were not significantly different from each other (adjusted mean effect size after imputation: $r = 0.39$, 95% $CI = 0.38$ to 0.40; actual effect size without imputation: $r = 0.39$, 95% $CI = 0.38$ to 0.41, $p < .05$), confirming that there was no evidence of publication bias.

3.3.2. Rosenthal's fail-safe N test

We conducted Rosenthal's fail-safe test (1979) and found that at least 45,886 studies would be needed to make the combined effect

Table 5
Results of categorical moderator analyses for the relationship between perceived peer cheating and academic dishonesty.

Categorical variables		*k*	*r*	95% *CI* for *r*		I^2	*Q*	p_Q	*Q**	*df*	*p*
				Lower	Upper						
Geographical region	North America	25	0.37	0.34	0.40	65.59%	69.74	0.000	0.01	1	0.939
	Others	18	0.37	0.34	0.40	58.98%	41.44	0.001			
	Combined	43	0.37	0.37	0.37	62.53%	112.08	0.000			
Source of data	Out of the classroom	24	0.37	0.34	0.39	59.33%	56.55	0.000	0.0037	1	0.951
	In the classroom	15	0.36	0.32	0.40	57.22%	32.73	0.003			
	Combined	39	0.37	0.36	0.37	59.07%	92.84	0.000			
Academic dishonesty type(code1)	Test	6	0.34	0.30	0.37	0.00%	3.98	0.552	2.86	1	0.091
	Homework	2	0.41	−0.12	0.76	53.39%	2.15	0.143			
	Combined	8	0.37	0.28	0.44	39.62%	11.59	0.115			
Academic dishonesty type(code2)	Individual	4	0.43	0.35	0.51	31.69%	4.39	0.222	1.52	1	0.217
	Collaborative	2	0.37	−0.24	0.77	60.37%	2.52	0.112			
	Combined	6	0.41	0.33	0.48	48.30%	9.67	0.085			

Note. Combined = combined effect size for each moderator analysis; Test = cheating on some form of test; Homework = cheating on homework and other assignments; *k* = number of effect size; *r* = average effect size; I^2 = the extent of heterogeneity; *Q* = variance based on sums of squares under the random effect model and actual weights of the individual studies to assess the heterogeneity in the given group; *Q** = variance based on sums of squares under the random-effects model within subgroups.

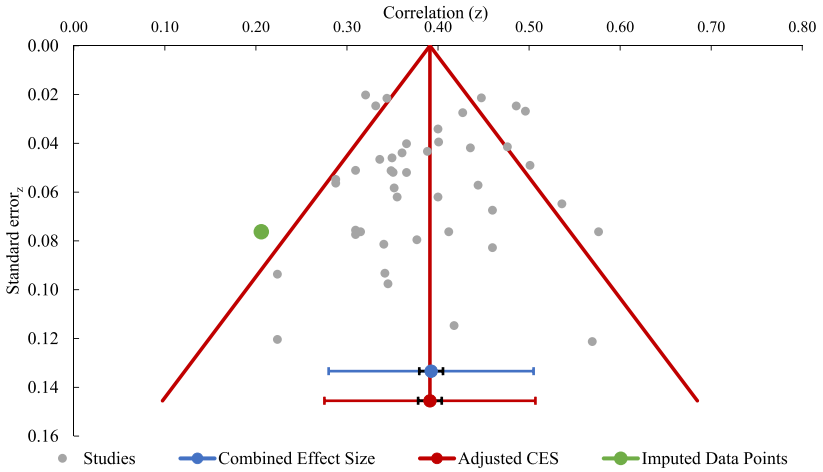

Fig. 4. Funnel plot with the trim-and-fill method in the meta-analysis. Grey dots represent each effect size from included studies; the blue dot represents combined effect size with its confidence interval (black line) and prediction interval (blue line); the red dot represents adjusted combined effect size with its confidence interval (black line) and prediction interval (red line); the red vertical line runs through the adjusted combined effect size and the corresponding lower and upper limits of the confidence interval represented by red diagonal lines. (For interpretation of the references to colour in this figure legend, the reader is referred to the Web version of this article.)

size statistically insignificant. Given this estimate, it is highly unlikely that there exists a publication bias, which is consistent with what was found by the trim-and-fill method.

3.3.3. Egger's regression

The Egger's regression was not significant ($b = -0.27$, $SE = 0.55$, 95% $CI = -1.38$ to 0.84, $t(41) = -0.49$, $p = .62$), again indicating the lack of a significant publication bias.

Taken together, the previous three analyses of publication bias suggest that there might be cases of unpublished papers due to low perceived peer cheating effects, but these possible unpublished papers ultimately did not significantly affect our estimation of the mean size of the perceived peer cheating effect.

4. Discussion

Academic cheating is a universal problem that researchers have been investigating for more than a century (Anderman & Murdock, 2011; Barnes, 1904; Cizek, 1999; Hartshorne & May 1928; Voelker, 1921; Whitley, 1998). Early theoretical work based on social learning theory and neutralization theory suggested that one important factor in determining whether students cheat is the extent to which their peers cheat (e.g., Hartshorne & May 1928; Voelker, 1921). The present study provides the first meta-analysis to

quantitatively synthetize this perceived peer cheating effect and identify key variables that moderate this effect.

Our first major finding was that the perceived peer cheating effect was significant and that its size, on average, was intermediate (Cohen, 1988). This perceived peer cheating effect could not be explained by publication bias or other factors that are not of theoretical interest, such as year of publication or the source of data (i.e., online vs. in-class survey). Further, this effect could not be explained by other national level measures such as GDP.

We also statistically compared the effect size of the perceived peer cheating effect with various other variables that have been investigated in previous meta-analyses (Cuadrado et al., 2021; Giluk & Postlethwaite, 2015; Krou et al., 2020; Lee et al., 2020; Paulhus & Dubois, 2015). We found that the perceived peer cheating effect was stronger than most other effects (e.g., age, gender, conscientiousness, and achievement motivation; see Table 1 for details). Among all the existing effects that have been analyzed using meta-analysis and reported with 95% confidence intervals, only three showed larger effect sizes than perceived peer cheating: neutralization, psychopathy, and impulsivity. The effect size of perceived peer cheating was statistically indistinguishable from these factors, suggesting that perceived peer cheating is among the most important factors associated with academic dishonesty when we consider each variable's effect size individually. However, it should be noted that perceived peer cheating may interact with other variables (e.g., school culture, personality) to form an even stronger association with students' academic cheating.

Our second major finding was that the perceived peer cheating effect is moderated by the cultural environment in which the students are living. This was investigated by rating the countries in which the studies were conducted along cultural dimensions of Hofstede's cultural value model (Hofstede, 2011), and the countries' overall religiosity in addition to several potentially confounding moderators. These specific findings are discussed below.

We found that the perceived peer cheating effect was stronger in countries with collectivistic tendencies as compared to individualistic tendencies. This is consistent with a general finding that peers play greater socialization roles in cultures that emphasize collective interests, goals, and harmony (e.g., Triandis, 1990). In these cultures, adolescents and youths, who were the majority of the participants for this meta-analysis, are more likely to use their peers as a reference to learn values and norms as compared to their counterparts in individualistic cultures (e.g., Triandis, 1995).

The perceived peer cheating effect was stronger in cultures with high power distance than with low power distance. In high power distance cultures, individuals are often afraid of disagreeing with their peers and are more likely to show respect for authority (Hendy et al., 2021). Therefore, in academic situations, students in high power distance cultures are more likely to value peer association and thus align their behavior with their peers in terms of cheating.

The perceived peer cheating effect was stronger in countries with a long-term orientation than in countries with a short-term orientation. As mentioned above, it is well established that individuals from cultures with a long-term orientation tend to treat peer relationships as more permanent, and thus are more inclined to use their peers' behaviors as a reference for their own actions (e.g., Oyserman et al., 2002). Thus, people in these culture may be more likely to cheat if their peers cheat and are more likely to be honest if their peers are honest.

In line with our hypothesis, the perceived peer cheating effect was stronger in countries with restrained tendencies than with indulgent tendencies. As mentioned before, cultural tightness was positively correlated with cultural restraint. In restraint cultures, individuals face more pressure to conform to the group norms whereas, individuals in a loose and indulgent culture are less likely to be constrained by the norms (Hofstede et al., 2010). Thus, students from the more restrained societies tend to be influenced more by their peers' cheating behavior than those from the more indulgent societies. Using others to decide how to act is one strategy that is frequently used to reduce uncertainty (McCabe et al., 2002; Nouri & Traum, 2011; Salter et al., 2001). This is in line with our finding that the perceived peer cheating effect was stronger in countries with low uncertainty avoidance than with high uncertainty avoidance.

The perceived peer cheating effect was stronger in countries with low religiosity than with high religiosity, which again is consistent with our hypothesis. This may be because religious belief protects people from negative peer influences (e.g., Grier & Gudiel, 2011; Johnson et al., 2001). However, it is also possible that religious belief could impact people's willingness to accurately report on their own cheating (Rettinger & Jordan, 2005; Sutton & Huba, 1995), especially given that all of the studies in this meta-analysis relied on self-report methods (Bloodgood, Turnley, & Mudrack, 2010; Hadjar, 2017).

In addition to the role of cultural values, we also examined the effects of a range of other potential moderating factors, including geographical region, source of data, academic dishonesty type, and year of publication on the average effect sizes. Among these moderators, none was significantly moderating the perceived peer cheating effect. We also examined the moderating effects of other national level variables that reflect social and economic development levels (e.g., GDP per capita, unemployment index, public spending on education), and found that none significantly moderated the perceived peer cheating effect. These null findings suggest that the significant moderating effects of the five Hofstede National Culture Dimension Indexes might be indeed reflect the role of culture in moderating how students are influenced by peer cheating.

Our findings regarding the role of cultural values in moderating the relation between academic cheating and perceived peer behavior suggest that the current theoretical models must be modified to take into consideration the role of culture environments. Thus, they suggest that individual level causal factors such as social learning (Bandura, 1989; O'Rourke et al., 2010), neutralization (Haines et al., 1986; Stephens, 2017; Waltzer & Dahl, 2022), or social cognition (Anderman & Koenka, 2017), should be considered within the broader cultural context. In addition, although the present findings only document a significant role of cultural values in moderating the relation between perceived peer behavior and students' academic cheating, the role of cultural values may be much broader. For example, they may moderate the effects of other factors such as grade, gender, and achievement motivation (Chen, 2020; Krou et al., 2020; Nowell & Laufer, 1997; Whitley et al., 1999). Further, cultural values can play an important role in decisions about whether to engage in academic cheating (e.g., Hendy et al., 2021) which might amplify the perceived peer cheating effect. These possibilities could be explored by conducting additional meta-analyses, as well as new empirical research designed to assess the effects

of cultural environment.

5. Limitations and future directions

One limitation of the present research concerns the nature of the sample. Although the total sample size was large ($N = 24{,}181$), the estimation of the mean effect size of the relation between perceived peer behavior and academic cheating was based on a relatively small number of effect sizes ($k = 43$). It should be noted that there are more studies on the perceived peer cheating effect than those included in this meta-analysis. Some of these studies were excluded due to the fact that the effect sizes were either not reported or were reported in a non-standard fashion. It is thus advisable that future studies follow a standard procedure to report the necessary statistical results for future meta-analyses.

Another limitation is that the studies included in our meta-analysis all relied on self-reported measures of academic dishonesty. Given the possibility of social desirability response bias (e.g., Bernardi & LaCross, 2004), the actual level of academic dishonesty might be underestimated, which may have resulted in biased correlations. Further, although the present meta-analysis provides evidence that cultural values can explain a significant amount of variance in the correlations between self-cheating and perceived peer cheating, it is possible that some of the unexplained variance is spurious. The potential spurious correlation could be due to the fact that in each of studies included in this meta-analysis, the same participants responded to the self-cheating and peer cheating questions. To address both social desirability and spurious correlation problems, future studies should use different informants to provide data about these two variables. One way to do this would be to use questionnaires to measure participants' perception of peer cheating, and to use behavioral methods to measure their academic cheating behavior (see Cizek, 1999; Hartshorne & May 1928; Voelker, 1921; Zhao et al., 2020, for examples of behavioral methods to assess academic cheating).

A third limitation is that we only examined cultural influences at the country level. It will be important for future research to examine the role of culture at the participant level as well, given that there are individual differences within cultures in the extent to which different cultural values are internalized (Fischer & Schwartz, 2011; Leung & Cohen, 2011). Assessing cultural values of participants will also allow researchers to determine whether the same patterns of differences between cultures are also seen within cultures (Oyserman et al., 2002).

The present meta-analysis used Hofstede's indexes as proxies of cultural values at the country level because these indexes are the most widely used and validated to measure country level value differences (e.g., Reisinger, 2009; Yoo et al., 2011). Future research should also include other indexes, such as the World Value Survey (Inglehart, 1997), which provide representative assessments of similarities and differences between different countries, and how cultural values change over time. Another issue is that several of the Hofstede National Culture Dimension Indexes are highly correlated with each other (e.g., individualism-collectivism vs. power distance), suggesting that there may be a common cultural construct that underlies these dimensions, and in turn moderates the perceived peer cheating effect. Future studies will be needed to determine what this core construct might be, and the specific and unique contributions of each of the cultural dimensions. Ideally, such studies would use individual-level measures of cultural values.

Finally, nearly all studies on the perceived peer cheating effect to date have been correlational, which does not allow for a direct examination of whether perceptions of peer cheating have a causal effect on cheating. For example, it is possible that students who cheat are more able to detect misconduct in their peers or are motivated to perceive cheating to be more normal to justify their own behavior. Experimental research is needed to assess different possible causal relationships. For example, researchers could manipulate information about how common cheating is and examine whether this impacts actual cheating rates, similar to what has been done in studies of alcohol consumption (e.g., Turrisi et al., 2009). Another possibility would be to have peers model academic honesty or cheating, to determine the effects on students' cheating tendencies. Such studies are necessary not only for understanding the causal relations between various factors and the perceived peer cheating effect but also for providing insights about how to effectively reduce cheating.

6. Conclusion

The present meta-analysis examined the relation between students' self-reported cheating behavior and their perceptions of cheating by peers by analyzing data from 38 studies with up to 43 effect sizes and 24,181 participants. Results showed that the perceived peer cheating effect was significant and that the mean effect size was intermediate in magnitude (Cohen, 1988). When compared to all factors known be significantly associated with students' academic cheating, this effect size was among the strongest and it was significantly stronger than factors such as age, gender, conscientiousness, and achievement motivation. Further, moderator analyses revealed that the perceived peer cheating effect was stronger in cultures that were high in collectivism, high in power distance, high in long-term orientation, high in restraint, low in uncertainty avoidance, and low in religiosity. These findings suggest peers play a central role in students' academic cheating behavior, and that this role may differ as a function of cultural values. The present findings provide new insights about the key factors contributing to academic dishonesty, and suggest that effective strategies to promote students' academic integrity must consider both peers and culture.

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D.: Supervision, Writing - Review and Editing. **Lee Kang**: Conceptualization, Methodology, Data curation, Supervision, Writing - Review and Editing.

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Appendix A

Table A1
Descriptive characteristics for studies included in the Meta-analysis

Reference	*r*	*N*	Percent of females	Nation	Educational level	Research methods
Einbu1941	0.52	71	0.57317	USA	College	Survey
Knowlton1967	0.36	161	/	USA	College	Survey
Lanza-Kaduce1986	0.39	175	/	USA	College	Survey
Michaels1989	0.35	623	0.55	USA	College	Survey
Spalter1992	0.79	82	0.74	USA	College	Survey
McCabe1993	0.51	5904	0.62	USA	College	Survey
Graham1994	0.15	480	0.75	USA	College	Survey
Baldwin1996	0.31	2459	0.3776	USA	College	Survey
Diekhoff1996	0.32	464	0.595	USA	College	Survey
McCabe1997	0.32	1645	0.65	USA	College	Survey
Lersch1999	0.52	503	0.592	USA	College	Survey
Cava2000	0.52	175	0.4457	USA	College	Survey
Jordan2001	0.31	175	0.68	USA	College	Survey
Lim2001	0.35	521	0.7394	Singapore	College	Survey
Harding2002	−0.10	349	0.172	USA	College	Survey
McCabe2002	0.42	2188	0.67	USA	College	Survey
Bichler2003	0.38	263	/	USA	College	Survey
Hrabak2004	0.19	827	0.642	Croatia	College	Survey
Robinson2004	0.33	118	0.551	USA	College	Survey
Stephens2004	0.53	337	0.54	USA	College	Survey
Vowell2004	0.67	674	0.489	USA	College	Survey
Rocha2005	0.31	2675	/	Portugal	College	Survey
Hard2006	0.35	373	0.5425	USA	College	Survey
McCabe2006	0.28	3455	/	USA & Canada	College	Survey
Stephens2007	0.13	1305	0.586	USA	College	Survey
McCabe2008S1	0.30	10525	0.58	USA	College	Survey
*McCabe2008*S2	0.38	860	/	Lebanon	College	Survey
Ogilvie2008	0.37	536	0.7425	Australia	College	Survey
Rettinger2009	0.33	154	0.49	USA	College	Survey
Yardley2009	0.34	263	0.711	USA	College	Survey
Stone2010	0.49	241	/	USA	College	Survey
Walton2010S1	0.46	1390	1	USA	College	Survey
Walton2010S2	0.33	108	1	USA	College	Survey
Walton2010S3	0.52	978	0	USA	College	Survey
Walton2010S4	0.40	79	0	USA	College	Survey
Bourassa2011	0.20	373	/	USA	College	Survey
Farnese2011	0.46	419	0.606	Italy	College	Survey
Jurdi2011	0.28	318	0.68	Canada	College	Survey
Khodaie2011	0.34	297	/	Iran	College	Survey
Yi2011	0.15	830	/	China	College	Survey
Spear2012	0.43	149	0.443	USA	College	Survey
Taradi2012	0.20	432	0.713	Croatia	College	Survey
Yang2012	0.44	586	0.57	China(Taiwan)	College	Survey
Zhang2012	0.45	1641	0.822	China	College	Survey
Curasi2013	0.42	309	0.49	USA	College	Survey
Ellahi2013	0.20	450	0.451	Pakistan	College	Survey
Krueger2013	0.28	336	0.898	USA	College	Survey
Park2013	0.38	645	0.893	Korea	College	Survey
Ma2013	0.22	1097	0.5	China	College	Survey
Eriksson2015	0.22	72	0.694	Australia	College	Survey

(*continued on next page*)

Table A1 (*continued*)

Reference	*r*	*N*	Percent of females	Nation	Educational level	Research methods
Meiseberg2016S1	0.34	476	/	German	College	Survey
Meiseberg2016S2	0.34	374	/	German	College	Survey
Mensah2016	0.34	384	0.55	Ghana	College	Survey
Tsui2016	0.40	1329	0.607	China	College	Survey
Bucciol2017	0.33	2157	0.611	Italy	College	Survey
Ives2017	0.11	1127	0.723	Romania	College	Survey
Yang2017S1	0.60	368	/	China	College	Survey
Yang2017S2	0.60	237	/	China(Taiwan)	College	Survey
Barbaranelli2018	0.43	223	0.682	Italy	College	Survey
Gunawan2018	0.19	535	/	Indonesia	College	Survey
Mensah2018	0.24	344	0.429	Ghana	College	Survey
Cicognani2019	0.07	676	/	Europe & USA & Others	College	Survey
Hendy2019	0.30	178	/	France	College	Survey
Ives2019	0.74	1390	0.76	Moldova	College	Survey
Kobayashi2019	0.14	1271	0.534	Japan & USA	College	Survey
Maloshonok2019S1	0.83	1909	/	Russia	College	Survey
Maloshonok2019S2	0.53	1114	/	Russia	College	Survey
Maloshonok2019S3	0.72	1310	/	Russia	College	Survey
Maloshonok2019S4	0.65	1656	/	Russia	College	Survey
Maloshonok2019S5	0.56	4577	/	Russia	College	Survey
Maloshonok2019S6	0.62	2009	/	Russia	College	Survey
Maloshonok2019S7	0.73	1444	/	Russia	College	Survey
Maloshonok2019S8	0.66	1059	/	Russia	College	Survey
Fontaine2020	0.41	573	0.8482	Canada	College	Survey
Hendy2021S1	0.30	386	0.436	USA	College	Survey
Hendy2021S2	0.30	170	0.713	France	College	Survey
Hendy2021S3	0.22	117	0.646	Greece	College	Survey
Stephens2021S1	0.20	780	0.413	New Zealand	College	Survey
Stephens2021S2	0.20	608	0.4	New Zealand	College	Survey

Note. *r* = observed effect size; *N* = sample size; Slash = not reported; References in italics are those not considered in the final Meta-Analysis (i.e., outliers).

Table A2
Distribution of the moderator variables across the studies in Meta-Analysis

Reference	Geographical Region	Source of data	Academic dishonesty type (code1)	Academic dishonesty type (code2)	Individualism-collectivism	Power distance	Long-term/ short-term orientation	Indulgence -restraint	Uncertainty avoidance	Masculinity-femininity	Religiosity
Einbu1941	North America	during the class	exam	individual	91	40	26	68	46	62	60
Knowlton1967	North America	out of the class	null	null	91	40	26	68	46	62	60
Lanza-Kaduce1986	North America	during the class	exam	combined	91	40	26	68	46	62	60
Michaels1989	North America	during the class	combined	combined	91	40	26	68	46	62	60
Spalter1992	North America	out of the class	combined	combined	91	40	26	68	46	62	60
McCabe1993	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Graham1994	North America	during the class	combined	combined	91	40	26	68	46	62	60
Baldwin1996	North America	during the class	null	null	91	40	26	68	46	62	60
Diekhoff1996	North America	during the class	combined	collaborative	91	40	26	68	46	62	60
McCabe1997	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Lersch1999	North America	out of the class	combined	collaborative	91	40	26	68	46	62	60
Cava2000	North America	during the class	combined	combined	91	40	26	68	46	62	60
Jordan2001	North America	out of the class	combined	combined	91	40	26	68	46	62	60

(*continued on next page*)

Table A2 (*continued*)

Reference	Geographical Region	Source of data	Academic dishonesty type (code1)	Academic dishonesty type (code2)	Individualism-collectivism	Power distance	Long-term/ short-term orientation	Indulgence -restraint	Uncertainty avoidance	Masculinity-femininity	Religiosity
Lim2001	Others	during the class	combined	combined	20	74	72	46	8	48	null
Harding2002	North America	during the class	combined	combined	91	40	26	68	46	62	60
McCabe2002	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Bichler2003	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Hrabak2004	Others	out of the class	combined	combined	33	73	58	33	80	40	null
Robinson2004	North America	out of the class	exam	combined	91	40	26	68	46	62	60
Stephens2004	North America	during the class	combined	combined	91	40	26	68	46	62	60
Vowell2004	North America	during the class	combined	collaborative	91	40	26	68	46	62	60
Rocha2005	Others	during the class	exam	collaborative	27	63	28	33	104	31	null
Hard2006	North America	during the class	combined	combined	91	40	26	68	46	62	60
McCabe2006	North America	out of the class	combined	combined	null	null	null	68	null	null	null
Stephens2007	North America	out of the class	combined	combined	91	40	26	68	46	62	60
*McCabe2008*S1	North America	out of the class	combined	combined	91	40	26	68	46	62	60
McCabe2008S2	Others	out of the class	combined	combined	38	80	23	34	68	53	64
Ogilvie2008	Others	out of the class	homework	individual	90	38	21	71	51	61	37
Rettinger2009	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Yardley2009	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Stone2010	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Walton2010S1	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Walton2010S2	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Walton2010S3	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Walton2010S4	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Bourassa2011	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Farnese2011	Others	out of the class	combined	individual	76	50	61	30	75	70	73
Jurdi2011	North America	during the class	combined	combined	80	39	36	68	48	52	46
Khodaie2011	Others	null	combined	combined	41	58	14	40	59	43	null
Yi2011	Others	during the class	combined	combined	91	40	26	68	46	62	60
Spear2012	North America	during the class	combined	combined	91	40	26	68	46	62	60
Taradi2012	Others	during the class	combined	combined	33	73	58	33	80	40	null
Yang2012	Others	during the class	homework	individual	17	58	93	49	69	45	14
Zhang2012	Others	null	combined	combined	20	80	87	24	30	66	14
Curasi2013	North America	multiple	combined	combined	91	40	26	68	46	62	60
Ellahi2013	Others	out of the class	homework	combined	14	55	50	0	70	50	84
Krueger2013	North America	during the class	combined	combined	91	40	26	68	46	62	60

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Table A2 (*continued*)

Reference	Geographical Region	Source of data	Academic dishonesty type (code1)	Academic dishonesty type (code2)	Individualism-collectivism	Power distance	Long-term/ short-term orientation	Indulgence -restraint	Uncertainty avoidance	Masculinity-femininity	Religiosity
Park2013	Others	during the class	combined	combined	18	60	100	29	85	39	52
Ma2013	Others	during the class	combined	combined	20	80	87	24	30	66	14
Eriksson2015	Others	during the class	combined	combined	90	38	21	71	51	61	37
Meiseberg2016S1	Others	out of the class	exam	combined	67	35	83	40	65	66	51
Meiseberg2016S2	Others	out of the class	exam	combined	67	35	83	40	65	66	51
Mensah2016	Others	out of the class	combined	combined	null	null	4	72	null	null	96
Tsui2016	Others	null	combined	combined	20	80	87	24	30	66	14
Bucciol2017	Others	out of the class	exam	combined	76	50	61	30	75	70	73
Ives2017	Others	out of the class	combined	combined	30	90	52	20	90	42	89
*Yang2017*S1	Others	during the class	homework	combined	20	80	87	24	30	66	14
Yang2017S2	Others	during the class	homework	combined	17	58	93	49	69	45	14
Barbaranelli2018	Others	during the class	combined	combined	76	50	61	30	75	70	73
Gunawan2018	Others	out of the class	combined	combined	14	78	62	38	48	46	null
Mensah2018	Others	out of the class	exam	combined	null	null	4	72	null	null	96
Cicognani2019	Cross-culture	out of the class	exam	combined	null	null	null	null	null	null	null
Hendy2019	Others	out of the class	combined	combined	71	68	63	48	86	43	37
Ives2019	Others	during the class	combined	combined	null	null	71	19	null	null	83
Kobayashi2019	Cross-culture	during the class	combined	null	null	null	null	null	null	null	null
Maloshonok2019S1	Others	out of the class	combined	null	39	93	81	20	95	36	55
Maloshonok2019S2	Others	out of the class	combined	null	39	93	81	20	95	36	55
Maloshonok2019S3	Others	out of the class	combined	null	39	93	81	20	95	36	55
Maloshonok2019S4	Others	out of the class	combined	null	39	93	81	20	95	36	55
Maloshonok2019S5	Others	out of the class	combined	null	39	93	81	20	95	36	55
Maloshonok2019S6	Others	out of the class	combined	null	39	93	81	20	95	36	55
Maloshonok2019S7	Others	out of the class	combined	null	39	93	81	20	95	36	55
*Maloshonok2019*9S8	Others	out of the class	combined	null	39	93	81	20	95	36	55
Fontaine2020	North America	out of the class	combined	collaborative	80	39	36	68	48	52	46
Hendy2021S1	North America	out of the class	combined	combined	91	40	26	68	46	62	60
Hendy2021S2	Others	out of the class	combined	combined	71	68	63	48	86	43	37
Hendy2021S3	Others	out of the class	combined	combined	35	60	45	50	112	57	null
Stephens2021S1	Others	during the class	combined	combined	79	22	33	75	49	58	null
*Stephens2021*1S2	Others	during the class	combined	combined	79	22	33	75	49	58	null

Note. Geographical Region = region in which the study was conducted; Others = outside North America; exam = cheating on some form of test; homework = cheating on homework and other assignments; Combined = cheating on both these types of academic dishonesty; Null = not reported; References in italics are those not considered in the final Meta-Analysis (i.e., outliers).

Appendix B

Table B
Meta-analyses based on different outlier criteria

Variables		Including all effect sizes/3 *SD*	2 *SD*	95% *CI*
Cultural values	Individualism-collectivism	–	–	–
	Power distance	+	+	+
	Long-term/short-term orientation	+	+	+
	Indulgence restraint	–	–	–
	Uncertainty avoidance	+	+	–
	Religiosity	–	–	–
Geographical region		×	×	×
Source of data		×	×	×
Academic dishonesty type		exam < homework	exam < homework	×
Publication year		+	+	×

Note. 3 *SD* = three units of standard deviation; 2 *SD* = 2 units of standard deviation; 95% *CI* = 95% confidence interval; Cross (×) indicates that this moderator variable is insignificant under specific outlier criteria, plus (+) or minus (−) indicates that this moderator variable positively or negatively moderates the relation between peer cheating and academic dishonesty under specific outlier criteria.

Appendix C

Table C
Results of Masculinity-femininity, GDP per capita, Unemployment Index, Adult literacy rate, School enrollment (tertiary) Index, Adult education level (tertiary) Index and Public spending on education (tertiary) Index moderating analyses for the relationship between perceived peer cheating and academic dishonesty

Moderating factors	*k*	*r*	*b*	*SE*	95% *CI*		*Q*	*df*	*p*
					Lower	Upper			
Masculinity-femininity	42	0.37	0.00041	0.00091	−0.0014	0.0022	0.20	1	0.653
GDP per capita	38	0.37	−0.0000006	0.0000004	−0.000001	0.0000003	1.75	1	0.185
Unemployment rate	36	0.37	−0.00018	0.0027	−0.0057	0.0053	0.0042	1	0.949
School enrollment, tertiary	33	0.38	−0.00053	0.00035	−0.0012	0.00018	2.31	1	0.128
Adult literacy rate	33	0.38	−0.00064	0.0020	−0.0047	0.0035	0.10		0.752
Adult education level, tertiary	31	0.37	0.0015	0.00079	−0.000075	0.0031	3.79	1	0.052
Public spending on education, tertiary	21	0.37	0.040	0.041	−0.046	0.126	0.92	1	0.337

Note. ***GDP per capita*** is gross domestic product divided by midyear population. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in current U.S. dollars. ***Unemployment*** refers to the share of the labor force that is without work but available for and seeking employment. ***School enrollment ratio*** is the ratio of total enrollment, regardless of age, to the population of the age group that officially corresponds to the level of education shown. Tertiary education, whether or not to an advanced research qualification, normally requires, as a minimum condition of admission, the successful completion of education at the secondary level. ***Adult literacy rate*** is the percentage of people ages 15 and above who can both read and write with understanding a short simple statement about their everyday life. ***Adult education level*** as defined by the highest level of education completed by the 25- to 64-year-old population. ***Public spending on education*** includes direct expenditure on educational institutions as well as educational-related public subsidies given to households and administered by educational institutions.

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