



## Review

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

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A R T I C L E I N F O

Academic dishonesty  
 Peer cheating  
 The perceived peer cheating effect  
 Meta-analysis  
 Culture  
 Collectivism  
 Individualism  
 Religiosity

A B S T R A C T

Academic cheating is a worldwide problem, which is exacerbated by perceived peer cheating. The present review of the literature quantitatively examined this relationship. This meta-analysis included studies reporting correlations between students' own cheating and their perception of cheating in peers. The sample consisted of 11 effect sizes from 11 studies based on a total of 1,111 demographically diverse participants from multiple countries. Results showed a perceived peer cheating effect size of  $d = .11$  to  $d = .13$ . Results showed a perceived peer cheating intermediate effect size of  $d = .11$  to  $d = .13$ , and that perceived peer cheating was 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.

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

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large Anderman & Murdoc, 2011; Lupton et al., 2011; Murdoc & Anderman, 2011; Ucci & Ucci, 2011). It is defined as intentionally carrying out forbidden behaviors to gain an unfair advantage in an academic context (Anderman et al., 2011), and it includes behaviors such as cheating on examinations, copying others' homework or assignments, and plagiarism (Anderman & Murdoc, 2011; Rettinger, 2011; Alt et al., 2011). The present study focused on the link between students' academic dishonesty and their perception of cheating behavior in peers, which was previously investigated by

scientific research on academic dishonesty began in the early 1950s (e.g., Barnes, 1950; Haines, 1950; May 1950; Noel et al., 1950). Shortly after educational research was established as a scientific discipline. Since then, research has 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., Hayman, 1950).

One theoretical approach that points to the importance of peers in understanding academic dishonesty is social learning theory (Bandura, 1977). This theory posits that many human behaviors and attitudes are learned through the process of social learning. This account suggests that a person who witnesses social norms of individuals engaging in academic dishonesty is more likely to engage in similar behaviors themselves, even if the behavior violates societal norms (Rourke et al., 2011). According to this theory, students will be more likely to cheat to observe their peers engaging in academic dishonesty.

Another theoretical approach which points to the importance of peers in understanding academic dishonesty is neutralization theory. According to this theory, individuals adopt new techniques to justify violating social norms in order to maintain a positive self-image (e.g., Mulvers, 1977).

"everyone else is doing it" (e.g., Haines et al., 1950). This process

of rationalization technique reduces or displaces one's own responsibility by attributing the causes of behavior to others or to external factors (Stephens, 2011). Thus, when students observe cheating among their peers, they may use it to justify their own cheating.

It should be noted that neutralizing one's moral concerns does not necessarily mean that individuals are disengaging from moral principles about honesty and integrity (Alt et al., 2011).

cheating. This approach perceives cheating to be a consequence of cheating. To date, many individuals for

perception of peer cheating. It is necessary to rule out potential publication biases, but also to conduct such an estimation will allow for comparing the motivation, the effect sizes of which have already been found. Second, we investigated potential factors that moderate the perceived peer cheating effect. Although we have not yet found evidence that cultural values can moderate the effect, we examined whether cultural values at the country level

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 & Minov, 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 (Lialdini et al., 2010; Lyserman et al., 2010). 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

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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 100 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), sample characteristics (sample size, educational level, number of females and males), information referring to academic dishonesty (research method, correlates of academic cheating, type of academic dishonesty). We identified 10 studies that specifically examined the association between academic dishonesty and perceived peer cheating by using the following keywords based on studies: peer, classmates' cheating, and others' cheating. We further narrowed down the number of studies to 10 after applying the following inclusion criteria:

1. studies had to report at least one measure of students' perceived peer cheating. We excluded 1 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 1 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 studies that met inclusion criteria included a total of 10 studies and yielded 10 independent effect sizes. After removing outliers based on assessing the extent of heterogeneity of the effect sizes by using  $I^2$  statistics (see below), we obtained a final set of 10 effect sizes from studies based on a total sample size of 1,111 subjects from papers published from 1981 to 2019.

See Appendix A and Table A1 for the studies included in the meta-analysis. See Fig. 1 for the literature search and study selection procedure.

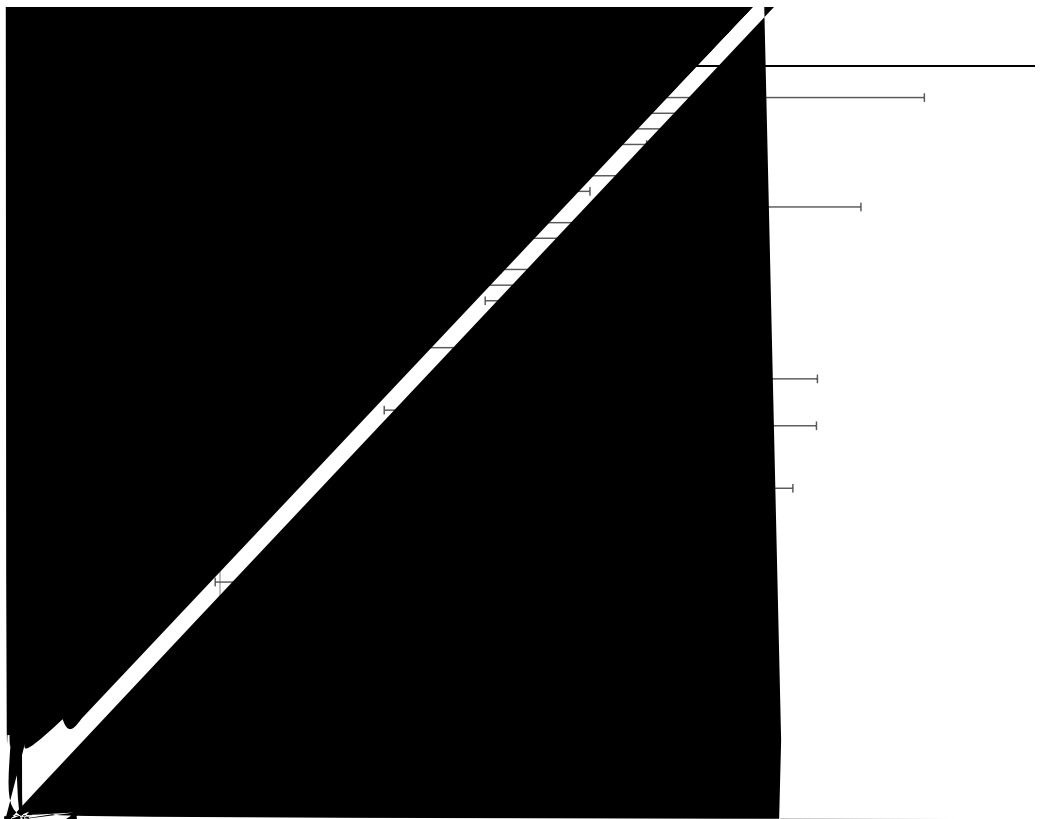
Two graduate students independently coded each of the studies. The interrater reliability for the coded variables and the effect sizes were both 1. We selected the correlation coefficients as the effect sizes to assess the relation between academic dishonesty and perceived peer cheating. The correlation coefficient is positive when the report of academic cheating increased as perceived peer cheating increased.

Among the studies included in the meta-analysis, a total of 10 effect sizes were obtained from studies that reported original correlation coefficients directly. For the studies using regression analysis and reporting correlation coefficients, we converted standardized  $\beta$  coefficients to correlation coefficients (Peterson & Brown, 1985). We excluded seven studies that only reported unstandardized  $\beta$  coefficients as they are rarely mentioned (Han Rhee et al., 2019). For studies using multiple statistical methods (e.g., reported both correlation coefficient and standardized coefficient), we gave priority to the correlation coefficients, following the suggestion of Peterson and Brown (1985). Some studies used  $t$ -tests or  $z$ -tests to compare the perceptions of peer cheating for cheaters versus non-cheaters. Some studies also conducted chi-square tests 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 to serial correlations ( $r = 1$ ). In these cases, we used a web application to calculate and transform the effect size computation of different effect sizes such as  $d$ , and transformation of different effect

report these results in the appendix. There were no studies measuring these variables at the individual level, so we obtained country-level indices as moderators, which were all continuous variables. For the first five cultural values, we used scores from Geert Hofstede's database <http://geert-hofstede.com> for countries in which the studies were carried out. We used the Gallup International Religiosity Index [allup international survey](http://allupinternationalsurvey.com), 1 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) = 1 and others (i.e., outside North America) = 0 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 = 1 or out of the classroom, such as an online survey = 0. 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 = 1, and cheating on homework or other assignments = 0. 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 = 1, and collaborative cheating = 0. 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 to 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: 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 for details).

For the quantitative meta-analysis, we used the Meta-essentials worksheet version 1.0 developed by Ha et al. (2017), and took the following five steps. First, we used the correlation coefficient to index effect sizes of the possible relationship between academic



effect sizes of each included study (excluding outliers). Correlations, dots, and confidence intervals are displayed for all effects entered into the meta-analysis. For studies with multiple independent samples, the result for each sample (1, 2, etc.) is reported separately. The relative size of each bullet is proportional to the study's weight in generating the meta-analytic result.



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  $I^2$ . 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  $I^2$  did not overlap with the  $I^2$  of the average effect size (Lipsey, 2001, pp. 11–12).

Third, we analysed 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  $SE$  and estimated the extent of heterogeneity by using  $I^2$  and  $Q$  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 0% represents low heterogeneity, of 25% represents moderate, and of 50% represents high heterogeneity (Higgins et al., 2002). After removing outliers using the confidence intervals we found a moderate proportion of heterogeneity in the effect sizes,  $I^2 = 11.1\%$ ,  $p < .01$ ,  $Q = 11.1$ , 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  $d$  test, and Egger's regression.

There were 10 studies that met all the inclusion criteria after excluding the outliers whose  $I^2$  was not within the range of average effect sizes. These studies yielded effect sizes based on a total sample size of 1,111 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  $d = .15$ ,  $SE = .02$ ,  $95\% CI = .11$  to  $.19$ ,  $p < .01$ . 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  $d = .15$ ,  $SE = .02$ ,  $95\% CI = .11$  to  $.19$ ,  $p < .01$ .



provide confidence intervals of their mean effect sizes. In addition, we could not statistically compare the effect sizes found in their meta-analyses and the present one.

We computed the Pearson correlational coefficients of the cultural value indices. As shown in Table 1, some of the indices 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). Some were 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 1, the correlational coefficients were generally not high.

We then conducted the moderator analysis of these indices on the perceived peer cheating effect. The results are shown in Fig. 2, and a summary of results of each cultural value is presented in Table 2. In cultures that were high in 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 indulgence-restraint, high in uncertainty avoidance and religiosity.

Results of other moderator variables are presented in Appendix 1. They included the sixth Hofstede national dimensions of gender equality-masculinity-femininity, and the potentially confounding national level moderator variables of GDP per capita, unemployment rate, 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

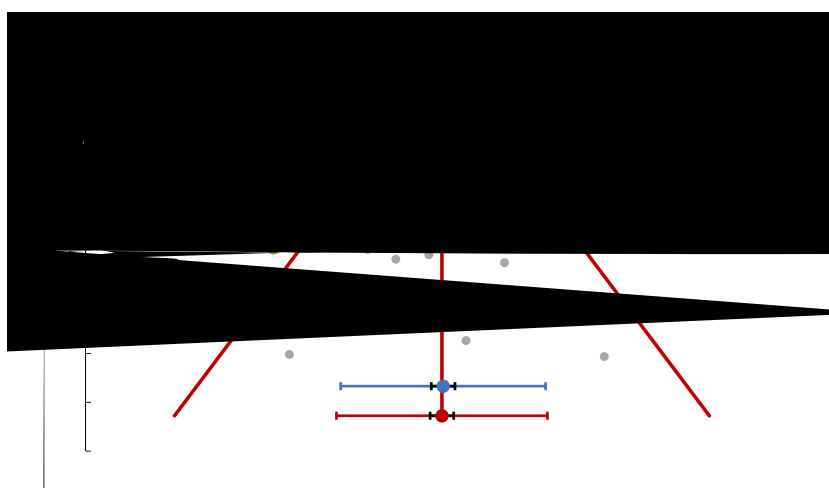
bias, if it existed, would not significantly affect the conclusion of our meta-analysis. To confirm this, we included the imputed effect size in the meta-analysis to obtain an adjusted mean effect size. We then compared it to the actual mean effect size without the imputation. We found that the two mean effect sizes were not significantly different from each other: adjusted mean effect size after imputation:  $d = .12$ ,  $95\% CI = .05$  to  $.19$ ; actual effect size without imputation:  $d = .12$ ,  $95\% CI = .05$  to  $.19$ ,  $p < .001$ , confirming that there was no evidence of publication bias.

We conducted Rosenthal's fail-safe test (1991) and found that at least 10 studies would be needed to make the combined effect

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

Categorical variables		for		* p < .05	
		Lower	upper		
Geographical region	North America	. .	. .	. .	. .
	Others	1 .	. .	1. .	. 1
Source of data	Online	. .	. .	11 .	. .
	Out of the classroom	. .	. .	. .	. .
Academic dishonesty type code1	In the classroom	1 .	. .	. .	. .
	Online	. .	. .	. .	. .
Academic dishonesty type code	Test	. .	. .	. .	. .
	Homework	. 1	. 1	. .	. 1
Academic dishonesty type code	Online	. .	. .	11 .	. 11
	Individual	. .	. 1	1. .	. .
Academic dishonesty type code	Collaborative	. .	. .	. .	. 11
	Online	. 1	. .	. .	. .

other assignments	om ined com ined effect si e for each moderator analysis	est cheating on some form of test	Homewor cheating on homework and
	num er of effect si e average effect si e		



unnel plot with the trim-and- ll method in the meta-analysis. rey dots represent each effect si e from included studies the lue dot represents com ined effect si e with its con dence interval lac line and prediction interval lue line the red dot represents ad usted com ined effect si e with its con dence interval lac line and prediction interval red line the red vertical line runs through the ad usted com ined effect si e and the corresponding lower and upper limits of the con dence interval represented y red diagonal lines. or interpretation of the references to colour in this gure legend, the reader is referred to the e version of this article.

is 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.

the gger s regression was not signi cant . , . , 1. to . , 1 . , . , again indicating the lac of a signi cant pu lication 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.

Academic cheating is a universal problem that researchers have been investigating for more than a century. Anderman, Murdoc, Barnes, i.e., Hartshorne May oel er, hitley, . 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 oel er, . The present study provides the first meta-analysis to

quantitatively synthesize this perceived peer cheating effect and identify key factors 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 (ohen, 1998). This perceived peer cheating effect could not be explained by publication bias or other factors of theoretical interest, such as year of publication or the source of data (i.e., online vs. offline). 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 variables that have been investigated in previous meta-analyses (Cuadrado et al., 2016; Ilu & Ostlethwaite, 2016; Roue et al., 2016; Schulhaus & Uois, 2016). We found that the perceived peer cheating effect was stronger than the effects of age, gender, conscientiousness, and achievement motivation (see Table 1 for details). Among all the variables that have been analyzed using meta-analysis and reported with confidence intervals, only three showed a stronger perceived peer cheating effect: neutralization, psychopathy, and impulsivity. The effect size of perceived peer cheating was distinguishable 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, 1980), 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., Riandis, 2016). 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., Riandis, 2016).

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., 2016). 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., Yserman et al., 2016). Thus, people in these cultures 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. Singing others to decide how to act is one strategy that is frequently used to reduce uncertainty (McAfee et al., 2015;ouri & raum, 2016; alter et al., 2016). 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., Rier & udiel, 2016; Johnson et al., 2016). However, it is also possible that religious belief could impact people's willingness to accurately report their own cheating (Rettinger & Jordan, 2016;utton & Hu, 2016), especially given that all of the studies in this meta-analysis relied on self-report methods (Bloodgood, urnley, & Mudrac, 2016; Hadar, 2016).

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 the moderators, none was significantly moderating the perceived peer cheating effect. We also examined the moderating effects of national level variables that reflect social and economic development levels (e.g., GDP per capita, unemployment rate, spending on education), and found that none significantly moderated the perceived peer cheating effect. These null findings suggest that the significant moderating findings of the role of Hofstede's cultural dimensions might be due to the unique role of culture in moderating

of cultural environment.

One limitation of the present research concerns the nature of the sample. Although the total sample size was large ( $N = 1,111$ ), the estimation of the mean effect size of the relationship between perceived peer behavior and academic cheating was based on a relatively small number of effect sizes ( $k = 10$ ). 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 & La Ross, 2019), 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 the 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 Lie, 2019; Hartshorne & May, 1928; Zuo et al., 2019; 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 (Schwartz & Shwartz, 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 (Ysserman et al., 2019).

The present meta-analysis used Hofstede's indices as proxies of cultural values at the country level because these indices are the most widely used and validated to measure country level value differences (e.g., Reisinger, 2019; Zuo et al., 2020). Future research should also include other indices, 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's cultural dimensions 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., Currisi et al., 2019). Another possibility would be to have peers model academic honesty or cheating, to determine the effects on students' cheating tendencies. Such studies are necessary. □ □

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#### Descriptive characteristics for studies included in the Meta-analysis

Reference	Sample size	Percent of females	Country	Educational level	Research methods
Lin et al. 1	1	1	Australia	College	Survey
Nowlton1	11	1	Australia	College	Survey
Lan et al. 1	1	1	Australia	College	Survey
Michaels1	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
Baldwin1	1	1	Australia	College	Survey
Diehoff1	1	1	Australia	College	Survey
McAuliffe1	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
Avan1	1	1	Australia	College	Survey
Jordan1	1	1	Australia	College	Survey
Lim1	1	1	Singapore	College	Survey
	1	1	Australia	College	Survey
McAuliffe1	1	1	Australia	College	Survey
Bichler1	1	1	Australia	College	Survey
	1	1	Romania	College	Survey
Roosinon1	11	1	Australia	College	Survey
	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
Hardy1	1	1	Portugal	College	Survey
McAuliffe1	1	1	Australia & Canada	College	Survey
	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
	1	1	Lebanon	College	Survey
gilvie1	1	1	Australia	College	Survey
Rettinger1	1	1	Australia	College	Survey
ardley1	1	1	Australia	College	Survey
tone1	1	1	Australia	College	Survey
alton1	1	1	Australia	College	Survey
alton1	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
alton1	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
arnese1	1	1	Italy	College	Survey
Jurdi1	1	1	Canada	College	Survey
hodaie1	1	1	Romania	College	Survey
	1	1	China	College	Survey
pear1	1	1	Australia	College	Survey
	1	1	Romania	College	Survey
ang1	1	1	China Taiwan	College	Survey
Zhang1	1	1	China	College	Survey
urasi1	1	1	Australia	College	Survey
	1	1	Australia	College	Survey
rueger1	1	1	Australia	College	Survey
ar1	1	1	China	College	Survey
	1	1	China	College	Survey
rierson1	1	1	Australia	College	Survey

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Reference	Geographical Region	Source of data	Academic dishonesty type code1	Academic dishonesty type code	Individualism-collectivism	Power distance	Long-term short-term orientation	Indulgence-restraint	Confucianism	Gender equality	Masculinity-femininity	Religiosity
Lim 1	Others	during the class	com ined	com ined								
	Orth America	during the class	com ined	com ined	1							
Mc a e	Orth America	out of the class	com ined	com ined	1							
Bichler	Orth America	out of the class	com ined	com ined	1							
	Others	out of the class	com ined	com ined								null
Ro inson	Orth America	out of the class	e am	com ined	1							
	Orth America	during the class	com ined	com ined	1							
	Orth America	during the class	com ined	colla orative	1							
	Others	during the class	e am	colla orative					1		1	null
Hard	Orth America	during the class	com ined	com ined	1							
Mc a e	Orth America	out of the class	com ined	com ined	null	null	null		null		null	null
	Orth America	out of the class	com ined	com ined	1							
	Orth America	out of the class	com ined	com ined	1							
Mc a e	Others	out of the class	com ined	com ined								
gilvie	Others	out of the class	homewor	individual			1	1	1		1	
Rettinger	Orth America	out of the class	com ined	com ined	1							
ardley	Orth America	out of the class	com ined	com ined	1							
tone 1	Orth America	out of the class	com ined	com ined	1							
alton 1 1	Orth America	out of the class	com ined	com ined	1							
alton 1	Orth America	out of the class	com ined	com ined	1							
	Orth America	out of the class	com ined	com ined	1							
	Orth America	out of the class	com ined	com ined	1							
	Orth America	out of the class	com ined	com ined	1							
arnese 11	Others	out of the class	com ined	individual			1					
Jurdi 11	Orth America	during the class	com ined	com ined								
hodaie 11	Others	null	com ined	com ined	1		1					null
	Others	during the class	com ined	com ined	1							
pear 1	Orth America	during the class	com ined	com ined	1							
	Others	during the class	com ined	com ined								null
ang 1	Others	during the class	homewor	individual	1							1
Zhang 1	Others	null	com ined	com ined								1
urasi 1	Orth America	multiple	com ined	com ined	1							
	Others	out of the class	homewor	com ined	1							
rueger 1	Orth America	during the class	com ined	com ined	1							



Reference	Geographical Region	Academic dishonesty type code1	Academic dishonesty type code	Individualism-collectivism	Power distance	Long-term short-term orientation	Indulgence-restraint	Confucius dynamism	Gender equality	Masculinity-femininity	Religiosity
Bar 1	thethers	during the class	com ined	com ined	1	1					
	thethers	during the class	com ined	com ined							
ri sson 1	thethers	during the class	com ined	com ined		1	1	1	1		
Meise erg 1 1	thethers	out of the class	e am	com ined							1
Meise erg 1	thethers	out of the class	e am	com ined							1
Mensah 1	thethers	out of the class	com ined	com ined	null	null		null	null		
sui 1	thethers	null	com ined	com ined							1
Buccioli 1	thethers	out of the class	e am	com ined		1					
	thethers	out of the class	com ined	com ined							
	1	thethers	during the class	homework	com ined						1
	thethers	during the class	homework	com ined	1						1
Bar aranelli 1	thethers	during the class	com ined	com ined		1					
	thethers	out of the class	com ined	com ined	1						null
	thethers	out of the class	e am	com ined	null	null		null	null		
	ross-culture	out of the class	e am	com ined	null	null	null	null	null	null	null
Hendy 1	thethers	out of the class	com ined	com ined	1						
	thethers	during the class	com ined	com ined	null	null	1	1	null	null	
	ross-culture	during the class	com ined	null	null	null	null	null	null	null	null
	thethers	out of the class	com ined	null		1					
	thethers	out of the class	com ined	null		1					
	thethers	out of the class	com ined	null		1					
	thethers	out of the class	com ined	null		1					
	thethers	out of the class	com ined	null		1					
	thethers	out of the class	com ined	null		1					
	thethers	out of the class	com ined	null		1					
ontaine	orth America	out of the class	com ined	collaborative							
Hendy 1 1	orth America	out of the class	com ined	com ined	1						
Hendy 1	thethers	out of the class	com ined	com ined	1						
Hendy 1	thethers	out of the class	com ined	com ined				11			null
	thethers	during the class	com ined	com ined							null
1	thethers	during the class	com ined	com ined							null

geographical Region = region in which the study was conducted    thers = outside North America    e am = cheating on some form of test  
homewor = cheating on homework and other assignments    om ined = cheating on both these types of academic dishonesty    ull = not reported  
References in italics are those not considered in the final Meta-Analysis i.e., outliers.

Meta-analyses based on different outlier criteria

Variables		including all effect sizes		
Cultural values	Individualism-collectivism	-	-	-
	Power distance	+	+	+
	Long-term short-term orientation	+	+	+
	Indulgence-restraint	-	-	-
	Uncertainty avoidance	+	+	+
Geographical region	Religion	-	-	-
	Source of data	×	×	×
Academic dishonesty type		exam < homework	exam < homework	×
Publication year		+	+	×

= three units of standard deviation      = one unit of standard deviation      = confidence interval      × indicates that this moderator variable is insignificant under specific outlier criteria.  
 plus + or minus - indicates that this moderator variable positively or negatively moderates the relationship between peer cheating and academic dishonesty under specific outlier criteria.

Results of Masculinity-femininity, GDP per capita, unemployment rate, school enrollment tertiary index, Adult education level tertiary index and public spending on education in the meta-analyses for the relationship between perceived peer cheating and academic dishonesty

Moderating factors		95% CI		95% CI	
		Lower		Upper	
Masculinity-femininity					
GDP per capita					
unemployment rate					
school enrollment, tertiary					
Adult literacy rate					
Adult education level, tertiary					
public spending on education					

**GDP per capita** is gross domestic product per capita. It is the sum of gross value added by all resident producers in the economy plus any product taxes and minus subsidies on products. It is calculated at basic prices. **Unemployment rate** is the percentage of the labor force that is without work but available for employment. **School enrollment ratio** is the ratio of the number of students enrolled in school to the total population of the country, regardless of age, to the population of the country. **Adult literacy rate** is the percentage of people aged 15 and above who can both read and write with understanding and use of basic writing skills in 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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