A comparison of Chinese and Australian university students' attitudes towards plagiarism

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Abstract

Student plagiarism is a growing problem within Australian universities and abroad. Potentially exacerbating this situation, research indicates that students' attitudes toward plagiarism are typically more permissive and lenient than the policies of their tertiary institutions. There has been suggestion that this is especially so in Asian countries relative to Western countries; however, very little research has sought to empirically validate this suggestion. Moreover, existing research in this area has typically compared international and domestic students studying in Western countries. As yet, no studies have directly compared Chinese and Australian university students' attitudes toward plagiarism, as they exist within their native countries. Rasch analysis/differential item functioning were conducted to contrast 131 Australian and 173 Chinese undergraduate university students' attitudes towards plagiarism. Results indicated distinct cross-cultural differences in aspects of students' plagiarism attitudes. Regardless of ethnic background, the results highlight undergraduate students' typical lack of understanding of plagiarism and plagiarist behaviours.

Keywords

plagiarism, towards, comparison, students, chinese, university, attitudes, australian

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A Comparison of Chinese and Australian University Students' Attitudes towards Plagiarism

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Abstract

Student plagiarism, or the misappropriation of others' words or ideas, is a growing problem within Australian universities and abroad. Potentially exacerbating this situation, research indicates that students' attitudes toward plagiarism are typically more permissive and lenient than the policies of their tertiary institutions. There has been suggestion that this is especially so in Asian countries relative to Western countries; however, very little research has sought to empirically validate this suggestion. Moreover, existing research in this area has typically compared international and domestic students studying in Western countries. As yet, no studies have directly and empirically compared Chinese and Australian university students' attitudes toward plagiarism, as they exist within their native countries. Rasch Analysis and Differential Item Functioning were conducted to contrast 131 Australian and 173 Chinese undergraduate university students' attitudes towards plagiarism. Results indicated distinct cross-cultural differences in aspects of students' plagiarism attitudes. Regardless of ethnic background, the results highlight undergraduate students' typical lack of understanding of plagiarism and plagiarist behaviours. This suggests a need for explicit instruction of the academic skills required to critically engage with others' ideas without improperly appropriating those ideas.

Keywords: plagiarism; attitudes; university; tertiary; Rasch analysis

A Comparison of Chinese and Australian University Students' Attitudes towards Plagiarism

Student plagiarism, or the act of misappropriating the scholarly work of others and claiming them as one's own, constitutes a serious problem for universities. For example, plagiarism studies in North America (e.g., McCabe 2005), the United Kingdom (e.g., Selwyn 2008), Australia (e.g., Brimble and Stevenson-Clarke 2005; Ryan, Bonanno, Krass, Scouller, and Smith 2009) and China (Hu and Lei 2012; Mu 2010) have found that plagiarism in universities is commonplace and widespread. Although the exact prevalence of plagiarism is unknown, large-scale studies have found that more than 30% of students admit to reproducing others' ideas or words in an assignment without proper acknowledgement, with up to 20% of students doing so with significant portions of text (Christensen Hughes and McCabe 2005; McCabe 2005; Underwood and Szabo 2003).

Whether intentional or unintentional, the growing prevalence of plagiarism (Park 2003) raises important questions concerning academic integrity, student learning and the validity of higher education degrees awarded to those engaging in plagiarist behaviours. However, the various causes of plagiarism and the possible solutions are grossly under-researched in the Australian context. Similarly, in China, plagiarism research remains sparse despite recent media attention on academic misconduct and government initiatives to address the issue (Li and Lei 1996; Moore 2010). Nevertheless, there is a perception that plagiarism is more prevalent in Asian countries, where thousands of cases of academic fraud have been exposed (Li and Lei 1996). Such perceptions have stereotyped Chinese students as having a greater propensity to engage in plagiarist behaviours than their Western counterparts (Ha 2006; Sowden 2005).

To date, there is little empirical evidence to establish the credibility of this stereotype of Chinese students as having 'softer' attitudes or a greater propensity to plagiarise than Western students (Martin, Rao, and Sloan 2011). Although a number of cross-cultural studies have found that Asian university students tend to have more permissive attitudes towards plagiarism than their Western counterparts (Egan 2008; Introna, Hayes, Blair, and Wood 2003; Marshall and Garry 2006; Pickering and Hornby 2005), there is also evidence suggesting no cross-cultural differences in plagiarism attitudes between these two groups (Martin 2011; Martin et al. 2011) or even higher rates of plagiarism in Western than Asian countries (Maxwell, Curtis, and Vardanega 2008). As such, whilst stereotypes of Asian students as having less serious attitudes toward plagiarism (or a greater propensity toward academic misconduct) than their Western counterparts persist, the evidence to sustain such viewpoints remains contentious.

A possible explanation for this inconsistency is that researchers investigating cross-cultural attitudes towards plagiarism often compare domestic and international students studying at the same Western universities (Egan 2008; Marshall and Garry 2006; Song-Turner 2008). For instance, Egan's (2008) comparison of the plagiarism attitudes of Malay and domestic undergraduate students at an Australian university indicated that Malay students held more lenient and permissive attitudes towards plagiarism than Australian students. The author attributed this result to academic pressure (i.e., workloads) and the perception that many international students were doing likewise. Generalisation of these findings, however, is complicated by the unique demands of studying abroad. For instance, in addition to typical coursework demands, international students also must overcome unique and significant language barriers, which have been associated with plagiarist behaviours (Devlin and Gray 2007). It is therefore difficult to determine whether these findings provide an accurate reflection of cultural differences in attitudes towards plagiarism or the additional pressures international students face in a foreign learning environment.

Furthermore, plagiarism is a highly complex phenomenon and, as such, it is likely that there is no single explanation for why individuals engage in plagiarist behaviours. In fact, prior research has attributed plagiarism to a number of factors, including: a lack of knowledge of what constitutes plagiarism (Harris 2001; Marshall and Garry 2006; Ryan et al. 2009); disconnect between staff and students' understandings of plagiarism (Brimble and Stevenson-Clarke 2005); time pressures (Bannister and Ashworth 1998); and poor language and academic skills (Devlin and Gray 2007). It is unclear, however, whether these factors differ in importance across different cultural contexts.

At the heart of this issue is whether or not there are genuine cross-cultural differences in attitudes toward plagiarism. To address this issue, the current study surveyed Chinese and Australian university students studying domestically in order to compare these students' attitudes toward plagiarism and the perceived factors contributing to plagiarist behaviours. Importantly, the cross-cultural comparison of university students studying domestically minimises the conflation of the unique demands of studying abroad. As such, any differences in plagiarism attitudes can more readily be attributed to cross-cultural differences in attitudes and understandings of plagiarism. Further, in contrast to the typical use of plagiarism questionnaires without psychometric evaluation of these measures (e.g., Brimble and Stevenson-Clarke 2005; Egan 2008; Gururajan and Roberts 2005; Marshall and Garry 2006; Song-Turner 2008), a series of Rasch analyses were also conducted. The use of advanced psychometric testing of our attitudinal measurement instrument ensured that the

psychological construct of severity of attitude toward plagiarism was measured in a reliable and valid way across cultural groups.

Method

Participants

Participants were domestic undergraduate students enrolled at either an Australian ($n = 131$) or Chinese university ($n = 173$). In the Australian sample there were significantly more females than males (80.9% female), the pattern of which was reversed in the Chinese sample (19.3% female). All Australian students were enrolled in an Education degree, whereas Chinese students were enrolled in Education ($n = 113$; 65%), Business ($n = 49$; 28%), or Science ($n = 11$; 7%). In both samples, the majority of students were in early years of study: first year of study (Australian sample: $n = 118$; Chinese Sample: $n = 38$), second year of study (Australian sample: n = 12; Chinese sample: n = 77); third year of study (Australian sample: n = 0; Chinese sample: n = 35); and fourth year of study (Australian sample: n = 1; Chinese sample: n = 21). All students were young adults of around the same age (Australian sample: $M_{males} = 21.32$, $SD = 4.43$; $M_{females} = 21.02$, $SD = 4.57$; Chinese sample: $M_{males} = 19.70$, $SD = 1.30$; $M_{females} = 20.00$, $SD = 3.80$). In the Australian sample, most students were from English speaking backgrounds (>95%) and in the Chinese sample the majority of students were native speakers of Mandarin (>97%).

Measures and Procedure

Participants were administered Harris' (2001) 12-item Plagiarism Attitude Scale, which consists of 12 questions designed to measure young adults' attitudes toward plagiarism. Responses to these questions are made on a 5-point Likert scale, ranging from 0 (Strongly Agree) to 4 (Strongly Disagree). Items for questions 2,3,7, 8 and 12 were reverse-scored to ensure that lower scores consistently indicated more permissive (lenient) attitudes toward plagiarism. In order to control for potential institutional differences in what is considered plagiarism, an operational definition of plagiarism was given to all participants to read (for the full scale, see Appendix A) before they completed the questionnaire. This was to ensure that both the Australian and Chinese participants had a common understanding of what constitutes plagiarism and plagiarist behaviour.

In addition to this scale, participants completed a brief questionnaire of basic demographic information (e.g., age, gender, faculty, year of study, employment status) and rated (on a 5-point Likert scale) their perceptions of the pressure placed on them to succeed academically by themselves and others. Because the original Plagiarism Attitude Scale was developed in English, all materials for Chinese students were translated and scored by a

Mandarin/English bilingual speaker, who is a Lecturer in China and holds a PhD in applied linguistics from an Australian university. In all cases, participants anonymously completed the paper-and-pen questionnaires at the end of pre-identified lectures. Students who volunteered to participate in the study were made aware that their lecturers would not have access to their data to promote the veracity of responses.

Data Analysis

Analyses can be segmented into three main parts. The first part consisted of a Rasch analysis (cf., Tennant and Conaghan 2007) to validate and optimise the accuracy of the measurement instrument (a 12-item Plagiarism Attitude Scale; Harris, 2001). This was necessary to establish that the underlying trait of interest (ie.g., severity of attitude toward plagiarism) was measured accurately and uniformly across participants. Although a complete discussion of Rasch analysis is beyond the scope of this paper (see Bond and Fox 2001), the basic premise is that Rasch models are models of intent, which are used to govern the construction of the measurement instrument and provide analytical data as to whether the questions comprising the scale have worked in the intended manner (Authors, 2013). For example, Rasch analysis involves the use of a mathematical model of probability that determines a respondent's ability (or degree of a psychological attribute or trait) in relation to the difficulty of an item (or degree to which an item can elicit the psychological trait being tapped) and places them on the same linear scale. Rasch analysis thus can be used to determine which items function well, both individually and collectively, according to the specifications of the mathematical probabilistic model. Items that function according to the model are evident when respondents' ability or levels of a psychological trait match the expected difficulty or levels of severity elicited by the items. Hence, items misfit when respondents with high levels of the trait respond in a manner typical of those with lower levels of the trait and vice versa.

Next, after establishing the psychometric properties of the measurement instrument and ensuring optimal performance of the scale, Differential Item Functioning (DIF) was conducted to investigate potential differences in responding resulting from cultural background (Australian vs. Chinese). DIF is used in psychometric analyses to investigate group bias on specific questionnaire/test items (see Andrich and Hagquist, 2012). DIF is detected when two groups of persons have the same ability (or equivalent levels of the measured psychological trait) but respond differently. DIF can be observed graphically as an Item Characteristic Curve (ICC). ICCs plot the observed values (person estimates) against the expected values (represented as an S-shaped theoretical curve). Incongruent group curves can

indicate DIF, which can be confirmed by Analyses of Variance (ANOVAs) on the grouped person estimates. These tests are conducted as a post-hoc follow up to Rasch analyses.

Our final analyses investigated the relationship between 'pressure felt at university' (pressure) and 'severity of attitude toward plagiarism' (plagiarism attitudes). 'Pressure' was measured by 5-point Likert scale responses on two questions: (1) *how much pressure do you put on yourself to achieve high grades?*; and (2) *how much pressure do others put on you to achieve high grades?* 'Plagiarism attitudes' were obtained by summing responses to well-functioning items (as determined by Rasch analysis) of the Harris' (2001) Plagiarism Attitude Scale. The relationship between pressure and plagiarism attitudes wee investigates using Spearman's bivariate correlations.

Results

Validation and optimisation of the Plagiarism Attitude Scale using Rasch analysis

Initial data screening examined individuals' responses for inconsistent patterns of responding (as evidenced by inconsistent responses on reverse-scored items). In such cases these participants' data were removed from subsequent analyses. Rasch modeling was then used to evaluate the psychometric properties (e.g., unidimensionality) of Harris' (2001) Plagiarism Attitude Scale. The Chinese and Australian data were analysed as one group to determine the functioning of the scale and differences in responses across cultural groups.

Threshold Ordering. An examination of the ordering of the thresholds was undertaken to evaluate participants' responses relative to their levels of the latent trait being measured (i.e., severity of attitude toward plagiarism). A threshold is the point between response categories. In the Plagiarism Attitude Scale, there are five possible response categories thus there are four thresholds. Ordered thresholds are those which reflect logical response choices relative to the person's levels of the latent trait being measured. Disordered thresholds indicate misfit of the data to the Rasch model. An examination of the ordering of the thresholds revealed disorder with 8 items (Questions 1, 3, 4, 5, 7, 8, 9 and 12). In such cases, response categories are usually re-scored (i.e., collapsed into smaller categories) to improve performance (cf., Tennant and Conaghan 2007). Ordered response thresholds were attained by collapsing 'Neutral' and 'Disagree' response categories, except in the case of Question 7 ('Neutral' category was omitted) and Question 1 (dichotomised into 'Agree' and 'Disagree'). These steps resulted in all 12 thresholds becoming ordered (see Figure 1).

Insert Figure 1 here

Fit statistics were examined after threshold ordering to investigate how well the scale functioned relative to the expectations of the Rasch model. Consistent with prior

psychometric evaluations (*Authors* 2013; Gururajan and Roberts 2005), analysis of the full scale revealed poor fit of the data to the Rasch model thus indicating that the scale did not meet basic assumptions of unidimensionality, construct validity and item fit. This indicated the need to remove problematic items to improve the psychometric properties of the scale.

Item Misfit and removal. Individual item fit is concluded if: individual fit residuals are between -2.5 and +2.5; chi-square and *F*-tests are non-significant (indicating that the data does not significantly deviate from the Rasch model); and item characteristic curves (ICC) indicate that expected values parallel the theoretical S-shaped curve (indicating where theoretical values should lie according the Rasch model). Investigation of these indices of item fit indicated misfit of Question 7 (mean fit residual = 2.69), Question 1 ($X^2 = 26.40$, $p < .001$) and Question 2 ($X^2 = 19.60$, $p < .001$). Examination of ICCs also indicated misfit of these items and provided evidence that all other items were functioning properly. Misfitting items were subsequently removed. Subsequent Rasch analyses of this new subscale identified further misfit in Question 8 ($F = 4.70$, $p = .002$), Question 12 ($X^2 = 18.20$, $p = .002$) and Question 3 ($F = 4.51$, $p < .002$), which were ultimately removed. A final Rasch analysis revealed that the subsequent 6-item subscale (Questions 4, 5, 6, 9, 10 and 11) displayed no item misfit (see Table 1) and had ICCs that were consistent with the Rasch model.

Insert Table 1 here

These results were also confirmed by an examination of the summary fit statistics. These statistics are expressed as an Item-Trait interaction (an overall indication of fit, including unidimensionality assumptions), a Person Separation Index (PSI; a measure of internal consistency similar to a Cronbach's alpha), as well as overall person and item mean fit residuals (indicating the extent to which actual responses deviate from theoretically derived expected responses). Results indicated a non-significant Item-Trait interaction ($X^2 = 33.10$, $p = .100$) indicating good fit of the data to the Rasch model. Overall item fit ($M = 0.24$, $SD = 0.64$) and overall person fit ($M = -0.28$, $SD = 1.00$) statistics indicated acceptable fit and no item misfit. Only the PSI of 0.66 remained low compared to common rules of thumb.

Unidimensionality and response dependency. Unidimensionality assumptions of the Rasch model require that all items of a (sub)scale measure a single latent construct. Response dependency assumptions require that participants' responses to questions do not impact their responses to other questions (i.e., the questions are independent). Principal Components Analysis (PCA) on the residuals is used to evaluate whether these assumptions have been met. PCA results indicated a dominant first factor accounting for 33.5% of the variance, which can be interpreted as indicating no evidence of multidimensionality (Reckase 1979). PCA

analysis also revealed that no items were strongly correlated on the Residual Correlation Matrix, indicating that all items of the revised subscale were independent.

Unidimensionality was further confirmed by post-hoc *t*-tests (see Smith 2002). Two subsets were formed comprising positively and negatively loaded items identified from the factor loadings of the PCA. These analyses indicated that 5.9% of participants had significantly different locations at the 5% level. This percentage is not considered to indicate threats to undimensionality (Hagquist, Bruce, and Gustavsson 2009). Taken together, Rasch analyses provided evidence that the 6-item subscale was both unidimensional and response independent (i.e., that it was psychometrically valid and measuring the single dimension of severity of attitude toward plagiarism only). This subscale was thus used to compare responses across cultural groups.

Differential Item Functioning comparing Chinese and Australian students

In order to compare Chinese and Australian participants' overall attitudes towards plagiarism on the 6-item subscale, an examination of the person-item distribution was undertaken (see Figure 2). That the Australian sample's mean location (1.10) was significantly larger than that of the Chinese sample (0.76), $F(1, 253) = 7.29$, $p < .009$, indicated that the Australian students, on average, had more severe (negative) attitudes towards plagiarism than their Chinese counterparts.

Insert Figure 2 here

Subsequent DIF analysis was undertaken to identify group differences on individual survey items, using Bonferroni-adjusted alphas of $p < .008$ (.05/6). Statistically significant DIF was found for Questions 4, 5 and 11, suggesting statistically significant differences between the Australian and Chinese groups on these items.

Question 4. *If my roommate gives me permission to use his or her paper for one of my classes, I don't think there is anything wrong with doing that.* DIF analysis, $F = 24.40$, $p < .001$, and the ICC for this item (see Figure 3) indicated that the Australian students were less accepting of using others' work compared to the Chinese group. Descriptive statistics (see Table 2) indicated that although the majority of students surveyed disagreed with this statement, more Australian students (74%) disagreed with this statement than Chinese students (57%).

Insert Figure 3 & Table 2 here

Question 5. *Plagiarism is justified if the professor assigns too much work in the course.* DIF analysis, $F = 82.10$, $p < .001$, and the ICC for this item (see Figure 4) similarly indicated that the Australian group was less accepting of plagiarist behaviours in the context of heavy

workloads compared to the Chinese students. Whilst the majority of students disagreed with this statement, a larger proportion of Australian university students (94%) disagreed with this statement than Chinese university students (50%). Further, a larger proportion of Chinese students (22%) believed that plagiarism was justified by heavy workloads (compared to 1% of Australian students).

Insert Figure 4 here

Question 11. *If I lend a paper to another student to look at, and then that student turns it in as his or her own and is caught, I should not be punished also.* In contrast, DIF analysis, $F = 53.70$, $p < .001$, and the ICC for this item (see Figure 5) indicated that Chinese students had lower levels of agreement with this statement (stronger attitudes against plagiarism) than Australian students. That is, the majority of Australian students (65%) agreed with this statement compared to only (38%) of Chinese students.

Insert Figure 5 here

Questions 6, 9 and 10. DIF analyses indicated no significant difference between Australian and Chinese students in terms of the following questions: (6) *The punishment for plagiarism in college should be light because we are young people just learning the ropes*, $F = 1.60$, $p = .210$ (with around 1 in 5 agreeing with this statement); (9) *Because plagiarism involves taking another person's words and not his or her material goods, plagiarism is no big deal*, $F < 1.00$ (with more than 4 in 5 students disagreeing with this statement); and (10) *It's okay to use something you have written in the past to fulfil a new assignment because you can't plagiarise yourself,* $F = 4.80$, $p = .030$ (with more than 3 in 5 students agreeing with this statement, indicating a general lack of understanding of the perils of self-plagiarism).

Pressure Analysis

All subsequent analyses were conducted using Statistical Packages for the Social Sciences (SPSS) software. A Mann-Whitney U test with Bonferroni adjusted alpha, $p < .025$ (.05/2) revealed no significant differences between the pressure Chinese (*Mdn* = 2) and Australian (*Mdn* = 2) students placed on themselves. However, the Chinese students (*Mdn* = 3) felt significantly more pressure placed on them by others than did Australian students (*Mdn* = 2), $p < .001$. Spearman rank correlations indicated a negative correlation between severity of students' attitudes towards plagiarism (as indexed by a sum score of well-functioning items) and the pressure they placed on themselves ($r_s = -.22$, $p < .001$). This suggests that the more pressure students placed on themselves, the more permissive were their attitudes towards plagiarism (and vice versa). No significant relationship was found

between students' attitudes towards plagiarism and their perceptions of the pressure placed on them by others ($r_s = -.034$, $p > .05$).

Discussion

The current study sought to examine university students' attitudes towards plagiarism and determine if, in line with reported stereotypes (Ha 2006; Sowden 2005), these attitudes genuinely differ between Chinese and Australian students studying domestically. To investigate this issue, students' attitudes toward plagiarism were examined using Harris' (2001) 12-item Plagiarism Attitudes Scale, which was reduced to a 6-item subscale to meet conditions of validity and reliability using Rasch analysis. In taking this advanced psychometric approach, the current study provides initial evidence of significant cross-cultural differences in severity of attitudes toward plagiarism. Specifically, DIF of sum scores derived from well-functioning items indicated that although domestic students in both countries tended to have generally severe (negative) attitudes towards plagiarism, Australian respondents displayed significantly more severe attitudes toward plagiarism than Chinese undergraduates. DIF analysis of individual items, however, indicated that this difference was the product of cross-cultural differences in responding on only a limited number of items.

Specifically, there were three notable points of divergence between the Australian and Chinese university students. For one, 20% of Chinese students indicated that plagiarising another student's paper with permission was acceptable, compared to only 5% of Australian students agreeing with this statement. Other studies on Chinese plagiarism have found even higher percentages of undergraduate students who believe that plagiarism is an acceptable practice. For example, Hu and Lei (2012) found that approximately 65% of Chinese university students did not classify verbatim appropriation of others' work without proper reference as plagiarism. The authors attributed these findings to cross-cultural differences in the conceptualisation of plagiarism. In particular, they cite Chinese university students' pre-tertiary schooling practices of rote learning and memorising classic works by Chinese scholars to explain the cross-cultural differences in conceptualisations of plagiarism. This suggestion, however, appears inconsistent with the lack of cross-cultural differences in the current study with respect to Chinese and Australian students' overall perceptions of plagiarism as 'a big deal'. It may therefore be the case that cross-cultural differences in plagiarism attitudes manifest only for particular plagiarist behaviours, as a result of cross-cultural differences in conceptions of plagiarism. Further study is required to investigate these possibilities.

A second cross-cultural difference was apparent in the situations that some students deem to warrant plagiarist behaviours. That is, more than one-fifth of Chinese students indicated that plagiarism is justified under conditions of heavy workloads, compared to only 1% of Australian students. It is possible, however, that this finding may reflect cross-cultural differences in student workloads. For example, prior research has indicated that university workloads tend to be very high for Chinese students (Kember 2004). Given the scope of the current study, it is unclear whether this disparity may have impacted students' evaluations of whether plagiarism is justified under conditions of heavy workload. It is also unclear whether, given equivalent workloads, Australian students' attitudes toward plagiarism might vary with their change in circumstances. Further research examining longitudinal changes in attitudes under different times/conditions of pressure is required in order to address these questions.

Lastly, in contrast to the more permissive attitudes of the Chinese students towards plagiarism with permission and in cases of heavy workload, significantly more Chinese than Australian felt that a student lending a paper (that is subsequently plagiarised) should be punished. Chinese students' more severe attitudes toward this situation suggest a heightened feeling of collective responsibility for this form of academic misconduct. This is consistent with Pickering and Hornby's (2005) suggestions that expressions of solidarity with others is one of the most important Chinese values - even more so than virtues such as working hard, harmony, wealth, knowledge and loyalty to superiors. Conversely, the Australian students responded in a manner that arguably is more reflective of an individualistic stance (in that responsibility for adhering to the laws of appropriate behaviour rests on the individual).

Although the current study is unable to examine these possibilities, this finding nevertheless highlights the complexity of plagiarism attitudes, which are likely influenced by a myriad of factors, evaluations and stressors. Further, the importance and prevalence of these factors may differ cross-culturally. As an example of these differing stressors, Chinese respondents in the current study indicated a higher level of perceived pressure from others to succeed academically compared to the Australian students. Despite this, perceived pressure from others was not significantly related to plagiarism attitudes. However, attitudes towards plagiarism were related to the pressure students put on themselves to succeed academically (which did not differ between groups). This finding is consistent with prior research suggesting that attitudes toward plagiarism are significantly related to pressure levels (Maxwell et al. 2008). There are likely additional cross-cultural differences in stressors that contribute to plagiarist behaviours than those examined here. Research that looks at a broad range of stressors is required to further investigate this possibility.

Although the current student identified a number of cross-cultural differences in students' plagiarism attitudes, there were also concerning similarities in response. For instance, 90% of Chinese and Australian students indicated a lack of awareness of self-plagiarism as a form of academic misconduct (as indexed by agreement with the statement '*You can't plagiarise yourself*'). This lack of awareness of what does and does not constitute plagiarism is consistent with other Australian (Devlin and Gray 2007; Marshall and Garry 2006; Song-Turner 2008) and Chinese studies (Hu and Lei 2012; Mu 2010). In addition, that one in five students indicated that punishment for plagiarism should be light (in contrast to universities' typical position on plagiarism), while directionally consistent with prior research (Ryan et al. 2009), demonstrates a troubling divide between students' perceptions and universities' academic misconduct policies. Furthermore, that 12% of Chinese students and 2% of Australian students indicated that plagiarism is 'no big deal' is of additional concern.

Although these findings represent important extensions to the methodology and analysis of cross-cultural study of plagiarism attitudes, there nevertheless are a number of limitations to the interpretation of these results. First, the two cross-cultural samples were heterogeneous not only in nationality, but also in their proportions of males and females. For instance, prior research has found that males tend to be more pre-disposed to committing plagiarist acts than females (e.g., Egan 2008), leaving open the possibility that the current findings reflect gender differences rather than cultural ones. The samples also differed to some extent in their major of study and years of study. It may therefore be the case that institutional differences, rather than cross-cultural ones, are the source of the differences found. That our findings are at least directionally consistent with prior research, however, suggests that our findings are likely attributable to genuine cross-cultural differences. Finally, it is unclear exactly how and under what conditions plagiarism attitudes become plagiarist behaviours. In fact, prior research has demonstrated inconsistency between students' ethical values and their predicted behaviours (Harris 2001). Although outside the aims of the current study, further study is required to establish which attitudes and conditions result in acts of plagiarism.

Conclusion

The current study makes a number of important strides toward understanding students' plagiarism attitudes by: 1) psychometrically evaluating the adopted scale to ensure proper functioning prior to interpretation of results; and 2) investigating cross-cultural differences in plagiarism attitudes by surveying university students studying in their native countries. Importantly, this study indicated significant differences between cultural groups in their attitudes toward plagiarism. That is, although Chinese students displayed more permissive

attitudes toward plagiarism with permission or under conditions of heavy workload, they also more strongly maintained that those who lend a paper (that is subsequently plagiarised) should be punished. This highlights the complex nature of plagiarism attitudes, which the current study suggests are a product of culturally embedded experiences. This also indicates that culture-specific studies of plagiarism cannot readily and easily be generalised to other contexts. Instead, further cross-cultural comparisons of plagiarism attitudes, behaviours and prevention efforts are required to identify proactive plagiarism prevention measures that are appropriate for each context. Although further study on a larger scale is required to examine these various possibilities, the current study represents an important initial investigation into these issues.

Furthermore, our findings indicate that while the majority of students in both China and Australia have strong attitudes against plagiarism, a minority nevertheless displayed concerning perceptions and understandings of plagiarism. This suggests that university educators, rather than focusing exclusively on content-based knowledge, must also provide explicit instruction in the academic skills required to critically engage with others' ideas without misappropriating those ideas. This may include explicit and concentrated instruction in more general academic skills to foster understandings of what constitutes plagiarist behaviours, how to appropriately access and utilise others' ideas, as well as how and when to reference. In addition, the current results suggest that universities should further explore the factors that lead students towards plagiarist behaviours and proactively address these.

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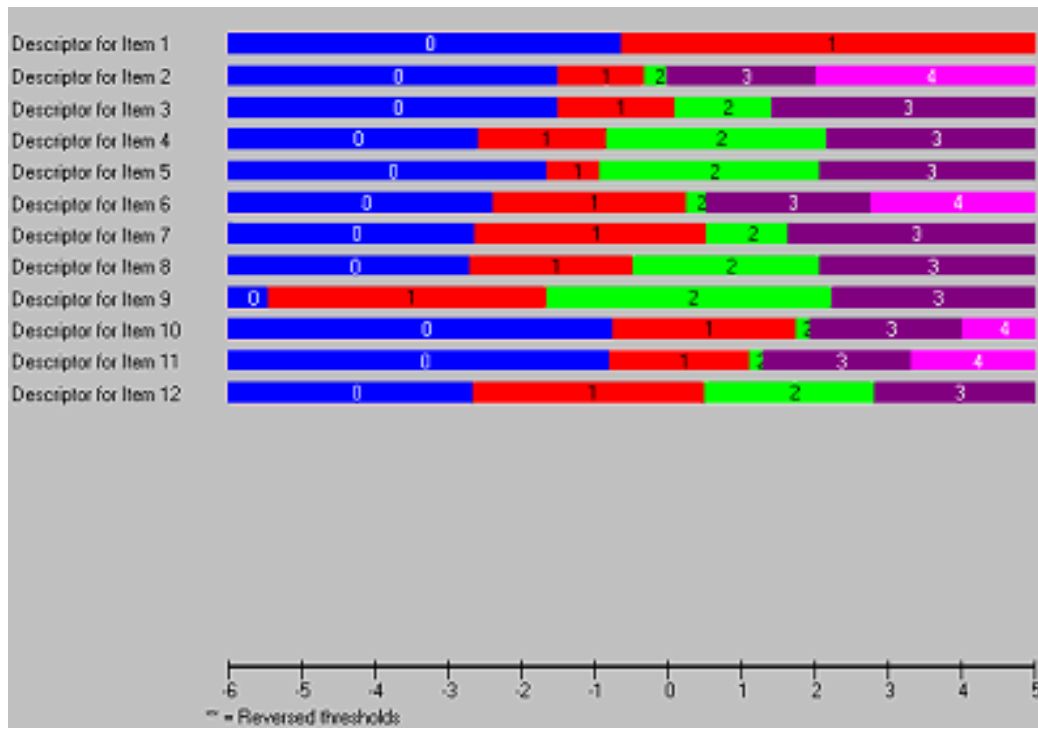   propensities in cheating. *British Journal of Educational Technology,* 34(4), 467-477.

Figure 1. The threshold map showing ordered thresholds for all 12 items of the Plagiarism Attitude Scale.
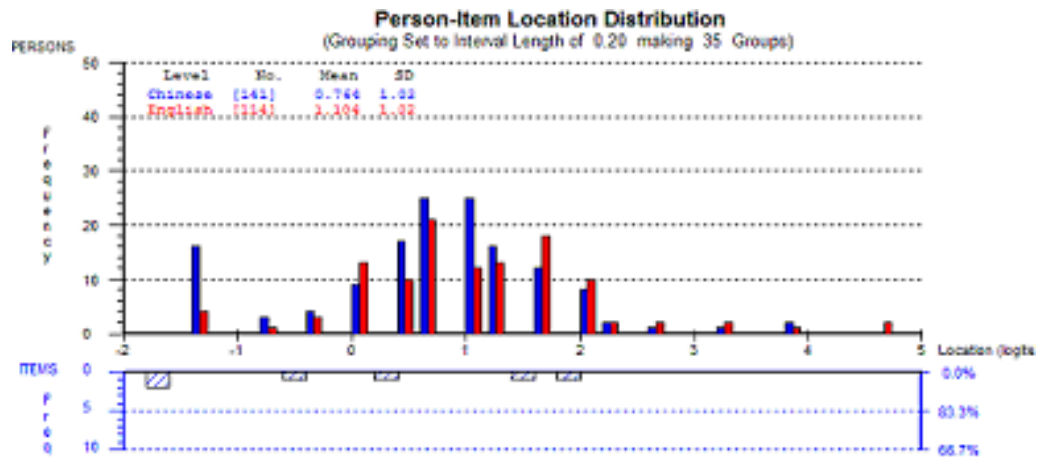
Figure 2. Person-item distribution organised by country for the 6-item subscale. The top graph indicates the distribution of persons along a continuum ranging from permissive attitudes toward plagiarism on the left of the zero to harsher attitudes on the right of the zero. Chinese undergraduates are displayed in blue. Australian undergraduates are displayed in red. The Australian group falls further to the right of the graph than the Chinese group indicating an overall harsher attitude toward plagiarism. The bottom graph indicates the range of items, with those eliciting permissive attitudes toward plagiarism on the left of the zero and those eliciting harsher attitudes toward plagiarism on the right of the zero.
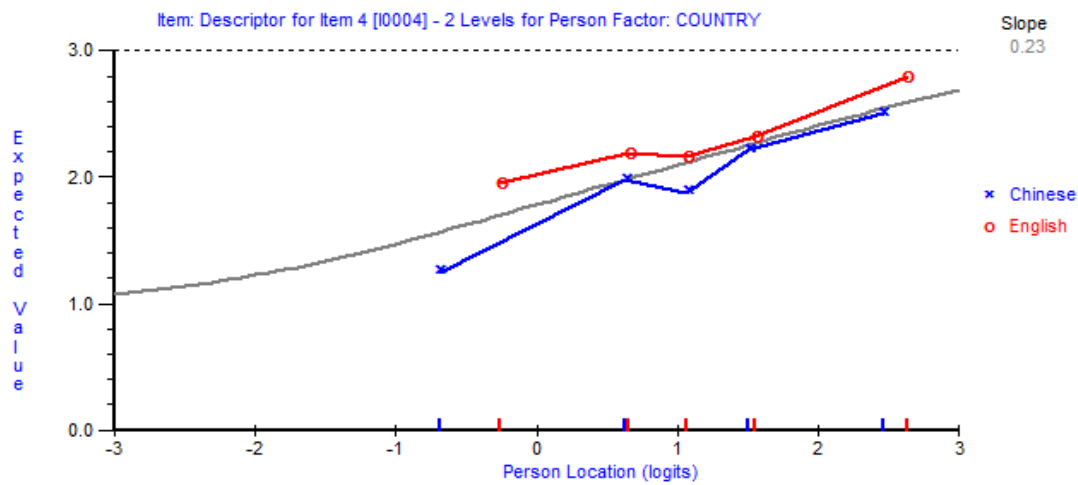
Figure 3. Differential Item Functioning for Question 4 of the 6-item subscale. Chinese respondents are represented in red. Australian respondents are represented in blue. As can be seen from the graph, the Australian university students' responses fall higher above the theoretical curve while the Chinese university students' responses fall below. Differences between the two groups are most pronounced for respondents who have more permissive attitudes toward plagiarism in general (i.e., those falling to the left of the zero).

Figure 4. Differential Item Functioning for Question 5 of the 6-item subscale. Chinese respondents are represented in red. Australian respondents are represented in blue. The difference in response patterns between the Chinese and Australian groups can clearly be seen here indicating a more permissive attitude toward plagiarism by the Chinese group.
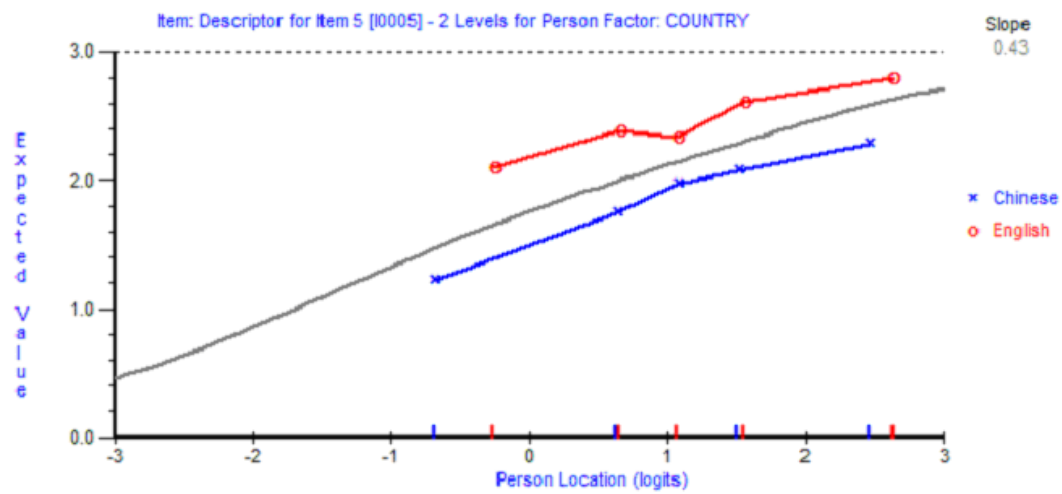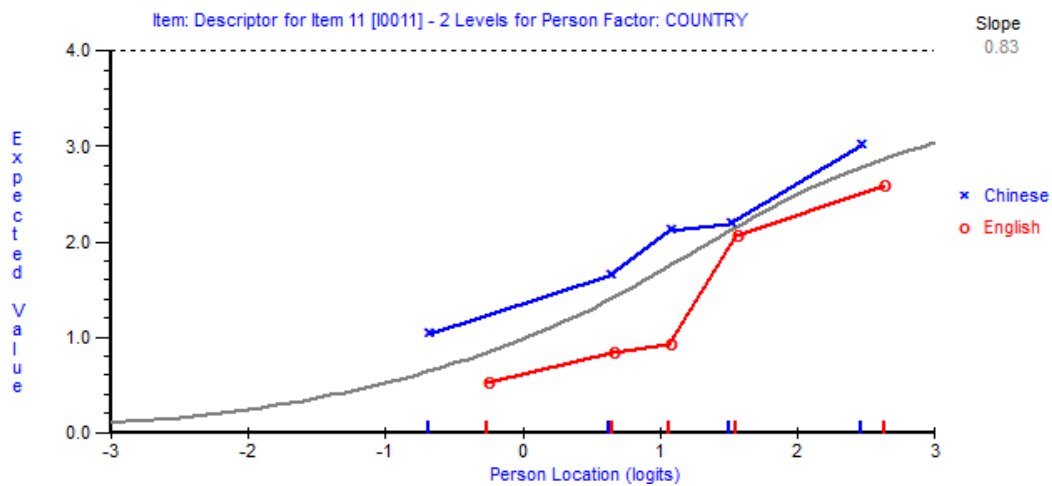
Figure 5. Differential Item Functioning for Question 11 of the 6-item subscale. Chinese respondents are represented in red. Australian respondents are represented in blue. By contrast with Figures 3 and 5, a reverse response pattern can be seen. The Chinese group clearly falls higher along the curve than the Australian group indicating a more severe attitude toward plagiarism. This difference is most pronounced in respondents who have more permissive attitudes toward plagiarism (i.e., those falling to the left of the zero).

Table 1

Fit of the Plagiarism Attitude Scale (6-item subscale)

Item	Location	Fit residuals	χ^2	*p*	*F*	*p*
Q4 Using others' work with their permission is ok	-1.67	-0.250	7.814	0.099	2.621	0.035
Q5 Plagiarism is justified if the professor assigns Too much work in the course	-0.439	0.106	0.569	1.258	0.869	0.883
Q6 Punishment for plagiarism should be light	0.331	0.914	2.963	0.564	0.748	0.560
Q9 Plagiarism involves taking others' words, not property, so it's no big deal	-1.706	-0.746	10.088	0.039	3.402	0.009
Q10 You can't plagiarise yourself	1.986	0.226	9.157	0.057	2.851	0.024
Q11 If I lend a paper to a student to look at who plagiarises, I should not be punished also	1.497	0.736	1.800	0.773	0.649	0.628

Note. Items with fit residuals <-2.5 and > 2.5 are considered misfitting. Bonferroni adjusted *p* values are significant at *p* < .008 (.05/6).

Table 2

Distribution of Chinese and Australian University Students' Responses on the 6-item subscale.

Responses	Questions					
	4	5	6	9	10	11
Strongly Disagree						
Chinese	(10.4)	(06.4)	(08.1)	(19.1)	(00.0)	(01.7)
Australian	(30.5)	(40.5)	(09.2)	(21.4)	(02.3)	(04.6)
Disagree						
Chinese	(46.8)	(43.9)	(38.2)	(60.7)	(09.2)	(19.7)
Australian	(43.5)	(53.4)	(43.5)	(64.9)	(08.4)	(15.3)
Neutral						
Chinese	(23.1)	(26.6)	(31.8)	(08.1)	(20.2)	(40.5)
Australian	(19.8)	(05.3)	(28.2)	(12.2)	(24.4)	(15.3)
Agree						
Chinese	(19.1)	(20.8)	(21.4)	(11.0)	(60.7)	(34.1)
Australian	(5.30)	(00.0)	(16.0)	(01.5)	(47.3)	(48.9)
Strongly Agree						
Chinese	(00.6)	(02.3)	(00.6)	(01.2)	(09.8)	(04.0)
Australian	(00.8)	(00.8)	(03.1)	(00.0)	(17.6)	(16.0)

Note. Values represent proportion of respondents within a sample that indicated a particular response.

Appendix A
Demographic and Plagiarism Attitude Questionnaire

1. **What is your age?** (please write) _____ years

2. **What gender are you?** (please tick <u>one</u> box)
   Male ❑   Female ❑

3. **Are you currently:** (please tick <u>one</u> box)
   1st Year Undergraduate ❑   2nd Year Undergraduate   ❑
   3rd Year Undergraduate ❑   4th Year Undergraduate   ❑
   Postgraduate   ❑

4. **What is your University major?** (please write) _____

5. **Do you work:** (please tick <u>one</u> box)
   Full-time   ❑   Part-time   ❑   Don't work   ❑
   Casual (less than 10 hours per week)   ❑
   Casual (10 or more hours per week)   ❑

6. **How much pressure do you put on yourself to achieve high grades?** (please circle a number)

1	2	3	4	5
none	a little	moderate	a lot	too much

7. **How much pressure do others put on you to achieve high grades?** (please circle a number)

1	2	3	4	5
none	a little	moderate	a lot	too much

PLEASE READ CAREFULLY BEFORE CONTINUING:

This questionnaire aims to measure your attitudes toward plagiarism, including the factors that might contribute to the prevalence of plagiarism. To begin, it is first important to understand exactly what plagiarism is.

For the purposes of this study, plagiarism is defined as using another person's ideas, designs, words or works without appropriate acknowledgement. This includes taking a full sentence of text without properly quoting (i.e., using "quotation marks" and an in-text reference), insufficient paraphrasing (e.g., changing only a few words of a sentence) and self-plagiarism (i.e., copying from your own previous work).

Plagiarism Attitude Scale

Directions: This is an attitude scale, which measures how you feel about plagiarism. It is *not* a test with right and wrong answers. Please consider your honest opinions regarding the items and record your responses. Please do *not* place your name on this scale. Please await further instructions.

1. Sometimes I feel tempted to plagiarise because so many other students are doing it.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

2. I believe I know accurately what constitutes plagiarism and what does not.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

3. Plagiarism is as bad as stealing the final exam ahead of time and memorizing the answers.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

4. In my roommate gives me permission to use his or her paper for one of my classes, I don't think there is anything wrong with doing that.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

5. Plagiarism is justified if the professor assigns too much work in the course.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

6. The punishment for plagiarism in university should be light because we are young people just learning the ropes.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

7. If a student buys or downloads free a whole research paper and turns it in unchanged with his or her name as the author, the student should be expelled from the university.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

8. Plagiarism is against my ethical values.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

9. Because plagiarism involves taking another person's words and not his or her material goods, plagiarism is no big deal.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

10. It's okay to use something you have written in the past to fulfill a new assignment because you can't plagiarise yourself.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

11. If I lend a paper to another student to look at, and then that students turns it in as his or her own and is caught, I should not be punished also.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree

12. If students caught plagiarizing received a special grade for cheating (such as an XF) on their permanent transcript, that policy would deter many from plagiarizing.

    ❑ Strongly Agree   ❑ Agree   ❑ Neutral   ❑ Disagree   ❑ Strongly Disagree