An empirical survey on prevalence and demographic differences in academic dishonesty among undergraduates from four public universities in China

Xinjuan Liu and Noryati Alias
SEGi University Kota Damansara, Petaling Jaya, Malaysia

Abstract

Purpose – This empirical survey is conducted to investigate the prevalence rate of academic dishonesty (AD) in examinations and assignments among undergraduates. The study compared the difference in admitted behaviours of academic dishonesty between male and female students comprising second-year, third-year and fourth-year students from the discipline of business, engineering, information technology (IT) and education.

Design/methodology/approach – A cross-sectional study was utilized in this study and collected data via the online questionnaire. A total of 1,624 respondents participated from four public universities of four provinces in China Mainland.

Findings – The findings showed that the proportion of respondents from China participating in AD is between 15.4 and 51.7%. The findings showed that more than two-thirds of the respondents stated involved dishonesty in examinations and assignments at least once during the previous academic year. In addition, male and female undergraduates in second-year, third-year and fourth-year showed statistically significant differences in dishonest behaviours. Specifically, the male/senior students were more involved in dishonest behaviours than the females/sophomores.

Originality/value – Unlike previous studies, this study found that discipline in the Chinese context was not a significant demographic predictor of dishonesty. Although not significantly different, the respondents majoring in business reported a high engagement rate of dishonesty, followed by engineering and information technology undergraduates, but education undergraduates revealed the lowest engagement rate of dishonesty. The target integrity education should be imparted among male and senior students.

Keywords Academic dishonesty, Cheating, Demographic difference, Chinese undergraduates

Paper type Research paper

Introduction

Most of the studies conducted in higher education institutions worldwide suggested that academic dishonesty (AD) was a pervasive phenomenon. AD is defined as dishonest behaviours that include cheating, copying, plagiarism and falsification at school or university, which results in better performance of students involved in such behaviour. Research on academic cheating dates back to the beginning of the century, with the earliest studies conducted within education and educational psychology (Campbell, 1931; Hartshorne and May, 1928). The topic is continuously being discussed and continues to remain a serious and ubiquitous academic integrity issue in the higher education fraternity.

Most studies were conducted in the USA, and problems with academic integrity are not unique to Americans. In recent two decades, a large number of empirical studies concerning the prevalence of cheating in the academic arena have been published, with studies conducted in Korea, Nigeria, Russia, Malaysia, UK, Czech, Poland, etc. Additionally, many studies were also conducted within the Chinese cultures, such as Hong Kong, Taiwan and Macao. However, a few of literature studies have been conducted in China Mainland focusing on the area of AD in colleges and institutions of higher learning though these studies stay at the level of phenomenon observation and theoretical discussion with a relatively narrow perspective and lack of practice and depth research (Chen *et al.*, 2020).

Undergraduates in China face severe employment involution, which may impact students' attitudes toward AD. More cases of cheating-related undergraduates have been reported in Chinese universities in recent years. In 2018, according to the official website of a university in Shanghai, a fourth-year student was expelled who cheated in three final examinations. In consideration of the Internet and smartphones having a high popularizing rate in the Chinese college and universities and together with the sudden outbreak and worldwide spread of Covid-19 that changed the teaching and studying mode, students had to stay at home to accept online teaching and examinations, not the traditional face-to-face model. Therefore, such related reports seem to become more common. The other two cases of dishonesty also came from their official websites. In 2020, a student at a university in Guangdong was found cheating twice sequentially and was eventually expelled. In the same year, two postgraduate students from the same faculty in one national key university in Hunan province were reported to have plagiarized 100% of other researchers' dissertations, which led to their graduate degrees being revoked.

AD or misconduct has been a common problem in Chinese universities and colleges (Ma *et al.*, 2013), which was supported by an online survey by the Social Research Center of China Youth Daily through 2,000 samples (of the respondents, 51.2% were college or university students or graduates) in 2015. The data showed that 60.4% of respondents confirmed that they or their peers had cheated in college or university, and 66.6% felt cheating was common among college or university students. The motivation for this study stems from the researcher's work experience in a university and concerns about what was going on in Chinese universities and colleges of higher education concerning AD.

AD is contrary to academic and professional integrity ideals and has had an incalculable impact on students, universities, institutions of higher education, academia and even economic sociality. While concerns about academic integrity have been raised worldwide (Ives *et al.*, 2017), however, in China, there is a lack of empirical studies and a large amount of data available on the exact extent of the behaviour of AD among Chinese students (Yang, 2012) or the demographic factors that influence Chinese students' dishonesty rate (Hu and Sun, 2017). This empirical study focuses on the relationship between the three demographic factors and dishonest academic behaviours, and the purpose is to investigate the prevalence rate of AD among undergraduates in four public universities and explore whether the undergraduates' three demographic characteristics (gender, year of study and discipline) have a significantly different frequency for the self-reported behaviours of AD in examinations and assignments.

Literature review
ADAD is defined as any different behaviour taking place during an academic exercise (Hendy and Montargot, 2019) that is aimed at achieving a positive outcome in education (Anderman and Murdock, 2011). For example, it includes cheating on examinations, as well as cheating on course assignments, plagiarism and similar immoral behaviours.

In order to more fully understand how undergraduates make decisions about dishonesty, it would be to understand better how these behaviours vary by type of context, so they assess

dishonest academic behaviours in two aspects. In the learning process of college and university students in China, academic work susceptible to dishonesty includes cheating during examinations (e.g. College English Test, FoxPro, tests, quizzes etc.), as well as on course assignments (e.g. all projects, written assignments, presentations, experiment report, etc.), which are the backbone of assessment in undergraduates' achievement in university.

Previous studies reported rather high AD participation rates among college and university students. Lin and Wen (2007) conducted a large-scale survey of 2,068 Taiwanese college students to investigate the prevalence of four types of AD: cheating on exams, cheating on homework, plagiarism and tampering with files. The authors found that the overall rate of AD was 61.72%. Specifically, 57.5% of students admitted to cheating during exams, 70.3% admitted copying others' work and 66.1% admitted plagiarism (Lin and Wen, 2007). Dömeová and Jindrová (2013) reported that the Center for Academic Integrity (CAI), in a study, found out that over 75% of higher learning students performed AD at least once in their studies.

Furthermore, some recent studies (Li, 2015; Chen and Chou, 2017) reported that rates of AD among students from Chinese cultures were higher. However, some researchers (Zhang *et al.*, 2014; Hu and Lei, 2015) revealed that Chinese students' self-reported participation rate is relatively low compared with other countries. The non-uniform conclusions on the frequency of behaviours on AD reported by studies were of interest to the researcher as this study could contribute to a better understanding of Chinese undergraduates' dishonest behaviours.

The relationship between gender and AD remains inconclusive and is mainly reflected in three points of view. The views are (1) men are more prone to AD than women, and there was considerable evidence in the literature that females report less cheating than males (e.g. Newstead *et al.*, 1996; Hensley *et al.*, 2013; Davis *et al.*, 1992; Błachnio, 2019). Błachnio's survey calculated that women scored lower than men on plagiarism, falsification and AD in general (Błachnio, 2019) because women always held stronger ethical views about AD (Selwyn, 2008; Ledwith, Risquez and O'Dwyer, 2010). Very few studies have found that (2) female students cheat more than male students (Leming, 1980; Graham *et al.*, 1994; Simon *et al.*, 2004). Several others observed (3) no reliable gender differences (e.g. Vitro and Schoer, 1972; Houston, 1976; Karabenick and Srull, 1978; Stevens and Stevens, 1987). Therefore, gender differences will be taken into consideration in present studies on AD in the Chinese context.

Studies conducted on AD indicated two findings by examining AD rates concerning students' grades in university. First, younger (sophomores) students tend to cheat more than older (seniors) students (e.g. Antion and Michael, 1983; Haines *et al.*, 1986; Newstead *et al.*, 1996). Second, older students (senior year) and especially those close to graduation cheat more often (Tang and Zuo, 1997; Crown and Spiller, 1998). Błachnio (2019) also supported this result and pointed out that age (year of study) was positively correlated with AD, such as cheating and fraud.

Meanwhile, with regard to disciplines differences, researchers have investigated AD in different student's academic fields of study, including business, engineering, nursing, pharmacy, information science and economics (e.g. Kerkvliet, 1994; Lawson, 2004; Klein *et al.*, 2007; King *et al.*, 2009; Smyth *et al.*, 2009; Carpenter *et al.*, 2010; Whitley and Starr, 2010). Ledwith *et al.* (2010) found that the discipline variable was not associated with students' ethical views regarding plagiarist behaviours from a sample of 708 undergraduate university students at an Irish institution. Yet, most studies have found that students majoring in business and engineering stand out in reporting dishonest academic behaviours.

McCabe (1997) surveyed 16 schools to compare business students with students from other majors. The results showed that 84% of business students reported one or more incidents of serious cheating in the past year, with 72% of engineering students and 66% of all participating students (McCabe, 1997). Tsui and Ngo (2016) concluded that business students cheat more than non-business students. In a study conducted in 1964, Bower

discovered that career-oriented courses such as business, education, and engineering led to the highest levels of cheating and that physical science produced quite low levels of AD (Bowers, 1964).

The topic of AD issue is sensitive; therefore, previous research related to interdisciplinary differences in the prevalence of dishonesty in China has been very limited, and corresponding academic research is concentrated in western countries, especially in the USA. The extent of AD among Chinese college and university students majoring in business, engineering, information technology (IT) and education are worth investigating, which has yet to be fully understood or surveyed in the Chinese context. The specific research results might be different from those found in Western countries. The key contributing factors are rooted in different exam-oriented education contexts, Confucian cultural backgrounds and attitudes towards education in China.

This study aims to examine the different opinions about whether there is a relationship and the type of relationship between college/university students' gender, year of study, disciplines and their likelihood of reporting AD.

Methodology
Participants
The target population comprises four provinces in four public universities' undergraduates who major in business, engineering, IT and education in China. The purpose of selecting public universities for the survey was to ensure the stability of the academic quality level of the research population. Stratified random sampling was utilized with discipline and year of study. Data collection was conducted in the Autumn semester of 2020 via an online survey among students who had just completed their final exams for the previous year. The counsellors sent the URL containing the link to the QQ, WeChat groups that include all the undergraduates of the faculty, with the research intention attached, and ensured the anonymity and voluntary of the collected data. This study was conducted across four universities and seven campuses to enrich the sample quality and eliminate regional differences. This provided a representative sample that reflected the dishonest academic behaviours of the corresponding disciplines' undergraduates in the territory.

Table 1 displayed the results of the demographic information of the respondents. In this study, a different quantity was represented in every university sample, in which University A is an institute of science and technology in Gansu province ($n = 298$), University B is a comprehensive university in Shandong province ($n = 397$) and University C ($n = 360$) and University D ($n = 570$) are normal universities with the majority of female students in Hebei and Shaanxi province, respectively. Therefore, the majority of the sample of this study is female students, who account for the proportion of 67.2%, and 32.8% are male undergraduates. Half of the respondents are second-year students, and third-year and

Characteristic		M	Percent %	Cumulative percent
Gender	Male	533	32.8	32.8
	Female	1,091	67.2	100.0
Year of study	Second year	825	50.8	50.8
	Third year	503	31.0	81.8
	Fourth year	296	18.2	100.0
Discipline	Business	332	20.4	20.4
	Engineering	535	32.9	53.4
	Information technology	316	19.5	72.8
	Education	441	27.2	100.0

Table 1.
Demographic
characteristics of
respondents
($N = 1,624$)

fourth-year students are 31 and 18.2%, respectively. Respondents from four disciplines are included in the sample for comparative purposes and are relatively evenly distributed across academic disciplines. Business undergraduates accounted for 20.4% of the total samples, engineering students are 32.9%, IT are 19.5%, and education are 27.2%.

Measures
The items used to measure the behaviours of AD constructs were adapted from ten items published in the literature (Stone *et al.*, 2009). Five new items to measure AD were added to existing items for the further supplements for Chinese undergraduates. All 15 items were measured on a five-point Likert scale that ranged from 1 (never) to 5 (always), which asked respondents to indicate how often they engage in behaviours such as cheating on a test or exam themselves or helping others cheat, unauthorized collaboration on an assignment, etc. A high score indicates greater levels of AD than lower scores and vice versa.

The researchers identified dishonest academic behaviours with many specific distinct forms, and simultaneously, students do not view cheating as a single construct, and their decisions to cheat or not to cheat are influenced differently depending on the type of assessment (Passow *et al.*, 2006). Hence, the outcome of this study is self-reported behaviours of AD in order to get a better understanding of how students make AD decisions. It is necessary to know how this behaviour varies in different types of contexts; therefore, two scenarios are depicted. In which, seven items were an index of cheating behaviours in tests or examinations, themselves or helped others cheating, and eight items were an index of dishonesty on assignments. In this research, the principal component analysis (PCA) with varimax rotation method was utilized to extract factors as Gaskin and Happell (2014) recommended, which method gets out factors based on the correlation among the items. The PCA revealed the presence of two components with eigenvalues exceeding 1, which explained 66.673% of the total variance exceeding the 60% value as the minimum percentage of acceptable variance. The two factors accepted 0.60 as the limit for factor loading, and adequate alpha reliabilities were 0.913 and 0.910.

Procedure
The counsellors in related disciplines conducted an online briefing session for their undergraduates to explain the procedure of the study. Students were invited to respond to an online survey. This was a self-reported questionnaire on students' AD based on their experience during the past academic year. Potential participants were informed about the research aims, and they were assured of the anonymity of their responses. Though this study focused on the analysis of the items concerning unethical behaviours, students are not penalized for reporting their misconduct.

Data analysis
Both descriptive and inferential data analyses were conducted using IBM-SPSS 25.0 with 0.05 as the significance level. Descriptive statistics were used to analyse the frequency, percentage, mean, range and standard deviation. Inferential statistics were carried out by techniques of independent samples *t*-test and one-way analysis of variance (ANOVA), followed by post hoc analyses using least statistical difference (LSD).

Result
The prevalence of academic dishonesty among Chinese undergraduates
Table 2 shows the percentage of participation in the four universities of undergraduate samples admitting to various forms of AD in examinations and assignments. The data showed that the proportion of undergraduates from four Chinese higher education

Factor	Dishonest academic behaviours	Mean	SD	Never (%)	Seldom (%)	Frequency of behaviours Sometimes (%)	Often (%)	Always (%)
1	*Cheating in examinations*							
	Look at peers' answers during a test/exam	1.678	0.929	56.7	22.8	15.0	3.5	1.0
	Learning what is on a test from someone who has already taken it	1.567	0.868	64.3	18.7	13.5	3.0	0.5
	Copying from other students on a test/exam without their knowledge	1.362	0.726	76.7	12.4	9.2	1.6	0.1
	Helping someone else cheat on a test/exam	1.469	0.805	69.5	17.2	10.5	2.4	0.4
	Copying from other students on a test/exam with their knowledge	1.394	0.747	74.0	14.9	8.9	2.0	0.2
	Using unauthorized cheat notes during tests/exams	1.342	0.727	78.0	12.4	7.4	1.8	0.4
	Using an electronic/digital device as an unauthorized aid during a test/exam	1.306	0.738	82.0	8.6	7.0	1.7	0.7
2	*Dishonesty in assignments*							
	Allow your assignment to be copied by your course mates	1.904	1.077	48.3	24.7	18.5	5.2	3.3
	Paraphrasing/copying few sentences for your assignment from a written source without acknowledging it	1.711	0.898	53.6	26.4	16.0	3.3	0.7
	Paraphrasing/copying few sentences for your assignment from Internet source without acknowledging it	1.741	0.903	52.1	26.0	18.0	3.3	0.6
	Receiving unauthorized help from someone on an assignment	1.539	0.806	63.6	21.4	12.7	2.2	0.1
	Copying another student's assignment and submitting it as your own	1.431	0.750	70.7	17.4	10.2	1.5	0.2
	Copying material almost word for word from a written source for your assignment without citing the source	1.463	0.753	67.8	19.5	11.3	1.2	0.2
	Working with others on assignments when it is required to be done as an individual assignment	1.572	0.806	60.1	25.2	12.4	2.0	0.3
	Pay someone to do your coursework for you	1.247	0.634	84.6	7.4	6.9	0.9	0.2

Table 2.
Percentage of dishonest academic behaviour frequency on examinations and assignments

institutions participating in dishonesty in examinations is between 18 and 43.37%. Most of the respondents (56.7–82%) reported they have never been involved in dishonest behaviours. Relatively few of the respondents (8.6–22.8%) reported cheating on "seldom" tests or exams. The remaining (7–15%) students reported cheating on tests/exams sometimes or (1.6–3.5%) often. Very few (0.1–1.0%) students report always cheating in tests/exams. In which the most common dishonest behaviour self-reported in examinations was "look at peer's answers during a test/exam" (Mean = 1.68, SD = 0.93), with its prevalence being significantly higher than all other forms of misconduct ($p < 0.05$). Concurrently, the lowest participation rate was "using an electronic/digital device as an unauthorized aid during a test/exam" (Mean = 1.31, SD = 0.74), with its prevalence being significantly lower than all other forms of misconduct ($p < 0.001$).

In the behaviour of dishonesty in assignments, more than half (51.7%, $n = 840$) of respondents allow their course mates to copy their assignments (Mean = 1.90). The second most involved in dishonest behaviour was that 47.9% of respondents admitted paraphrasing/copying a few sentences seldomly or always for their assignment from an Internet source without acknowledging it (Mean = 1.74). Other incidences of dishonest academic behaviours in assignments identified that 36.4% of respondents admitted that they had received unauthorized help from someone, and approximately two-thirds reported that they completed assignments independently (Mean = 1.57). The lowest participation rate paid others to do their coursework, and 84.6% reported they had never paid anyone (Mean = 1.25). In sum, most of them (48.3–84.6%) reported never having dishonest behaviours in assignments, but few (15.4–51.7%) reported seldomly participating to always.

Furthermore, this study revealed that more than half (55.97%, $n = 909$) of all respondents conceded to having been personally involved at least once in dishonest academic behaviours in examinations throughout their previous academic year, whereas 66.19% of respondents ($n = 1,075$) reported dishonesty at least once in their assignments. It is obvious that students report the participating rate in AD more frequently in assignments than in examinations. The possible reason is that there are many supervision mechanisms during the period of exams or tests, such as integrity education, faculty invigilation, cameras in the classroom and so on. However, the time and form of done assignments are uncontrolled. The previous study reported that students just wanted to finish their assignments instead of caring much about the quality of their work; however, the worst penalty is just being asked to redo the assignments without mark deduction, which does not affect their course grades (Khathayut *et al.*, 2020).

Gender difference in academic dishonesty

Several studies suggest that gender is an important predictor of moral judgements regarding academic misdemeanours. One of the purposes of this study was to examine the difference between male students and female students in dishonest behaviours. The result supported that male and female undergraduates have statistically significant differences in reported dishonest behaviours, as shown in Table 3.

In the scenario of cheating in examinations, male and female undergraduates have statistically significant differences ($t = 6.00$, $p < 0.001$), in which males reported more participation rate than females significantly (Mean = 1.594 > 1.373). Meanwhile, as well for written assignments, male and female undergraduates still showed statistically significant differences ($t = 5.33$, $p < 0.001$), and males are engaged more frequently than females significantly (Mean = 1.709 > 1.511). As a result, the university males are statistically more involved than the female undergraduates in dishonest behaviours in examinations and assignments in the Chinese context.

Year of study difference in academic dishonesty
The year of the study was another strong predictor of AD. This study will survey the difference among different academic year undergraduates on dishonest behaviours in examinations and assignments. The results revealed that these three different academic year groups of undergraduates had a statistically significant difference, as shown in Table 4.

Findings show statistically significant differences among the second-year, third-year, and fourth-year undergraduates for the behaviours of AD in examinations ($F = 3.490$, $p < 0.05$) and assignments ($F = 9.553$, $p < 0.001$). In order to exactly determine which group means differed significantly, the Scheffe test was carried out to do post hoc multiple comparisons. The examination results revealed significant differences between the sophomores and seniors (Mean difference $= -0.12$), with sophomore respondents who self-reported dishonesty at lower means than the seniors. Regarding the report on dishonest behaviours in assignments, the undergraduates who are sophomores and juniors (Mean difference $= -0.14$), sophomores and seniors (Mean difference $= -0.19$) performed significantly different senior respondents have greater means than juniors which is greater than sophomores.

Discipline difference in academic dishonesty
Some studies indicated that the percentage of undergraduates reporting engagement in various cheating behaviours differs by college major. Therefore, another target is to enquire about the difference among undergraduates in four disciplines (business, engineering, IT and education) on the dishonest behaviours in examinations and assignments.

Based on the results as shown in Table 5, it could be seen that in the frequency of involvement in dishonest behaviours in examinations and assignments, these four different discipline groups of undergraduates were not significantly different ($p > 0.05$). It is important to note that the respondents majoring in business self-reported relatively highest

Gender		M	SD	Cheating in examinations F	t	p	M	SD	Assignments F	t	p	
Male	533	1.594	0.754	78.32	6.00	0.000	1.709	0.752	59.46	5.33	0.000	**Table 3.** *T*-test result of gender on the behaviour of academic dishonesty
Female	1,091	1.373	0.570				1.511	0.593				

Year of study		M	SD	Cheating in examinations F	p	M	SD	Assignments F	p	
Second year	825	1.405	0.652	3.490	0.031	1.509	0.633	9.553	0.000	**Table 4.** ANOVA result of year of study on the behaviour of academic dishonesty
Third year	503	1.474	0.638			1.627	0.674			
Fourth year	296	1.508	0.629			1.678	0.669			

Discipline		M	SD	Cheating in examinations F	p	M	SD	Assignments F	p	
Business	332	1.510	0.760	2.327	0.073	1.612	0.709	1.769	0.151	**Table 5.** ANOVA result of disciplines on the behaviour of academic dishonesty
Engineering	535	1.463	0.643			1.610	0.681			
IT	316	1.419	0.585			1.541	0.638			
Education	441	1.395	0.587			1.532	0.592			

participation rates of AD in examinations (Mean = 1.51) and assignments (Mean = 1.61), followed by respondents in the program of engineering, IT and undergraduates in education were shown to have the lowest engagement rate of dishonest academic behaviours.

Discussion and conclusion

The researcher collected 1,624 samples via an online questionnaire from four university settings in four provinces in China to investigate and compare the prevalence rate of AD among male and female undergraduates with the year of study and discipline. The respondents were required to report the participation frequency of dishonesty in examinations and assignments they have been involved.

The findings revealed that the proportion of participants in China from four Chinese universities is relatively lower than other country students, ranging from 15.4 to 51.7% in the past academic year. Meanwhile, Lewellyn and Rodriguez (2015) reported in 1960, the AD rate in America was at 39% and dramatically increased in 1993 to 64%. Simkin and Mcleod (2010) found that it was at 60–86%, and Olafson et al. (2013) reported the present level of dishonesty is high from 54.1 to 70.4%. Though the prevalence rate of AD in China is not low compared with other Western countries, such as the USA, Malaysia, Bangladesh, etc., the rate is relatively lower than previous investigations in Asian countries (Lin and Wen, 2007; Li, 2015; Chen and Chou, 2017).

This study revealed that Chinese samples' self-reported cheating in examinations was 55.97 and 66.19% in assignments at least once in the past year. Whereas Mustapha et al. (2016) conducted a study in Malaysia on university students and found that 62% of Muslim university students admitted to performing AD in 2015 and 56% admitted to performing AD in 2014. According to survey data from Alam (2016), in Bangladesh, about 85% of the respondents have been involved with AD one or several times. About 74% of respondents said they had prepared their assignments one or more times by copy-pasting from Internet sources.

The results of this study indicate that although the AD participation rate of students is high, it still decreased compared with previous studies among students from Chinese cultures. The possible explanation is that the Chinese educational oversight bodies and universities have attached great importance to the integrity of education of students from higher learning institutions. A series of regulations on academic integrity and ethical standards have been issued, and universities have formulated their institutional policies on academic integrity to govern the academic activities of their faculty and students. Additionally, integrity (Chinese is ChengXin) is a moral quality that is highly esteemed and socially expected in the Confucian culture, also one of the Socialist Core Values strongly promoted by the Chinese government. Therefore, the decrease in the frequency of students participating in AD is a natural consequence.

According to the difference in gender, the findings indicated that male students were involved statistically significantly more in dishonest behaviours than the female students in the Chinese context, which is consistent with several research studies (e.g. Selwyn, 2008; Ledwith, Risquez and O'Dwyer, 2010; Hensley et al., 2013; Błachnio, 2019). The possible reason was that females were more prone to the influence of social desirability than males, especially with ethical issues (Dalton and Ortegren, 2011). Similarly, the female participants are inclined to maintain a socially favourable image. This explanation was partially supported by gender socialization theory by Gilligan in 1982 that females show greater ethical sensitivity and concern about others' expectations compared with males.

Other findings related to research duration were that fourth-year undergraduates were engaged in more than the third-year, and third-year undergraduates were engaged in statistically significantly more than second-year dishonest academic behaviours in the

Chinese context. This is consistent with the previous studies (e.g. McCabe and Treviño, 1997; Yu *et al.*, 2016; Zhang *et al.*, 2017). This finding can be interpreted as senior students staying longer in college/university, having greater experience with tests and assignments, and being observed more dishonesty. According to observational learning and imitation learning from a social learning perspective, they are more prone to be engaged in AD. Especially in Chinese universities, most undergraduates are full-time and stay on campus except for 2–3 months of vacation every year. They spend most of their time with peers and faculty members, and interaction effects are immeasurable therein.

However, when it comes to the characteristic of age or grade level, some scholars have consistently reported that younger college students cheat more than their older peers (McCabe and Treviño, 1997; Klein *et al.*, 2007; Olafson *et al.*, 2013). They explained that first-year or second-year students are more likely to be at the early stages of cognitive and moral development, where they are influenced by peer influences and are therefore less likely to develop their ideas and take appropriate actions, which may lead to young students entering college are less inclined to cheat, but they are then easily influenced by their peer culture to engage in cheating (McCabe *et al.*, 2012). Even if they hold opposing views, this explanation is congruous with the reason that the longer students have been in university, the more experienced they were in examinations and assignments, the more likely they were to observe peers' violations and the more likely they were to involve in.

The students in business, engineering, IT and education discipline did not show a significant difference in the dishonesty prevalence rate and indirectly supported by Yang *et al.* (2013), which examined Taiwanese students and discovered no differences in students' willingness to report dishonest behaviour by classmates or friends based on major. However, most prior studies have shown that business students reported the highest dishonesty participation rate in examinations and assignments (e.g. Stone *et al.*, 2010; Bagraim *et al.*, 2014). That is probably because of differences in context, cultural background and other educational context factors; this finding may differ from those obtained in other nations.

This non-significant discipline difference may possibly reflect cross-cultural differences in teaching and learning styles in China (prior research has indicated that learning workloads tend to be very high for Chinese students). Undergraduates, in particular, mainly those learning the basic professional course, must memorize and understand a lot of professional vocabularies and theory constantly in the second and third academic year. Only in the summer, winter vacations and last year of the study, will there be practical learning, such as curriculum design or practicums. Teaching and learning style is similar in both hard disciplines (e.g. the natural sciences, IT and engineering) and soft disciplines (i.e. the social science, humanities, business and education). Another explanation for the non-significant discipline difference was influenced by the way Chinese university students are assessed in terms of their academic performance. And Chinese undergraduates' final grade is calculated by taking a percentage of the examination result and extra-curricular assignment. Even extra-curricular practice is no exception. Therefore, Chinese undergraduates in all disciplines generally have similar teaching, learning and assessment styles, and understandably, it is not significant according to the discipline. Furthermore, more research is needed to explore whether the disparities in results are due to differences in students' attitudes and perceptions.

In conclusion, the data provided evidence of the relatively common prevalence of AD among undergraduates in the four Chinese public universities. The male/senior respondents reported being involved in dishonest behaviours more than the females/juniors in the Chinese context. Gender and year of study were important demographic predictive variables of dishonesty in these four public universities, which were also applicable to other public

undergraduates in China, and indicated well-directed measures for males and senior students to strengthen education integrity. However, the reasons behind the non-significant discipline difference deserved further exploration.

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About the authors

Xinjuan Liu, PhD candidate of Faculty of Education, Languages and Psychology, SEGi University, Petaling Jaya, Malaysia. Xinjuan Liu is the corresponding author and can be contacted at: liuxj0905@163.com

Noryatii Alias, Senior lecture of Faculty of Education, Languages and Psychology, SEGi University, Petaling Jaya, Malaysia.