Exploring Tertiary Students' Behavior in Maintaining Academic Honesty regarding School Assignments: An Application of the Theory of Planned Behavior

By

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in Partial Fulfillment of the Requirement for

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Statement of Originality

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Abstract

Having academic honesty is a valuable character for tertiary level learners in their learning journey. The purpose of the current study was to study tertiary students' behaviors of academic honesty regarding school assignments. Data from 8 public universities in Hong Kong were collected through a questionnaire. This questionnaire contained ten scales for evaluating the five components of "the theory of Planned Behavior: 1) attitude toward behavior, 2) subjective norm, 3) perceived behavioral control, 4) intention and 5) behavior". Rasch analysis had been used for examining psychometric properties of the modified study instrument and generate students' measures. These students' measures were then subjected to a path analysis for investigating relationships among 5 components. Results of the path analysis revealed good model-data fits on the two constructs: avoiding academic misconducts and upholding academic truth. Regardless of the predictive power of subjective norms is debatable, attitudes toward behavior and perceived behavioral controls are significantly related to the intentions and behaviors of tertiary students in maintaining academic honesty. The significance of this current study suggests that the implications of results contribute to further research. These contributions to researchers and practitioners include the advancement of current research and teaching techniques, all of which are presented in this thesis.

Keywords: "academic honesty scales"; "tertiary students"; "Rasch analysis"; "Theory of Planned Behavior"; "path analysis" ("Structural equation modeling")

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List of Abbreviations

CAI	The Center for Academic Integrity
EDB	Hong Kong Education Bureau
GovHK	The Government of Hong Kong Special Administrative Region
H	Hypothesis
ICAC	The Hong Kong Independent Commission Against Corruption
ICAI	International Center for Academic Integrity
MCSDS	Marlowe-Crowne Social Desirability Scale
SEM	Structural equation modeling
TRA	The Theory of Reasoned Action
TPB	The Theory of Planned Behavior

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Chapter 1: Introduction

1.1 Background of the study

Academic honesty refers to the activities in educational sectors including learning, teaching and scholarly research pursuing truth and knowledge (International Center for Academic Integrity, 2014). Learners are expected to act "truthfully and honestly" in all academically activities ("The Hong Kong University of Science and Technology", 2015). Since the school is a place for further knowledge (Lingnan University, Hong Kong, 2017), and is also a place to nurture students to become responsible citizens ("The Education University of Hong Kong", 2016), tertiary students should avoid academically misconducts including academic plagiarism, academic collusion and academic falsification ("Hong Kong Baptist University", 2017; "The Education University of Hong Kong", 2016 and "The University of Hong Kong", 2012). Equally important, students should uphold academic truth as an essential moral quality ("Hong Kong Baptist University", 2017, "The Hong Kong University of Science & Technology", 2015) by expressing truthful opinions, reporting incorrect behaviors and correcting a mistake ("International Center for Academic Integrity", 2014; McCabe, Treviño & Butterfield, 2012; Stone, Kisamore, Kluemper & Jawahar, 2012).

The research of academic honesty or dishonesty in China has increased from 2 in 2001 to 335 in 2010, and these research studies mostly focused on academically dishonesty rather than academically honesty (Macfarlane, Zhang, and Pun, 2014). The trend in these research

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publications demonstrates the awareness of academic honesty in the Chinese education community. However, there are some local education news that reports academic honesty issues, including plagiarism, collusion and falsification. For example, a university educator in the Mainland plagiarized and self-plagiarized more than 15 papers (Zhuang, 2018). Another example, two university educators in two Hong Kong public universities had been found that there were 40% of the similarity on their jointed publications; these educators expressed that they did not have enough awareness of plagiarism when they wrote the manuscripts (Wang, 2018).

Recently, "Du, Xiang, Zhu, and Xu (2011)" have applied the "Theory of Planned Behavior" (TPB) to develop a questionnaire for investigating the intention and behavior of Chinese college students regarding cheating on exams. In the review study by "Meng, Othman, D'Silva, and Omar" (2014), it was shown that TPB is an appropriate approach for studying academic dishonesty. From the perspective of Western and Chinese literature, research articles usually focused on negative aspects of academic integrity: discussing unethical academically behavior rather than focusing on positive aspects of academic integrity like promoting ethical practice ("Macfarlane, Zhang and Pun, 2014"). Hence, this can be the direction of planning a balance research framework, including positive and negative frameworks to study ethical and unethical practices of tertiary students in preparing their school assignments.

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During the planning phase, a systematic search of the five databases (see Chapter 2) was performed. A total of 1807 related research articles was assessed, and several limitations were identified. First, most of the studies focused on intention and behavior of tertiary students' plagiarism and only a few studies examined the intention and behavior of tertiary students' unauthorized collaboration and falsification (Singh and Bennington, 2012). Second, there were only a few studies on the positive framing to promote ethical academic practices which have examined the intention and behavior of tertiary students reporting peer academic misconducts (Stone et al., 2012). Third, little or no study has been performed for investigating the intention and behavior of tertiary students in promoting academic practices, such as expressing truthful viewpoints for prohibiting academic misconducts, self-reporting academic misconducts and restoring academic honesty. Forth, current instruments were developed mainly for capturing the concept in avoiding academic dishonesty as the emerging knowledge of academic honesty. In a study by Riemenschneider, Leonard and Manly (2011), they have successfully assessed tertiary students' ethical decision-making through the TPB approach. Based on the weaknesses and strengths in the existing research, this current study was proposed to explore tertiary students' intentions and behaviors of academically honesty in preparing their school assignments through the application of TPB.

1.2 "Statement of the problem"

The "Government of Hong Kong Special Administrative Region" (GovHK) has had a

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goal to promote academic integrity (http://www.edb.gov.hk/en/curriculum-development/4-key-tasks/moral-civic/). The GovHK has encouraged the universities at Hong Kong to advise their tertiary students to uphold academically integrity that is a broad topic including six values, namely: honesty, fairness, respect, trust, courage and responsibility (Fisherman, 2014). Among these six values, honesty has been suggested to be the core value of academic integrity for Hong Kong tertiary education (Kwong, Ng, Mark & Wong, 2010) so the focus of the current study is on academic honesty as it is the backbone of academic integrity, and it can be promoted and enforced through trust, respect, responsibility, fairness and courage.

The first problem is the misunderstanding of the definition of academic honesty among tertiary students which may lead them unintentionally to violate academic honesty (Barrett and Cox, 2005). For instance, students can avoid unethical practice such as plagiarism, collusion and falsification while ignoring their roles as responsible citizens: expressing a true view of the prohibition of academic misconducts; reporting academic misconducts which have committed by their peers and themselves; restoring academic honesty after understanding the values of academic honesty.

To better understand academic honesty, it is required to know the denotation in academically integrity and academic honesty because these two terms are often interchangeable. For example, integrity has been frequently utilized for an English synonym or substitute for replacing honesty (Macfarlane, Zhang and Pun, 2014). Consequently,

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students and teachers do not seem to be aware of the difference between integrity and honesty in the institute setting (Kwong et al., 2010). Kwong et al. (2010) noted that there were perception differences in what can be or cannot be academically dishonest behaviors between tertiary students and teachers in Hong Kong. The gap in the perception of academic honesty is one which to be addressed.

The intention and behavior involved in upholding academic truth may be a knowledge gap in academic honesty. Few studies have investigated tertiary students' intention and behavior of maintaining academic truth and very few studies have investigated academic truth in assignments. This could be due to the lack of a conceptual framework for developing a self-administered questionnaire to explore tertiary students' academic honesty in assignments. In response to this problem, this study proposes to develop a self- administered questionnaire by a multi-method approach which includes considering experts' opinions, gathering tertiary students' feedbacks, reviewing existing literature, comparing university documents, conducting on-site surveys and analyzing research data.

Technology and cultural differences may affect tertiary students' intentions and behaviors to uphold academic honesty (Riemenschneider et al., 2011). Knowledge transfer can be promoted or blocked by technology. Technology can provide a wealth of information to meet users' needs, but it may also aid academic dishonesty (Feon, Vasodavan and Siraj, 2016). For instance, technology makes the paper easier for tertiary students to "copy and

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paste" their previous course assignments to another course than ever before ('Teddi' Fishman, 2016). This factor may be one of the reasons for the decline in academic honesty.

On the other hand, cultural differences may also be present in the academic dishonesty issues. In research by Chapman and Lupton (2004), 622 Hong Kong and 443 American tertiary business students were surveyed to compare the cross-national differences in academic dishonesty. The results displayed that Hong Kong tertiary students were more possible to collude on out-of-class school assignments because of collectivist culture and the American students were more possible to cheat alone in exams due to individualism. As Hong Kong is a unique city where Eastern and Western cultures meet in her colonial history, it is not known how Hong Kong tertiary students maintain academic honesty. The data to make evident of academically honesty or dishonesty in Hong Kong tertiary students remain inadequate. In this study, I proposed to examine the predisposing factors including attitudes, subjective norms (such as considering social pressure) and intentions that have an impact on upholding academic honesty in Hong Kong tertiary students.

Without an effective measure of the problems, promotions of academic honesty will continue to advance slowly or stagnate in meeting the educational expectation of Hong Kong stakeholders including tertiary students, tertiary teachers, tertiary students' family, tertiary education level principals, tertiary education institutions, teacher training institutions, institution sponsoring bodies, taxpayers and GovHK. Therefore, there is a need to define

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academic honesty, modify a questionnaire and eliminate predisposing influences including attitudes of avoiding academic misconducts or upholding academic truth, subjective norms regarding considering social stress and intentions. The current project has addressed this need, and in the subsequent chapters of this thesis, the contributions of this study to tertiary education regarding tertiary students' behaviors of academic honesty in school assignments are presented.

1.3 Purpose of the study

Despite the growing alertness of academically honesty, the study measurements of tertiary students' intentions and behaviors for sustaining academic honesty regarding school assignments are still very limited. The limitation can be instigated by the confusion of the concept of academically integrity and honesty. Furthermore, there are only a few questionnaires for measuring academic dishonesty while there are limited or no well-established questionnaires for measuring academic honesty.

The existing research is mainly studied on academic dishonesty and not on academic honesty. An appropriate questionnaire is required for studying tertiary students' academic honesty regarding school assignments. First, in the eight degrees awarding universities, providing 15,000 first year and first degree places, funded by the "University Grants Committee" (Education Bureau, 2017). A low-cost and effective study measure is useful to assess many participants. Second, Macfarlane et al. (2014) studied 115 research that was

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associated with the problems of academically integrity. The systematic review noted existing research lacks a positive aspect for evaluating academic honesty among the post-modern young people (Macfarlane et al., 2014). Third, Riemenschneider et al., (2011) called a geographically similar questionnaire to study non-American tertiary students due to cultural influences within a local zone. Therefore, this project will modify a validated questionnaire to meet the research purpose

In response to the statements of problems, the purpose of this project is to understand tertiary students' academically honesty with a focus mainly on school assignments. Four research questions are based on this study purpose:

1) "Can tertiary students' intentions to avoid academic misconducts regarding school assignments be predicted by attitude towards behavior, subjective norm and perceived behavioral control?",

2) "Can tertiary students' behaviors to avoid academic misconducts regarding school assignments be predicted by attitude towards behavior, subjective norm, perceived behavioral control and intention?",

3) "Can tertiary students' intentions to uphold academic truth regarding school assignments be predicted by attitude towards behavior, subjective norm and perceived behavioral control?" and

4) "Can tertiary students' behaviors to uphold academic truth regarding school

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assignments be predicted by attitude towards behavior, subjective norm, perceived behavioral control and intention?"

To answer the four research questions, the subsequent research objectives are established:

1) To define what academic honesty is in among tertiary students' in doing their assignments,

2) To modify a questionnaire for assessing the intentions and behaviors of tertiary students in Hong Kong in maintaining academic honesty in school assignments, and

3) To apply the modified questionnaire (objective 2) to assess the intentions and behaviors of tertiary students in Hong Kong for upholding academically honesty in their assignments through a path analysis.

1.4 Significance of the study

The current study aims to advance understandings in academically honesty of Hong Kong as well as tertiary level education worldwide. A newly modified questionnaire fills the research gap in existing research studies (such as Kwong et al., 2010: Riemenschneider et al., 2011). This modified questionnaire helps to assess the intentions and behaviors of tertiary students across Hong Kong public universities with regards to academic honesty. Data has been collected from student participants from 8 public universities using a self-administered questionnaire which is modified by applying a multi-method approach.

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This approach has solved the limitation of the existing research. Furthermore, the multi-method approach has helped to achieve the project objectives such as defining what academic honesty is, modifying a self-administered questionnaire and eliminating the predisposing factor for upholding academic honesty. In addition, this study expands current knowledge in the field as existing research focuses on primarily commercial students (such as Chapman and Lupton, 2004; Rawwas, Swaidan and Isakson, 2007). The research may conduct another cross-sectional survey in a non-commercial university. Hopefully, the findings will distribute contributions to future teachers, principals or educators with regards to academic honesty.

1.5 Theoretical framework and assumptions

A theory acts as a body to organize factors and assumptions for explanation and prediction of the target behavior (Lunenburg and Irby, 2008). This study requires evidence of relationships and direction of a set of variables including 1) "attitude toward the behavior", 2) "subjective norm", 3) "perceived behavioral control", 4) "intention" and 5) "behavior" (Beck and Ajzen, 1991). A theoretical model is constructed to indicate the research hypotheses. A hypothesized model is illustrated in Figure 1.

The hypotheses (H1a to 1g) for testing model 1 (Avoiding academic misconducts) and (H2a to 2g) for testing model 2 (Upholding academic truth) are as follows:

"H1a/H2a: Tertiary students' attitude toward a behavior is positively related to intention

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H1b/H2b: Tertiary students' subjective norm is positively related to intention

H1c/H2c: Tertiary students' perceived behavioral control is positively related to intention

H1d/H2d: Tertiary students' attitude toward a behavior is positively related to behavior

H1e/H2e: Tertiary students' subjective norm is positively related to behavior

H1f/H2f: Tertiary students' perceived behavioral control is positively related to behavior

H1g/H2g: Tertiary students' intention is positively related to behavior"

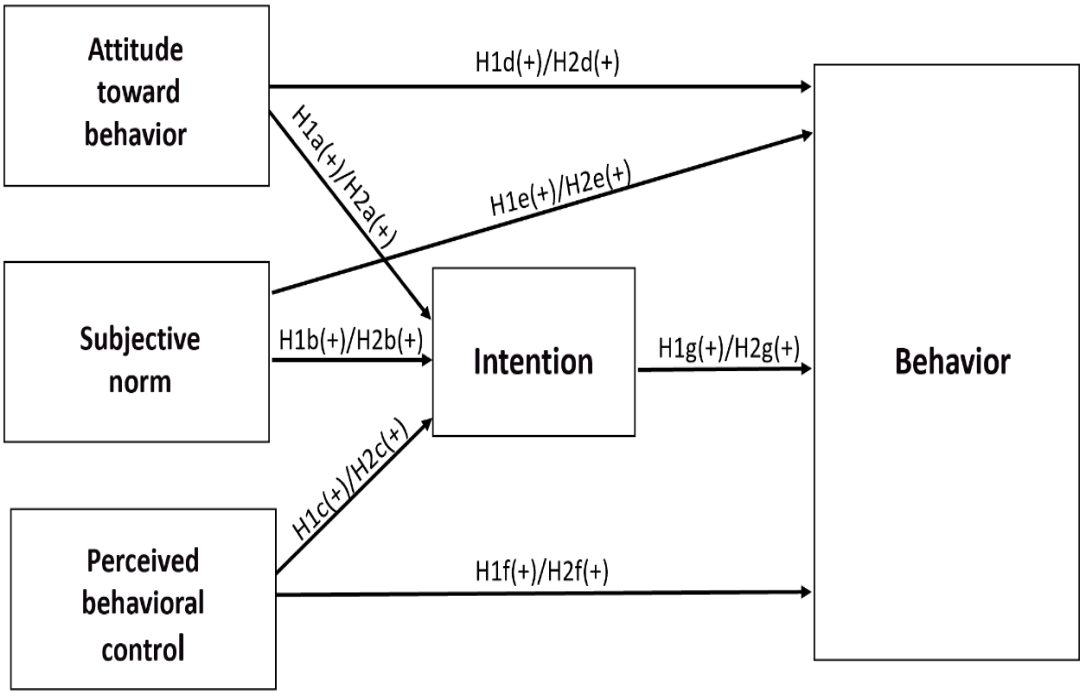

Figure 1. A hypothesized model for the constructs of avoiding academic misconducts and upholding academic truth.

Note. The direction of the hypothesized relationships is in parentheses. + = positively related

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1.6 Definition of the terms

Avoiding misunderstanding, this section presented the definitions and descriptions for distinguishing the difference between a model and a theory. Furthermore, the definition difference was made between academic integrity and academic honesty in relation to assignments.

1.6.1 Theory

A theory is a description of the phenomena and interrelationships, it reflects the true nature of the world and can be further empirically tested through theoretical analysis and verification (Daresh & Playko, 1995).

1.6.2 Model

A model is a structure or diagram which uses to explain the theoretical foundation; nevertheless, the study model is not a theory and so it can not be examined or validated (Bogdan, and Biklen, 2007). A model describes the interrelationships of variables in the graphical description of the theoretical model (Daresh and Playko, 1995) for showing multipart relationships with the straightforward format (Stoner, Freeman and Gilbert, 1995).

1.6.3 Academic integrity

The “International Center for academic Integrity” suggested that academically integrity includes 6 values: “honesty, fairness, respect, trust, courage and responsibility” (Fishman, 2014).

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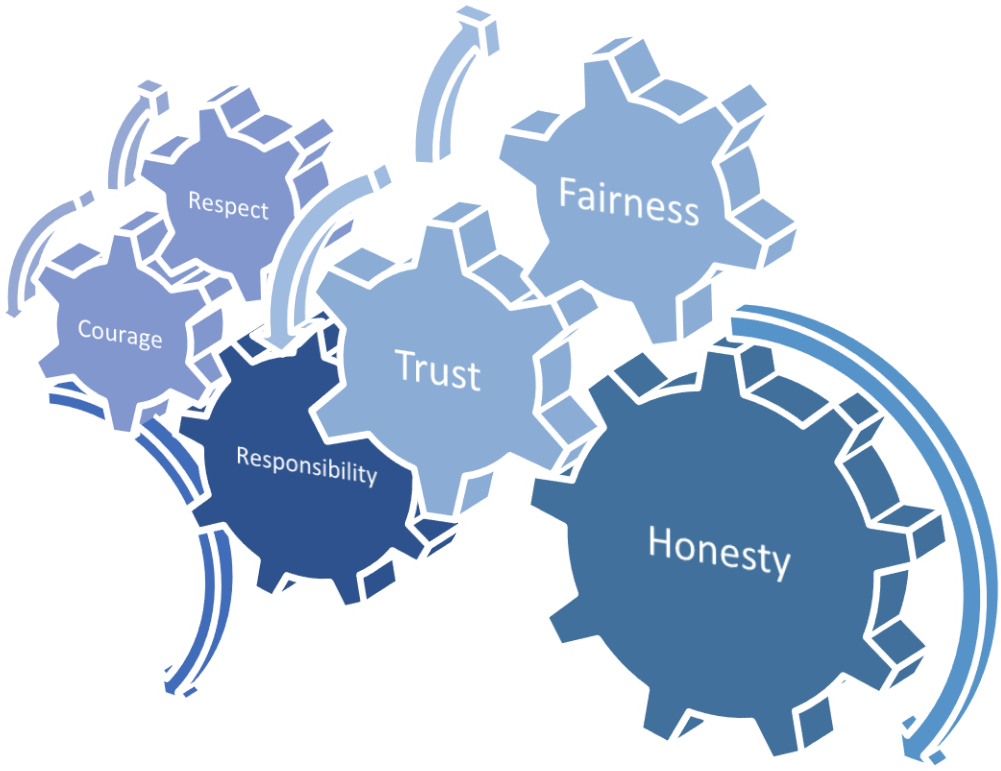

Figure 2. The definition of academic integrity

1.6.4 Academic honesty regarding tertiary students' assignments

Following the literature review (Chapter 2), academic honesty is an indispensable component of academic integrity and academic honesty in relation to assignments defines into two categories (Figure 3). The first category is avoiding academic misconducts and its sub-categories are 1) avoiding plagiarisms, 2) avoiding collusions and 3) avoiding falsifications. Another category is upholding academic truth and its sub-categories are 1) expressing truthful viewpoints (for prohibiting academic misconducts), 2) reporting academic misconducts (peer and self-report academic dishonesty) and 3) restoring academic honesty (correcting mistakes). This definition is based on the literature reviews (such as Bretag, 2016;

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Fishman 2014; Macfarlane et al., 2016; Meng et al., 2016; McClung and Schneider, 2015 and Wu, 2010) and the student's information (such as handbooks) from entirely public universities in Hong Kong such as "The Education University of Hong Kong", 2017 and "The Hong Kong University of Science and Technology", 2015.

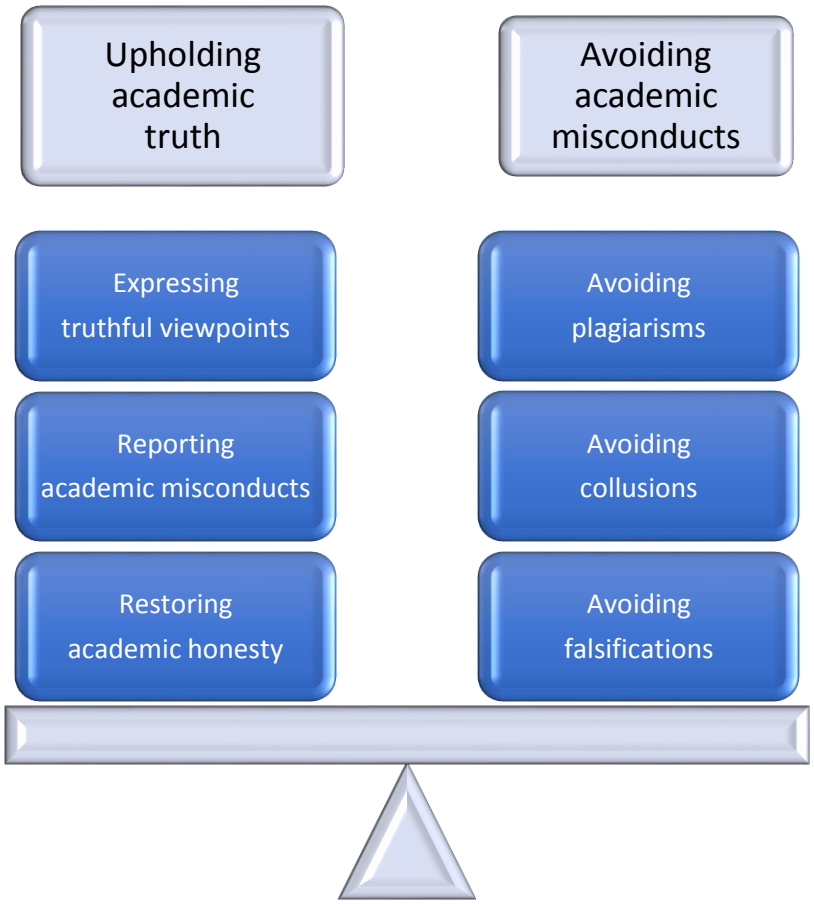

Figure 3. The definition of academic honesty regarding tertiary students' assignments

1.7 Organization of the study

A design map (Figure 4) displays how the mechanisms of this study which interacts with each study component and delivers the strategy for maintaining coherence and practical relationships among the study components.

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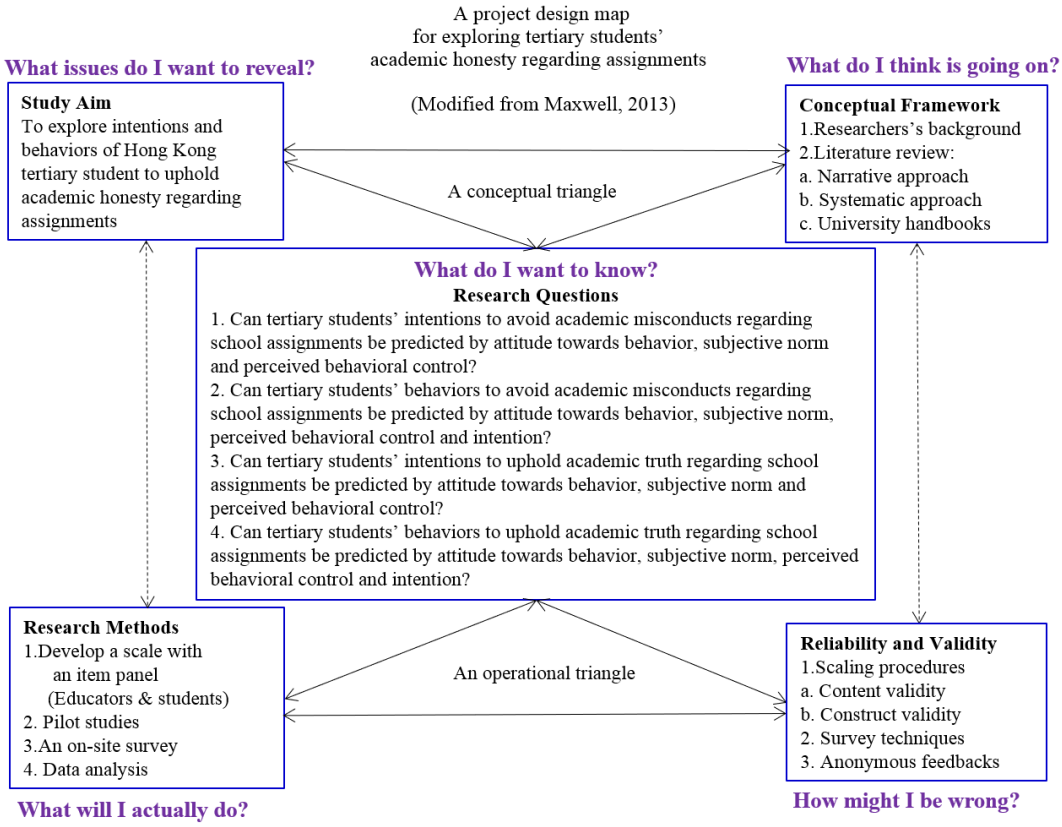

Figure 4. An Organization of the study for exploring students' academic honesty regarding assignments

A project map is designed for organizing the research components including 1) research questions, 2) study aim, 3) conceptual framework, 4) research methods, and 5) reliability and validity. Two triangles connect the research components to link the conceptual and operational views of the current study design. An upper triangle of this design map is formed by the conceptual framework (What do I think is going on?), study aim (What issues do I want to reveal?) and research question (What do I want to know?). Firstly, the conceptual framework guides this project through the background of the researcher and the literature review. The researcher has had three roles in the academic settings, the first role is a doctoral

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student, the second role is a tertiary level education teacher and the third role is a medical researcher at a public university, which is associated with a public hospital in Hong Kong. The knowledge of the researcher can enrich the information of conceptual framework.

University handbooks, Education Bureau websites and electronic information are assessed to deepen understanding of academic honesty. Some relevant literature (such as "Beck & Ajzen, 1991; Harding et al., 2007; Riemenschneider, 2011") has been identified to develop the current research aim and research question. The current research aim, and the four research questions are affected by the conceptual framework. For example, the four research questions are not fixed at the beginning of the project. The research questions may have to be modified due to changes in the study aim or conceptual framework. That is because the researcher has learned something new during the research process. Therefore, this conceptual triangle connects the conceptual framework, study aim and research question to form an interactive function.

The lower triangle is an operational triangle which is located on the lower part of the design map. The operational triangle and the conceptual triangle are connected by the research questions. Maxwell (2013) has stated that the research question section is the heart of the project design because the research question section is directly linked to all other components: 'Study aim', 'conceptual framework', 'research methods' and 'reliability and validity'. Thus, the research question has served two functions in this project. The first

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function is to aid the researcher focusing on the relationship between “study aim” and “conceptual framework” for achieving the objective one, ‘To define what academic honesty is regarding tertiary students’ assignments. This objective has been attained by the conceptual framework and mentioned in chapter two.

Another function is to provide guidance to the researcher, focusing on the relationship between ‘research methods’ and ‘reliability and validity’. A theoretically driven design has been applied to achieve the three research objectives. This design consists of three stages, 1) defining what academic honesty is regarding tertiary students’ assignments, 2) collecting feedback from university educators and students and 3) analyzing data for answering the four research questions.

This introduction chapter presents: 1) the study background, 2) the problem statement, 3) the study purpose, 4) the study significance, 5) the theoretical framework and assumptions, 6) definitions of the terms including theory, model, academic integrity, academic honesty regarding tertiary students’ assignments), and 7) organization of this study. In addition, three research objectives are set to achieve the research aim for occupying the niche of existing studies.

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Chapter 2: Literature review and the theoretical framework

Chapter 2 provides a beneficial theoretical and empirical framework for the current study by reviewing existing studies on the "Theory of Planned of Behavior" in academic honesty and dishonesty. Literature related to the current study are reviewed for pursuing the research objectives, 1) defining what academic honesty is regarding tertiary students' assignments, 2) developing a questionnaire to assess the intentions and behaviors of tertiary learners for upholding academically honesty about school assignments, and 3) applying the current study questionnaire to assess the intentions and behaviors of tertiary learners for upholding academically honesty regarding their school assignments through path analysis.

2.1 Roles of tertiary teachers and tertiary students in academic honesty

Education is very important, the "Government of Hong Kong Special Administrative Region" (GovHK) has spent HK$113.7 billion which representing 20.0 per cent of total government expenditures in the financial year 2018-2019 ("Hong Kong Special Administrative Region Government", 2018*).* Additionally, the "Hong Kong Education Bureau" (EDB) emphasizes the whole-person teaching strategies as which can improve learners' abilities through moral education, civic instruction and national enlightenment. EDB proposes that schools can nurture their learners through seven important values or attitudes: 1) "integrity", 2) "perseverance", 3) "responsibility", 4) "respect for others", 5) "commitment", 6) "care for others", and 7) "national identity" (Education Bureau, 2019).

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GovHK attaches these important values to foster Hong Kong students' abilities by cultivating the seven priority values including integrity.

2.1.1 Roles of teachers in students' academic honesty

Academic integrity should be adhered to ethical principles to advance knowledge and truth through personal and intellectual honesty in teaching, learning, research, and operation in the educational communities (Fishman, 2014). The GovHK emphasis that Hong Kong provides quality learning pathways to tertiary learners for pursuing knowledge through 20 local degree-awarding tertiary level education institutions such as "The Hong Kong University of Science and Technology and the University of Hong Kong" ("Hong Kong Special Administrative Region Government", 2018*).* As the problem of academic dishonesty has increased dramatically (Macfarlane et al., 2014), there has been a growing awareness of the moral decisions of tertiary students in maintaining academic integrity (Stone et al., 2012).

Academic institutions emphasize that universities place extreme importance on honesty and morality in the academic effort and accept zero tolerance on academically misconducts (such as "The Chinese University of Hong Kong", 2015 & "The Hong Kong University of Science and Technology", 2015). Simkin and McLeod (2010) revealed that "the presence of a moral anchor" as a moral professor was critical to maintaining academic integrity. In other words, the role of tertiary teachers is very important to help their students maintain academic honesty. How can tertiary teachers facilitate their roles to promote student honesty? The

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"Committee on Professional Development of Teachers and Principals" is a place to promote primary and secondary student learning through working closely with teachers, principals, parents, school sponsoring bodies, schools and teacher education institutions including "the Education University of Hong Kong" ("Committee on Professional Development of Teachers and Principals", 2015). This committee aims to help primary and secondary school teachers advance student learning by providing teaching support such as overseas training and professional teaching workshops. Who is the party that helps Hong Kong tertiary teachers to promote tertiary student learning including moral education through working closely with academic stakeholders such as tertiary teachers, tertiary education level principals, parents, institution sponsoring bodies, tertiary education institutions and teacher training institutions?

Tertiary teachers are required to provide professional teaching, including fostering academic honesty. Despite institutional constraints in supporting tertiary teachers, McCabe and Pavela (2004) have proposed the ten principles to tertiary teachers for fostering student honesty, which are as follows:

1) Discussing the value of academically honest work in the classroom
2) Sharing the joyful experiences in learning
3) Affirming teachers have the roles in inspiring students to advance truth work
4) Helping students to understand the potential gains and loss of the internet
5) Encouraging student to maintain academically integrity

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6) Clarifying course expectations such as scope and nature in collaboration

7) Developing fair and creative assessment formats

8) Listening to learners' suggestion and perspectives of academic honesty

9) Responding to academic misconducts

10) Supporting to academic integrity standard

These ten principles are designed for the tertiary teachers to help their students avoiding academic misconducts and promoting academic truth. For example, the seventh principle suggests teachers develop fair and creative assessment formats to promote academic honesty. Since each student's academic work for each course is expressed as a grade point average (GPA) for indicating his or her academic achievement (Velliaris, 2015), there is an association between GPA and the depth of knowledge. Stakeholders like students, parents, teachers, universities and the taxpayers consider the students with higher GPA can have higher levels of knowledge. However, those students with higher GPA who interrupt academically honesty can have lower levels of knowledge (Rawwas, Swaidan and Isakson, 2007). Owing to the reason for academic honesty violations, a student's GPA may not represent learning achievement. The fairness of assessment formats is one of the principles to promote tertiary students' academic honesty (McCabe and Pavela, 2004). Löfström, Trotman, Furnari and Shephard (2015) have suggested that the role of tertiary teachers contributes significantly to promote academic honesty in tertiary students' school assignments through

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professional training such as school work assessment skills.

2.1.2 Roles of tertiary students in academic honesty

Academic honesty refers to the pursuit of truth and knowledge in educational activities (Fishman 2014). The tertiary education emphasizes that students must have honest roles in all academically works, including uphold academic truth and avoid any academic misconduct ("Hong Kong Baptist University", 2017; "The Education University of Hong Kong", 2017; "The Hong Kong University of Science and Technology", 2015). Academic honesty is considered important to students' academic works as well as to avoid dishonest behavior in students' academic works such as assignments and examinations. All in all, the denotation of academically honesty of universities and tertiary institutions expect their learners to maintain academic truth with academic manners and avoid academic misconducts in their studies.

School assignments of academic works are mentioned as part of the grade point average (GPA) in the tertiary student's handbook (The Education University of Hong Kong, 2017), just as students express their academic work in the United States (Velliaris, 2015). GPA has closely associated the level of knowledge of tertiary students. The teaching staff, parents and peers usually expect students to advance their knowledge in an honest way. Avoiding academic misconducts, plagiarism, collusion and falsification are the basic requirements of tertiary students ("The Education University of Hong Kong", 2017).

Students' role of avoiding academic misconducts is related to intellectual property

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("City University of Hong Kong", 2017). There is an example, using another person's work without acknowledging properly is a plagiarism behavior ("City University of Hong Kong", 2017). The concept in intellectual property also has highlighted in the information of "Hong Kong University of Science and Technology", 2015 and this university freshmen should complete an online tutorial of academic integrity. This online tutorial is developed to raise students' awareness of honest academic behavior by showing the ways to stay clear from academic misconducts such as plagiarism. For example, tertiary students should not duplicate any school assignments, group projects, coursework, dissertations or thesis (Lingnan University, 2011).

The significant role of students to upholding academic honesty has been revealed in the tertiary students' guidelines. Alike one of the public universities, "City University of Hong Kong" defines academic honesty to ICAI, "a commitment, even in the face of adversity, to five fundamental values: honesty, trust, fairness, respect, and responsibility" ("City University of Hong Kong", 2017). Furthermore, another university of Hong Kong, "The Chinese University of Hong Kong" stated that the school policy bans all academic misconducts including plagiarism and numerous submissions of school assignments. Hong Kong tertiary students can determine academically honesty by avoiding academic misconducts guidelines from their tertiary institutions. Academically honesty means all tertiary students require to follow the school guidelines and maintain academic honesty by

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avoiding academic misconducts and uphold academic truth with ethical manners during tertiary education journeys. The message given by the eight universities in Hong Kong is that all tertiary students should not commit any academic misconducts including plagiarism, self-plagiarism, collusion and falsification.

2.2 Academic honesty defined

What is academic honesty? The Oxford Living Dictionaries (n.d.) describes honesty with respect and honor, the original form of honesty comes from Latin, *honestās* which show no deception. Such a definition of honesty is simple, nonetheless, this simple meaning may not be suitable for the modern academic environment. In addition, honesty in English is often used as a synonym for integrity, the meaning of integrity is open to a complex interpretation (Macfarlane et al., 2014). Fishman (2014) has suggested that honesty is an essential foundation for maintaining the truth and advancing knowledge.

2.2.1 Perspectives of international academics

Macfarlane et al. (2014) has applied the concept of a Chinese word, 'Chengxin' (誠信) to define integrity as honesty, truthfulness and sincerity, it can be seen honesty is a core component of integrity. Honesty is an important part of integrity, while honesty cannot be an alternative expression of the complex meaning of integrity. In order to attain the first study objective, 'to define what academic honesty is regarding students' assignments', this section discusses the international and Chinese perspectives of academic honesty.

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2.2.1.1 Perspectives of the International Center for Academic Integrity

Promoting academically honesty has become the worldwide academic movement, scholars from different countries are contributing to academic integrity discussion (Bretag, 2016a). This movement has started in early 1990, Donald McCabe, who is an American scholar of Rutgers University, with five scholars in the United States of America foundered "the Center for Academic Integrity" (CAI). CAI aimed to advance academically integrity to all teachers, students and academic staff (International Center for Academic Integrity, 2018). After two decades, CAI officially became an international organization, "International Center for Academically Integrity" (ICAI) which has extended membership to six continents, including more than 20 countries such as Australia, Egypt and Singapore ("International Center for Academic Integrity", 2018).

Fisherman (2014) – "the International Center for Academic Integrity" (ICAI) has suggested that academically integrity includes 6 essential values, "honesty", "fairness", "respect", "trust", "courage" and" responsibility". Regarding school assignments, the author concludes that the characteristics of these six fundamental values are:

1) honesty is the indispensable foundation for advancing the truth and knowledge, and is the prerequisite for realizing trust, fairness, respect, responsibility and courage,

2) trust accumulates the experience between teachers (set clear assignment guidelines) and students (prepare assignments honestly),

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3) fairness relates to students' expectation of teachers' accurate and impartial assignment evaluation,

4) respect is the act of appreciating people, efforts, opinions, ideas and rules of oneself or others

5) responsibility is to take appropriate action which is based on the mutual agreement between teachers and students

6) courage is based on one's values. Despite the fear, a person (teachers or students) can take action to improve the moral quality of one's or peers when it involves the risk of negative consequences.

Academic honesty, based on the conclusion of Fisherman (2014), is one of six fundamental values, which related to advance the truth and knowledge with fairness, trust, courage, respect and responsibilities in educational settings even in difficult circumstances.

2.2.1.2 Perspectives of Handbook of Academic Integrity

The academically integrity cultures not only applied for an institution, but also applied to all countries of the world. The meaning of academically integrity is a diverse issue in the world-wide perspectives. Bretag (2016b) has mentioned that the "Handbook of Academic Integrity" has been proceeded peer reviewing with a double-blind method to present a variety of academically integrity perspective from 13 countries such as Australia, Egypt and Spain. The typical perspective can be seen that the perspective of academically

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integrity is associated to honesty, fairness, trust, respect and responsibilities (Bretag T. 2016b; 'Teddi' Fishman, 2016). This perspective of academically integrity comes from scriptural values – do not lie, deceit, steal, or accept others to commit misconducts (Fishman, 2016). According to the definition of academically integrity, "the Handbook of Academic Integrity" aims to encourage students to avoid an ethical behavior in their school assignments and teachers to ban academic misconducts in their school settings including plagiarism, self-plagiarism, deception, data falsification and collusion.

The founding editor in the "International Journal for Educational Integrity", Tracey Bretag who is an Australian scholar, invited scholars from a number of countries to define academic integrity (Bretag, 2016b). These countries represent Australia, the Mainland (not including Hong Kong and Macau), Latin America and Colombia, European Union, Egypt, India, Japan, Indonesia, Malaysia, Middle East, Nigeria, the United of Kingdom and the States of America (Bretag, 2016b). The views of these scholars on academic integrity have some commonalities. One of these common values is academic honesty which is emphasized within tertiary level education worldwide. The other common value defines honesty is a sub-category of academic integrity.

These countries except Japan showing unclear definition (Wheeler, 2016) define academic integrity that is related to: 1) avoid academic misconducts or 2) avoid academic misconducts and uphold academic truth (Bretag, 2016b). The regions of Egypt, European

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Union, India, Indonesia, Middle East consider academic integrity is mainly related to avoiding academically misconducts including self-plagiarism and plagiarism (Abou-Zeid, 2016; Cinali, 2016; Glendinning, 2016; Mohanty, 2016; Siaputra and Santosa, 2016). For examples, the dominating patterns of academic integrity concerns in Egypt include avoiding plagiarism and multiple submissions in higher education (Abou-Zeid, 2016). Similarly, avoiding self-plagiarism in student assignments is also a major concern of academic integrity in a number of European countries including Austria, Sweden and the Republic of Ireland (Glendinning, 2016).

Moreover, another regions from Australia, the Mainland (not including Hong Kong and Macau), Colombia & Latin America, Malaysia, Nigeria, the U.K and the U.S.A. consider academic integrity is highly relevant to both avoid academic misconducts and uphold academic truth (Bretag, 2016a; Chen and Macfarlane, 2016; García-Villegas, Franco-Pérez, Cortés-Arbeláez, 2016, Kim and Cheah, 2016; Orim, 2016, 'Teddi' Fishman, 2016 and, Thomas and Scott, 2016). For example, institutions in Colombia and Latin America have established to avoid academic violations and to maintain academic truth, such as fraud prevention media programs and non-cheating universities ("García-Villegas, Franco-Pérez, Cortés-Arbeláez, 2016"). Likewise, the U. K. institutions have provided student training and guidance to avoid academic misconduct (e.g. plagiarism) and to maintain good academic practices such as citation skills, multi-lingual honor guidelines and knowledge assessment

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workshops (Thomas and Scott, 2016). These efforts have increased the awareness of academic work quality, in terms of avoiding academic misconducts and upholding academic truth.

According to the perspectives of academic integrity from international scholars, it has been revealed that academic honesty is the essential value of academically integrity (Figure 2, chapter one, section 1.6.3). Despite academic honesty acts as an essential value of academically integrity, in order to improve tertiary learners' academic honesty, tertiary learners need courage, respect, trust, responsibility and fairness to enhance their academic integrity. View on the complexity and diversity of academic integrity, the current study attentions in the essential value: honesty of educational settings. The definition of academic honesty in this study includes not only upholding academic truth but also avoiding academic misconducts including avoiding plagiarism, avoiding collusion and avoiding falsification.

"The Handbook of Academic Integrity" (Bretag, 2016a) provides a brief history of academically integrity movement. The origin of the movement of integrity is the United States of America, this movement has been expanded to almost 40 countries (Bretag, 2016a). One of the purposes of the academically integrity movement is to help students to combat academically misconducts (Fishman, 2014). Another purpose is highlighted by the Australian communities to propose the equity which means the academic integrity values should be shared by the whole organization including students, teachers, administrators. In brief, the

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American and Australian perspectives of academic integrity highlight academic honesty is an essential value in academically integrity. This essential value of academically integrity is also evidenced in the views expressed by authors from the Mainland, Egypt, the United Kingdom and 36 countries (as reported in Bretag, 2016a). The Chinese perspectives of academic honesty will be discussed in the next section, in particular, the views of academic honesty from Hong Kong scholars, teachers and students.

2.2.2 Perspectives of Chinese academic communities

Chen and Macfarlane (2016) have suggested that the description of academically integrity in the Analects of Confucius refers to "*Xueshuchengxin* (學術誠信)" that means reliability, honesty and credibility for attaining academically morality in the educational communities. Honesty is one essential values of academically integrity, which can be defined as "*Chengshi* (誠實)", and its meaning is related to seeking the truth (Wu, 2010).

The description of tertiary teachers and tertiary students' point of views about the integrity of academic settings in Hong Kong has been reported by a study of Kwong et al., 2010. This study also compares perspectives of integrity through a negative framework such as comparing the level of severity of the academic misconducts (Kwong et al., 2010). Based on the values of integrity in educational settings, the current study adopts the basic definition of integrity in the study of Kwong et al. (2010) as a negative category of definition of academic honesty. This part is named, avoiding academic misconducts. Tertiary students in

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the study of Kwong et al. (2010) could report what academic dishonesty is by stating some examples such as copying a student's school assignment and on behalf of as one own's school work (Kwong et al., 2010). However, tertiary learners were not given the that located inoption to present the more positive view of academic honesty (or ways in which they might uphold academic honesty). Therefore, future research can be suggested to identify 'good or 'ethical' behavioral characteristics for developing a positive framework for the consideration of post-modern academic settings (Macfarlane et al., 2014).

2.2.2.1 Perspectives of Hong Kong teachers

A local perspective of academic integrity including honesty is investigated by comparing the academic honesty information with 8 public universities located in an Asian city, Hong Kong. There are 8 publicly-funded universities, together with "City University of Hong Kong", "Hong Kong Baptist University", "Lingnan University", "the Chinese University of Hong Kong", "The Education University of Hong Kong", "The Hong Kong Polytechnic University", "the Hong Kong University of Science and Technology" and "the University of Hong Kong", these universities provide numerous and flexible learning pathways for local and international tertiary students (Education Bureau, 2017).

These universities show their academic honesty perspectives through the student handbooks which are the guide to the academic structure, rules and regulations, and the services available to students. The academic honesty information is the code of conduct

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("City University of Hong Kong", 2017) or the code of campus ("Hong Kong Baptist University", 2017). Academic integrity refers to have honesty and morality of academic work that including assignments and examinations (The Hong Kong Polytechnic University, 2015). This study focuses on school assignments including oral presentations, study projects and reports, therefore, the area of examination does not address.

Referring to ICAI (1999), academic honesty is one of the fundamental values in academically integrity, students should uphold their academic honesty even in the adverse situation ("City University of Hong Kong", 2017). The principles of honesty in academic settings are expected that students should conduct school events (including school assignments) honestly and faithfully, expecting students take on a wide range of responsibilities for submitting school assignments such as ensuring originality and acknowledging the intellectual property ("The Education University of Hong Kong", 2016). In this regard, academic honesty is avoiding plagiarism ("The University of Hong Kong", 2017a) through doing citations properly ("The University of Hong Kong", 2017b) with time-saving tools ("The University of Hong Kong", 2017c), by inspection of originality with Turnitin which is a text similarity checking device ("The Education University of Hong Kong", 2016 and "The University of Hong Kong", 2017c).

Academic honesty is associated with avoiding plagiarism which can also show the moral quality ("Hong Kong Baptist University", 2017) regarding the school is a place for learning

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that academic honesty is very important (Lingnan University, 2011). Thus, the role of supervisors should provide appropriate guidelines to their students in particular for intellectual property rights (The University of Hong Kong, 2003). In addition, learners have to perform the educational pursuits truthfully, learners are found to have academic misconducts will be subject to academic disciplinary actions ("the Hong Kong University of Science and Technology", 2017). In sum, the message given through the eight universities in Hong Kong is that students should maintain academic honesty by performing a truthful academic work with their faith. Equally important is to avoid academically misconducts including avoiding plagiarism, avoiding collusion and avoiding falsification.

Academic honesty is related to avoiding collusion which means that a student should not work with another student to prepare and produce academic work for presenting as a single student's assignment (The Education University of Hong Kong, 2016). Similarly, avoiding collusion including a student should not allow other students to gain an advantage through copying one's coursework (City University of Hong Kong, 2017). Furthermore, avoiding collusion is identified as students should not ignore the prohibition of other students' academic misconducts (Henning, Malpas, Manalo, Ram, Vijayakumar and Hawken, 2015).

On the other hand, academic honesty is also associated with avoiding falsification which means that a student should not intend to mislead a teacher ("the Hong Kong University of Science and Technology", 2017) by fabricating data for research or providing falsifying

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information (“The Education University of Hong Kong”, 2016).

2.2.2.2 Perspectives of Hong Kong students

Tertiary students use the aspects of avoiding academic misconducts as the direction for maintaining academic honesty. Chen and Chou (2017) have shown that Chinese students and teachers share a similar perception of plagiarism, for example, plagiarism is related to copying others’ writing, and plagiarism is unacceptable. For this reason, teachers use the concept of avoiding misconducts in academic settings including “plagiarism”, “collusion” and “falsification” as the concept of academic honesty (“City University of Hong Kong”, 2017 & “the Education University of Hong Kong”, 2016). Tertiary students would follow their teachers’ concept of academic honesty as avoiding academic misconducts. Tertiary students believe that they do not clearly understand what constitutes academic misconducts such as the citation system and scope of collaboration.

The study of Kwong et al. (2010) has found that the reasons for Hong Kong tertiary students violate the academic misconducts including 1) excessive academic pressure for term grades, 2) overload of school work, 3) laziness, 4) exhausted of extra-curricular activities or part-time jobs, 5) interpersonal relationship problems in group projects, 6) observing peer cheating, 7) teachers do not clearly explain the requirements of class assignments, 8) trying to help friends, 9) not considering would get caught, 10) misunderstanding the meaning of plagiarism, 11) teachers’ expectation for assignments are not justify such as not giving

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sufficient time, and 12) the assignment is not important. The scenario designs of the current study instrument are according to these reasons in committing academic misconducts.

The problems for violating the academic misconducts among Hong Kong tertiary students may be solved by the stakeholders such as tertiary teachers, tertiary education level principals, parents, institution sponsoring bodies, tertiary education institutions and teacher training institutions. Some recommendations are presented in Chapter 6. Another Hong Kong study has found that tertiary students with less experiences in committing academic misconducts will uphold academic truth such as prohibiting, reporting other students' academic misconducts (Fung, Mui, Yee, and Ching, n.d.). This finding is very important to define what academic honesty is in both positive and negative frameworks.

2.2.3 Definition of academic honesty for tertiary students' assignment

The eight universities include an emphasis on academic honesty in assignments, but what is meant by course assignments. This section will describe the definition of assignment and its issues in university education. Assignments refer to students' academic works which include course works, projects, dissertations (Lingnan University, 2011), field experiences, lesson plans ("The Education University of Hong Kong", 2017), oral presentations, research reports ("The Hong Kong Polytechnic University", 2015) and scientific works ("The Hong Kong University of Science and Technology", 2015). Assignments are one of the methods to assess students' knowledge. Students should not only sustain the academic truth and moral

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manner in their assignments, but also, they should avoid academically misbehaviors.

McClung and Schneider (2015) studied tertiary students' academically misbehaviors by a concept synthesis. The concept synthesis began with search databases CHINAHL, ERIC, PubMed and SCOPUS with the keywords including academic dishonesty, academic misconducts, student perception and student attitudes (McClung & Schneider, ibid). 17 empirical articles were identified by collecting data from on-site undergraduate students in English speaking countries (McClung and Schneider, ibid). The concept synthesis found that academically misbehaviors happening in school activities such as plagiarism, collusion, and data falsification (McClung and Schneider, ibid).

Plagiarism

The definitions of the academically dishonest behavior occurring in assignments are explained here. First, plagiarism is a broad topic including plagiarism of intellectual property, accessory and self-plagiarism. Plagiarism is associated with citing information incorrectly, improperly listing all citations in the reference section, using other people's work or idea, paying or letting others write a paper. In addition, accessory to plagiarism is related to complete work for other students, inappropriately using tutors or writing centers, selling papers to other students. Furthermore, self-plagiarism is known as using the same writing to fulfil the requirements of other courses and submitting work with the same information as data without reporting (McClung and Schneider, ibid). Self-plagiarism which refers to reuse

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the submitted writing for other school assignments (Bruton, 2014). Law, Ting and Jerome (2013) were surprised that fewer tertiary students agreed that students detected for plagiarism should fail the assignment.

Collusion

In legal term, collusion is a secret agreement between two or more parties that gains benefits through deceiving and misleading other (Cornell Law School, 2019, March). On the other hand, in the academic field, collusion refers to two or more parties working together to complete school assignments without school permission, such as assisting or accepting academic misconducts (Henning et al., 2013). The boundaries of collaboration and collusion are not clearly defined (Velliaris, 2015). In this study, collaboration is described as an unpermitted group activity (Fraser, 2014). Some of the school teachers offer another confusion of collaboration and collusion, allowing students to discuss their ideas together, yet the written school assignment should submit as an individual work (Fraser, 2014).

Collaborative learning has designed to joint students' efforts to improve student learning outcomes in the last century (Sabin and Sabin, 1994). Allowing group discussions facilitate active learning opportunities, while excessive collaboration will undermine the ability of weaker students to learn from the assignment (Fraser, 2014).

Falsification

Falsification is the prohibited behavior in academic settings ("The Education University

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of Hong Kong", 2016; "City University of Hong Kong", 2017). It is known that falsification can provide false or incorrect information: 1) making up lab data, 2) altering laboratory data, 3) fabricating a reference list, 4) listing unread material in the reference, 5) listing non-related materials in the reference, 6) misquoting a source intentionally, false claiming that the assignments have been handed (McClung and Schneider, 2015).

2.2.3.1 Avoiding academic misconducts

The definition of academic honesty regarding tertiary students' assignment (Figure 3, chapter one, section, 1.6.4) has shown that there are three kinds of academic misconducts in assignments will be studied (Plagiarism, collusion and falsification). These three academic misconducts are mentioned in some local student's handbooks ("The Education University of Hong Kong", 2016; "City University of Hong Kong", 2017).

Avoiding plagiarisms

The code of student conduct has mentioned that students are expected to avoid academic misconducts ("The Education University of Hong Kong", 2016). Plagiarism is the most common misconduct mentioned in student's handbooks ("City University of Hong Kong", 2017; "Hong Kong Baptist University", 2017; "Lingnan University, Hong Kong", 2017; "The Chinese University of Hong Kong", 2015; "The Education University of Hong Kong", 2016; "The University of Hong Kong", 2012; The Hong Kong Polytechnic University, 2015). The types of plagiarism include 1) violating intellectual property is related to the improper

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acknowledge of other's work (McClung & Schneider., 2015). 2) using unauthorized materials (accessory plagiarism) ("City University of Hong Kong", 2017 and McClung & Schneider., 2015) such as purchase an essay and 3) "self-plagiarism" which refers to reuse a learner's school assignment for other course or more courses (City University of Hong Kong, 2017 & McClung & Schneider., 2015).

To avoid the first type plagiarism, intellectual property plagiarism students may consult librarians, teachers or school web site for making appropriate citations and list reference properly in their assignments (The Education University of Hong Kong, 2016). Both intellectual property plagiarism and patchwriting result in a zero mark and serious consequences (Britamericanlit, 2019, March 28). Most of the second-language students fall into patchwriting, which means students rewrite information from one source and without referring the original source (Britamericanlit, ibid, 2019, March 28). The second-language students do not intend to plagiarize, who gain sufficient support would be competent academic writers (Pecorari, 2003).

Avoiding the second kind plagiarism, accessory plagiarism, students may plan in order to prevent doing students' assignment at the last minute ("The Education University of Hong Kong", 2016) and consult course instructors when students are not sure about the assessment formats and late assessment (The Hong Kong Polytechnic University, 2018). For example, students may inform their teachers for the reasons of late submission of out-of-class

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assignments. There may have some downgrading penalties: 1) by 1/2 grade if the assignment is submitted within 24 hours after the deadline, 2) by 1 grade if the assignment is submitted within 48 hours after the deadline, 3) by 1 1/2 grade if the assignment is submitted within 72 hours after the deadline, 4) If students do not submit the assignment within 72 hours after the deadline of submission, then the students will then be deemed to have not completed their assignments, and have not passed the course and 5) If students have a valid reason for a late submission, such as the students suffering from a serious illness, the students may receive no penalty for providing sufficient documentary evidence within seven calendar days of the assignment submission deadline. “The Education University of Hong Kong” (2016) recommends that when students seek using their submitted assignments to further their current assignments, the students may seek approval from the course lecturers.

Avoiding collusions

Secondly, collusion is mentioned in some tertiary student’s handbooks including “The Education University of Hong Kong”, 2016 and “City University of Hong Kong”, 2017. Collusion refers to help or ignore unauthorized cooperative behavior in academic settings (McClung & Schneider., 2015). The following behaviors are examples of academic collusion: 1) misrepresenting the joint effort to produce a school assignment as a sole school assignment of a student (“City University of Hong Kong”, 2017) or working with another parties to prepare and produce a school assignment for a single student’s assignment (“The Education

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University of Hong Kong", 2016), 2) permitting other students to copy one's school assignment ("City University of Hong Kong", 2017).

The boundaries between collusion and collaboration are not clearly defined, where cooperation stops, and collusion starts (Barret and Cox, 2005). One of the fostering student honesty principles mentions that teachers should clarify course expectations such as the nature and scope of teamwork (McCabe and Pavela, 2004).

Avoiding falsifications

Falsification is defined as providing incorrect or untrue information (McClung & Schneider., 2015). There are some examples: 1) using of fabricated data which claimed to be collected for the course work ("City University of Hong Kong", 2017) like claiming a fabricated interview data, and 2) providing falsified information ("The Education University of Hong Kong", 2016) including attaching a falsified reference for a reading report. These academic misconducts used to design the scenarios of an instrument for this study. Helping students to avoid falsification is to understand the reasons of student cheating, for example, students may want to reduce the time required to read all the necessary materials, so they may add some unread materials to the list of reference in their assignments (McClung et al., 2015).

2.2.3.2 Upholding academic truth

Since the twentieth century, Hong Kong scholars have used "the Theory of Planned Behavior" (TPB) for studying tertiary students' unethical behavior (Chang, 1998). Similarly,

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Rawwas et al. (2007) use a negative framework to reveal the difference of moral perception of academic honesty between Mater business learners in Hong Kong and the United States of America. Similarly, Chapman and Lupton (2004) also used a negative framework to reveal the difference of moral perception of academic honesty between undergraduate business learners in Hong Kong and the United States of America. The research examined tertiary students' academic misconducts rather than students' academic honesty in an educational setting. Macfarlane et al., (2014) have stated applications of negative frameworks may lead to much research identifying ethical inadequacy.

Expressing truthful viewpoints

Honesty in the educational setting is the main component of academic integrity, which can be defined as a Chinese word "*Chengshi*" (誠實), and its meaning is related to truth-seeking (Wu, 2010). Tertiary students have their responsibility to act truthfully and reliably in all learning activities ("The Hong Kong University of Science and Technology", 2015). Tertiary learners can also play a special role of peer monitoring in their academic environment (McCabe, Butterfield and Treviño,2003). For instance, a learner can express a truthful point of view for prohibiting a peer from self-plagiarism or a student can advise their peers for reporting their unauthorized collaborations to their teachers. Some teachers want to share the responsibility for dealing with cheating incidents with students and institution administration (McCabe, 1993). This is an opportunity to achieve the university goals

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through nurturing tertiary students to be accountable peoples ("The Education University of Hong Kong", 2016). In addition, tertiary teachers' burden of addressing incidents of cheating can be reduced (McCabe, Butterfield and Treviño,2003).

Reporting incorrect behaviors

In the context of academic organizations, tertiary students commit academic misconduct and report such incorrect behavior, which represents a form of organizational misconduct and subsequent reporting (Burton and Near, 1995). Issues with students reporting incorrect behaviors include reporting peer-incorrect behaviors and reporting self-incorrect behaviors.

The first issue with reporting peer-incorrect behavior is that many students have observed incorrect behavior while fewer students disclose this incorrect behavior (Stone, Kisamore, Kluemper and Jawahar, 2012). Reporting student cheating is classified as whistle-blowing (Burton and Near, 1995). A student whistle-blower has to take courage and firm belief to report academic misconducts (Wardani and Yuhertiana, 2017). Courage acts as much as possible based on the value of the student, and he or she can take action even in times of adversity (Fisherman, 2014). The firm belief of a student whistle-blower associates with the student's perception of cheating (Bernardi, Landry, Landry, Buonafede, and Berardi, 2016). For example, students may be concerned that teachers and other students will guess how they know the cheater if they are not cheaters (Nitsch, Baetz and Hughes, 2005).

Some motives for learners are not to report incorrect behavior of their peers: 1) the

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students have had cheated, 2) students are not responsible for reporting peer cheating, 3) cheating does not affect them, and 4) reporting peer cheating might ruin their reputation (Bernardi, Larkin, LaBontee, Lapierre and Morse, 2012). Furthermore, whistle-blowers are heroes or traitors depending on the academic organization culture and their own benefits (Wardani and Yuhertiana, 2017).

On the other hand, the non-reporting cheating decisions among tertiary students may include 1) insufficient evidence of academic misconduct, 2) students do not assign to disclose academic misconducts, 3) high cost such as time consume, personal consequences of friendships and 4) school management cannot handle the situation (Nitsch, Baetz and Hughes, 2005).

Tertiary students do not like free-riders who do not contribute to what is expected to participate in group projects (Lim and See, 2001). A free-rider in the classroom is a student who obtains something without effort or cost (Lim and See, 2001). A tertiary student comments on school policy by awarding equal scores to all members of a group project because all members have made the incomparable effort (Lim and See, 2001).

Just as expressing the truth and reporting peer-incorrect behaviors to prohibit academic misconducts, reporting self-incorrect behaviors is also associated with upholding academic truth. Tertiary students may encounter some problems during the learning process such as perceptions of essay purchase (Zhang, 2014). An example of perceptions of plagiarism and

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essay purchase, a student was worried to write an English essay because of poor English writing skills, so she purchased an essay and submitted it to her course. This student was upset about punishments and reported the cheating to her teacher. The teacher found that her essay had a high similarity index. This example reflects that report self-cheating may be related to punishments. Tertiary students who are subject to any academic misconduct, including plagiarism and uncensored multiple submissions, these students will be punished including termination of students' study (The Chinese University of Hong Kong, 2015). McCabe (1993) suggests that teachers can pay less attention on punishment and control mechanisms, and focus on fostering a shared sense of responsibility to deal with cheating. Ethical training can help tertiary students to build a fair and trustworthy learning environment (García-Villegas et al., 2016).

For instance, a learner forms his reference list that he has not actually read in his homework. The student may consider that the course instructors were less likely to check the reference list, so the cost of punishment would not be so high (Passow et al., 2006). After learning about the importance of academic honesty in moral lectures, the student reported his cheating behavior to his teacher. This suggestion offers learners chances for improving the moral quality as institutions expect their students to maintain a high quality moral academic perspective (Hong Kong Baptist University, 2017).

Frederickson (2002) has found that the Confucian people including Chinese regard

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common traditions and civilized conventions as life values, these people follow the rule of man to direct their moral values. For instance, a student omitted the opposite opinions of a respondent and intended not to report this incident in his questionnaire report. This student had achieved a high score in this project. This student felt guilty because the course teacher praised him before the class. Finally, he reported his cheating behavior to his teacher. This student had the heart to tell the truth to his teacher as his teacher praised him which had reacted his honesty. It is suggesting that students may practice honesty not only in academic life but also in their everyday lives (Wu, 2010), which may extend honesty from one's heart to one's behavior and then extend to peers and organization.

Upholding academic truth not only defines as honestly performing school assignments ("The Education University of Hong Kong", 2016) but also reporting academic misconducts (Stone et al., 2012). Student hanboks often provide advice to students for avoiding academic misconducts including The Education University of Hong Kong, 2016. This handbook suggests some actions that may safeguard tertiary students against academic honesty, including to avoid doing assignments at the last minute; to seek the approval of teacher for using previous works for reusing the current assignment; and making use of an online web-based text matching device to avoid plagiarism ("The Education University of Hong Kong", 2016).

Cheating and reporting represent a form of wrong-doing and the subsequent reporting,

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however, a large number of tertiary students have committed cheating and a small number of students will be reported by their peers or themselves, even if these peers have observed or known the cheating behavior (Burton and Near, 1995). In other words, reporting academic dishonesty is associated to the whistle-blowing education, including peer-cheating and self-cheating (Caillier, 2017). While there is a limited resource of whistle-blower support can be sorted out in the student's handbooks. Whistle-blower can be a tertiary student who informs another student or teacher to disclose the wrongful act (Bernardi, Goetjen and Brax, 2014). Chen and Tang (2006) suggest that not whistleblowing is one of the unethical behaviors among tertiary students and this unethical behavior can be measured by questionnaire items. The decision to report cheating can be influenced by the cheating experiences, observed peer-cheating experiences and positive perceptions of reporting cheating (Bernardi, Goetjen and Brax, 2014).

Restoring academic honesty

Nobody is perfect. Everyone experiences making mistakes. If a student can restore academic honesty after making a mistake, then there is nothing better! Students commit cheating can be a kind of academic incivility to their instructors. In order to repair the relationship between teachers and students, "Clark, Juan, Allerton, Otterness, Jun, and Wei" (2012) have suggested teachers and students can share the role of creating a harmonious and civil academic environment in the following ways: 1) encouraging personal responsibility, 2)

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showing forgiveness and tolerance, 3) disseminate the idea of respecting teachers and caring for students and 4) stopping insulting the wrongdoers. For example, students provided forged interview information for coursework. Teachers might try to understand why students make wrongdoings. When students had to retake the course, teachers could encourage students to be honest and responsible all coursework. Teachers could also show forgiveness and tolerance to students. These actions might help students to restore academic honesty. In fact, a good relationship between teachers and students could spread a culture of respect and care in an academic setting. Stopping insults against wrongdoers might also stop academic misconducts.

2.3 Academic honesty and "the Theory of Planned Behavior"

A theory-guided study design can improve the understanding of intentions and behaviors of tertiary learners who choose acting with the truth upholding the positive value of academic honesty, not dishonesty (Stone Jawahar, and Kisamore, 2010). Miller et al., (2011) have applied the goal orientation theory for studying how students avoid academic misconducts but this approach lacks the direction of developing a study measure and organizing the constructs of academic honesty definition. Theory plays an important role in how researchers to explain the findings after data analysis (DeVellis 2012). A conceptual paper has reviewed that the application of TPB in study academic dishonesty can help to reveal the ethical decision-making of tertiary learners (Meng et al., 2014).

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2.3.1 Background of "the Theory of Planned Behavior"

Predictive behavior has always been the main goal of psychological theories and some of them have been done very well (Chang, 1998). Some theories like "the Theory of Reasoned Action (TRA)" and "the Theory of Planned Behavior (TPB)" may be useful in studying commitment of academic misconducts (Riemenschneider et al., 2011) and upholding academic truth (Stone et., 2012).

2.3.1.1 "The Theory of Reasoned Action"

Attitude towards one's favorable or unfavorable behavior plays the main part in social psychology historical background ("Fishbein and Ajzen", 1974). "Ajzen and Fishbein" (1977) have performed a theoretical investigation of empirical research and reviewed the attitude toward a person's target behavior is strongly related the actual behavior (Ajzen, Fishbein and Hernstein, 1977). Later, Fishbein has extended the existing assumption of attitude toward beahvior and behavior of a target action through adding new components: subjective norm and intention, this new knowledge has been named as "the Theory of Reasoned Action (TRA)", which can be applied for predicting students' daily behaviors through assessing students' attitudes, subjective norms and intentions (Fishbein, 1979).

Figure 5 has illustrated that these components are related to students' personal evaluation of the outcomes (Attitude toward behavior) and specific individuals or groups thinking (Subjective norm). The relationships of the components in predicting students'

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behavior is through intention (Fishbein, 1979). Ajzen and Fishbein (1977) have mentioned that researchers should consider four elements in the measurement of attitude towards behavior: 1) the target of respondents (such as students), 2) the selected of actions (such as academic misconducts), 3) the proposed context (such as an American) and 4) time of measure (such as before and after treatment). Furthermore, the scaling of Likert's opinion options (including "strongly disagree", "disagree", "neither agree nor disagree", "agree" and "strongly agree") can linearly predict relationships from various attitudes and target behaviors (Fishbein and Ajzen, 1974). Indeed, TRA can provide a systematic approach to investigate behavior in various areas for explaining, organizing and integrating the empirical results (Fishbein, 1979).

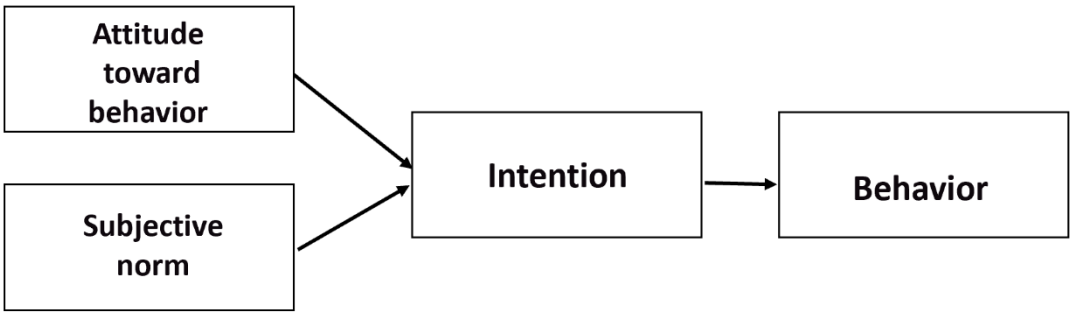

Figure 5. "The Theory of Reasoned Action (TRA) (Fishbein, 1979)"

Note. ⟶ Represents the direct relationship between components.

2.3.1.2 "The Theory of Planned Behavior"

After a decade, Beck and Ajzen (1991) have extended "TRA" to "TPB" by adding a component: "perceived behavioral control" (Figure 6). TPB has been validated as a theoretical model for predicting dishonest actions through evaluating learners' "attitudes

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toward behavior", "subjective norms" and "perceived behavioral control". Madden, Ellen and Ajzen (1992) have studied predictions of TRA and TPB, and these scholars have suggested that TPB can explain more details than TRA.

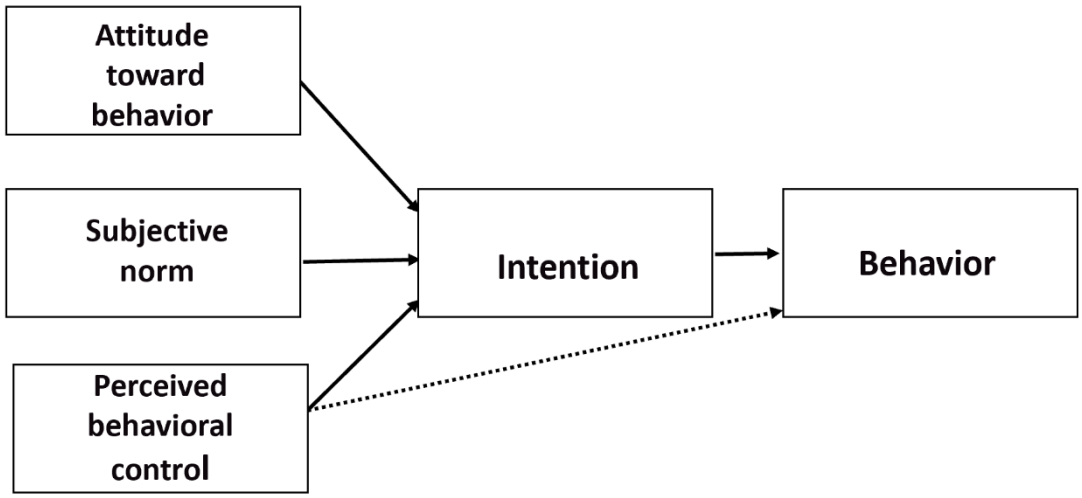

Figure 6. "The Theory of Planned Behavior (TPB)" (Beck & Ajzen, 1991)

Note. ⟶ represents the direct relationship between components; ⇢ represents a possible direct relation if people have required opportunities and resources.

Earlier, a study in Hong Kong compared TRA and TPB to predict the unethical behavior of Hong Kong tertiary students regarding replicate unauthorized software by using structural equation modeling (SEM) to replicate unauthorized software (Chang, 1998), this study found that TPB could provide a solid theoretical framework for investigating unethical behavior and was superior to TRA because TRA did not consider resources and opportunities and TPB provide the more information for explaining the respondents' intention and behavior through "perceived behavioral control" (considering obtainability of resources and opportunities).

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In the past two decades, TPB has been used for a theoretical model to study moral decision-making in academic dishonesty (Meng et al., 2014). This framework had been used for predicting academically misconducts among several countries including the Mainland ("Du, Xiang, Zhu and Xu", 2011), Ukraine ("Chudzicka-Czupała et al.",2015), and the United States of America (Stone et al., 2010). In spite of these previous studies have applied a negative framework to investigate academically dishonest behaviors by using TPB. This study will apply a positive framework to study academically honest behaviors of tertiary students in Hong Kong by using TPB as a theoretical model. Hence, TPB can act as the comprehensive framework of theoretical aspect to assess avoiding academically misconducts and upholding academic truth among tertiary students.

TPB has 5 components: "attitudes toward behavior", "subjective norms" and "perceived behavioral control", "intentions" and "behaviors" (Beck and Ajzen, 1991). A person's "attitudes toward behavior", "subjective norms" and "perceived behavioral control" can be used to explain the person's intention and behavior (Ajzen, 1991).

"Intentions" are related to "attitudes towards behavior", "subjective norms" and "perceived behavioral control" to indicate the willingness of one's decision-making to commit the target behavior (Beck & Ajzen, 1991). On the other hand, the target behavior is related to the action from the willing of one's decision-making and the one's perceived ability (Beck and Ajzen, 1991).

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According to the definition of academic honesty in this study which included two categories, avoiding academic misconducts and upholding academic truth. This study has studied behavior through the TPB components: “attitude towards behavior”, “subjective norms”, “perceived behavioral control” and “intention”. For instance, a student provided a falsified reference list in a reading report. The student attended an ethical lecture which conducted by his/her university. After completing the lecture, the student’s “attitude towards the behavior”, “subjective norm” and “perceived behavioral control” of telling academic truth were greater. So, this student intended to tell the truth. That he told the course lecturer that he provided a falsified reference list in the reading report. Thus, “TPB” is a suitable model for studying tertiary learners’ “intentions” and “behaviors” in upholding academically honesty in their school work.

2.3.2 Attitude towards behavior

Attitude towards behavior’ defined as the benefits or disadvantage of evaluating the target behavior (Beck and Ajzen, 1991). Tertiary students’ attitudes toward academic honesty were considered in this study. These attitudes would be associated with students’ responsibility (Whitley et al., 1999). Responsibility of “academic integrity” is defined as a student has to take action when he or she is facing a wrongful act (Fisherman, 2014). For example, a tertiary student takes his or her responsibility to express a truth viewpoint to confront a Facebook friend to commit self-plagiarism.

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In addition, cost and benefits would be related to the attitude towards the target behavior ("Passow, Mayhew, Finelli, Harding and Carpenter", 2006). Costs and benefits of cheating include scholarships, course load and job employment (Passow et al., 2006). Tertiary students also assess the benefits of cheating and calculate the return of the assignment (Passow et al., 2006).

The categories of avoiding academic misconducts emphasis that avoiding plagiarism, collusion and falsification even if students were in an adverse situation. The fact of being caught risks, time-consuming and heavy punishment were considered as the influencing factors of avoiding or committing academic misconducts (Simkin and McLeod, 2010). According to the first and third research questions, Can tertiary students' intentions to avoid academic misconducts regarding school assignments be predicted by "attitude towards behavior", "subjective norms" and "perceived behavioral control"? and "Can tertiary students' intentions to uphold academic truth regarding school assignments be predicted by attitude towards behavior, subjective norm and perceived behavioral control?" two hypotheses are as follows:

H1a: Tertiary students' attitude toward avoiding academic misconducts is positively related to intention of avoiding academic misconducts

H2a: Tertiary students' attitude toward upholding academic truth is positively related to intention of upholding academic truth

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During the early developmental stages of TPB, a theoretical analysis of attitudes toward behavior can be the stronger predictor of target behavior, depending on the target participants, selected actions, proposed populations and time for the measures (Ajzen and Fishbein, 1977). Based on the second and fourth research questions, 'Can tertiary students' behaviors to avoid academic misconducts regarding school assignments be predicted by "attitude towards behavior", "subjective norms", "perceived behavioral control" and "intention"?' and 'Can tertiary students' behaviors to uphold academic truth regarding school assignments be predicted by "attitudes toward behavior", "subjective norms", "perceived behavioral control" and "intentions"?' two hypotheses are as follows:

H1d: Tertiary students' attitude toward avoiding academic misconducts is positively related to behavior of avoiding academic misconducts

H2d: Tertiary students' attitude toward upholding academic truth is positively related to behavior of upholding academic truth

2.3.3 Subjective norm

The next component in the figure 6 is entitled 'subjective norm' which is described as whether a learner can act or not act target behaviors to satisfy social factors (Beck and Ajzen, 1991) which may come from family, friends or professors (Simkin and McLeod, 2010). According to the first and third research questions, 'Can tertiary students' intentions to avoid academic misconducts regarding school assignments be predicted by "attitudes toward

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behavior", "subjective norms" and "perceived behavioral control"?' and 'Can tertiary students' intentions to uphold academic truth regarding school assignments be predicted by "attitude towards behavior", "subjective norm" and "perceived behavioral control"?' two hypotheses are as follows:

H1b: Tertiary students' "subjective norm" is positively related to "intention" of avoiding academic misconducts

H2b: Tertiary students' subjective norm is positively related to "intention" of upholding academic truth

"Subjective norm" has been shown strong influences on an individual's behavior ("Stone, Kisamore and Jawahar", 2007), when the respondents believe that subjective norm is linked to the behavior of people around them (such as peers and teachers) who consider avoiding academic misconduct (such as avoiding plagiarism, collusion and falsification) is common or usual practice in academic environments (Whitley, Nelson and Jones, 1999). For example, the subjective norm can be an important indicator for respondents who believe their professors are moral people who combat academic dishonesty (Simkin and McLeod, 2010).

In reporting the misconduct of peers, the subjective norm can explain a moderate amount of variances, the attitude toward reporting the misconduct of peers can explain a large portion of variances, and the perceived behavior control can add a little amount of variance (Randall and Gibson, 1991). In addition, tertiary students' subjective norm of upholding

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academic honesty is a weak indicator when the respondents believe that other students are continuing to cheat as cheating is acceptable (Stone et al., 2007).

Based on the second and fourth research questions, 'Can tertiary students' behaviors to avoid academic misconducts regarding school assignments be predicted by "attitude towards behavior", "subjective norm", "perceived behavioral control" and "intention"?' and 'Can tertiary students' behaviors to uphold academic truth regarding school assignments be predicted by "attitudes toward behavior", "subjective norms", "perceived behavioral control" and "intention"?' two hypotheses are as follows:

H1e: Tertiary students' "subjective norm" is positively related to behavior of avoiding academic misconducts

H2e: Tertiary students' "subjective norm" is positively related to behavior of upholding academic truth

2.3.4 "Perceived behavioral control"

"Perceived behavioral control" defined as the capability of action-targeted behaviors by anticipating the easiness or difficulties (Beck and Ajzen, 1991). Another essential point is the path from "perceived behavioral control" to intentions or behaviors (not mediated by intentions), depending on the level of "perceived behavioral control" including participants have more experience with target behavior (Beck and Ajzen, 1992). In addition, the cost and benefits would be associated with the attitude towards the target behavior ("Passow, Mayhew,

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Finelli, Harding and Carpenter", 2006). Tertiary students would evaluate the costs of committing academic misconduct by developing skills to reduce caught risks, these skills might require additional costs like time to refine the skills of data falsification (Passow et al., 2006).

It has been shown that TPB can improve the predictive power of intention and behavior among tertiary students' dishonesty (Beck and Ajzen, 1991; Madden, Ellen and Ajzen,1992). For example, tertiary students would commit academic misconducts by anticipating the low risk of cheating discovery school assignments (Passow, Mayhew, Finelli, Harding and Carpenter, 2006) when the target behaviors can be affected by the volitional control in a non-stressed environment.

Stone et al. (2007) agreed that perceived behavioral control is associated with two components: 1) self-efficacy and 2) controllability (Stone, et al., 2007). The first component, self-efficacy refers to situations in which tertiary students will deal with their self-perceived abilities for predicting intention, but they will avoid dealing with the pressures of the environment in which they believe they are beyond their capabilities (Bandura and Estes, 1977). For example, tertiary students can avoid academic conducts as these students believe that they are able to avoid academic misconducts, On the other hand, these students consider that they will not actually avoid academic misconducts when time is limit and the pressure is high. The second component, controllability which is the extent to predict actual behavior but

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not intention (Stone et al., 2007). “Perceived behavioral control” can be used the predictor of conditions without time constraints or high pressure. For example, tertiary students will have higher self-efficacy and controllability to express truthful viewpoints for stopping self-plagiarism when those students are not under pressure in this situation.

According to the first and third research questions, ‘Can tertiary students’ intentions avoid academic misconducts regarding school assignments be predicted by “attitudes toward behavior”, “subjective norms” and “perceived behavioral control”?’ and ‘Can tertiary students’ intentions uphold academic truth regarding school assignments be predicted by “attitudes toward behavior”, “subjective norms” and “perceived behavioral control”?’ two hypotheses are as follows:

H1c: Tertiary students’ “perceived behavioral control” of avoiding academic misconducts is positively related to intention of avoiding academic misconducts

H2c: Tertiary students’ “perceived behavioral control” of avoiding academic misconducts is positively related to behavior of avoiding academic misconducts

Based on the second and fourth research questions, ‘Can tertiary students’ behaviors avoid academic misconducts regarding school assignments be predicted by attitude towards behavior, subjective norm, perceived behavioral control and intention?’ and ‘Can tertiary students’ behaviors uphold academic truth regarding school assignments be predicted by “attitude towards behavior”, “subjective norm”, “perceived behavioral control” and

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intention?' two hypotheses are as follows:

H1f: Tertiary students' "perceived behavioral control" is positively related to behavior of avoiding academic misconducts

H2f: Tertiary students' "perceived behavioral control" is positively related to behavior of upholding academic truth

2.3.5 "Intentions" and "behaviors"

The goal of TPB is to provide information for predicting and interpreting a person's decisions toward the target behavior(s) (Beck and Ajzen, 1991). Intention has been referred to a person's considerable probability to one's commitment of the target behavior (Randall and Gibson, 1991).

According to the second and fourth research questions, 'Can tertiary students' behaviors to avoid academic misconducts regarding school assignments be predicted by "attitudes toward behavior", "subjective norms", "perceived behavioral control" and intentions?' and 'Can tertiary students' behaviors to uphold academic truth regarding school assignments be predicted by attitude towards behavior, subjective norm, perceived behavioral control and intention?' two hypotheses are made:

H1g: Tertiary students' "intention" is positively related to "behavior" of avoiding academic misconducts

H2g: Tertiary students' "intention" is positively related to "behavior" of upholding

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academic truth

2.3.6 The theory and planned behavior and existing instruments

A series of articles has been reviewed on the concept of academic integrity (Macfarlane et al., 2014), the association of academic misconducts and the extended "Theory of Planned Behavior (TPB)" (Meng et al., 2014), and the academically dishonest behaviors (McClung and Joanne, 2015). The scales of academic integrity with application of "the Theory of Planned Behavior" is an instrument have applied for more than two decades to predict the dishonest behavior in academic settings (Meng et al., 2014). Theory guided research can increase the accuracy evaluation of student's academic honesty (Stone et al., 2010). Meng et al. (2014) suggest that "the Theory of Planned Behavior (TPB)" can be an appropriate theoretical framework to study academic integrity as it may predict the cheating behavior. TPB is discussed in terms of five components, namely "attitudes toward behavior", "subjective norms", "perceived behavioral control", "intentions" and "behaviors" (Ajzen, 1991).

2.3.7 Academic honesty and study instruments

The current study requires a study instrument for measuring the constructs of the "TPB" models. These constructs of academic honesty are based on the definition of academic honesty. In the current study, academic honesty is referred to avoiding academic misconducts and upholding academic truth (Figure 3, Chapter 1, section 1.6.4). This definition is based on

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the literature reviews (Bretag, 2016, Macfarlane et al., 2016, Meng et al., 2016 and McClung & Schneider, 2015) and the handbooks from the public universities in Hong Kong such as "The Education University of Hong Kong", 2017; "The Hong Kong University of Science and Technology", 2015.

A systematic search was performed on five databases, together with the China Knowledge Resource Integrated Database (CNKI); EBSCOhost Education Research Complete; Education Resources Information Centre (ERIC); ProQuest Education databases and PsycINFO. This search strategy might overcome the searching constraints with particular databases, for example by facing up to the expansion of Chinese literature across Mainland China (CNKI), the limited coverage of articles as well as citations to dissertations in the field of education (EBSCOhost Education Research Complete; ERIC; ProQuest Education databases) and the possible related area such as psychology (PsycINFO). These databases were searched systematically for the terms, "the Theory of Planned Behavior" and "academic dishonesty" or "academic misconduct" and "student". This search process used these words across the title, abstract and any part of documents.

The databases had been examined with no restrictions on time and language across publications. All possible relevant non-English and non-Chinese articles were interpreted into English for supplementary evaluation. The articles in the list of reference or bibliographies of the relevant articles were also examined. Full-text articles had been retrieved according to the

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primary screening of the titles and abstracts. Retrieved articles had been imported to a computing article device, RefWorks (version 2.0; RefWorks, Bethesda, MD). The duplicate articles whether in the same or different databases were removed.

The inclusion criterion for this search was the original research studies that reported academic integrity with the samples were students. Papers were excluded if the studies were 1) duplicates, 2) not on the topic of academic integrity, 3) not measuring academic integrity by scaling questionnaires 4) not applying "the Theory of Planned Behavior", and 5) not retrievable.

Twenty studies met the criteria had been examined and it was found that seven scales had been applied in these studies. Six of the seven scales were used to measure academic misconducts such as plagiarism and collusion. One of the seven scales was used to measure upholding academic truth such as reporting student cheating events (Stone et al., 2012). The current research aims to study intentions and behaviors of maintaining academic honesty. An appropriate instrument is required to assess the two constructs: avoiding academic dishonesty and upholding academic truth.

Since there are no suitable measures to answer the research question, an instrument is developed according to the guideline of DeVellis, 2012. Following the definition of academic honesty, the instrument modified into two constructs, namely, avoiding academic misconducts by 1) avoiding plagiarisms, 2) avoiding collusions and 3) avoiding falsifications,

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and upholding academic truth by 1) expressing truthful viewpoints to prohibit academic misconduct behavior, 2) reporting self and peer academic misconducts and 3) restoring academic honesty thought corrections (Figure 3, Chapter 1, section 1.6.4).

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Chapter 3: Methodology

In the second chapter, the existing literature has been reviewed for highlighting the existing research issues regarding academic honesty. Two theoretical models of "the Theory of Planned Behavior (TPB)" for measuring intentions and behaviors of tertiary students in continuing academic honesty of school work have also been identified. The third chapter presents the study methods applied for addressing four research questions, 1) 'Can tertiary students' intentions to avoid academic misconducts regarding school assignments be predicted by "attitude towards behavior", "subjective norm" and "perceived behavioral control"?', 2) 'Can tertiary students' behaviors to avoid academic misconducts regarding school assignments be predicted by "attitude towards behavior", "subjective norm", "perceived behavioral control" and "intention"?', 3) 'Can tertiary students' intentions to uphold academic truth regarding school assignments be predicted by "attitude towards behavior", "subjective norm" and "perceived behavioral control"?' and 4) 'Can tertiary students' behaviors to uphold academic truth regarding school assignments be predicted by "attitude towards behavior", "subjective norm", "perceived behavioral control" and "intention"?'

To address the four research questions, a theory-guided study approach is applied for testing the research hypotheses (For example, H1a: "Tertiary students' "attitude toward behavior of avoiding academic misconducts is positively related to the intention of avoiding

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academic misconducts". Two TPB models of avoiding academic misconducts and upholding academic truth are used to explore the relationships between five variables: "attitudes toward behavior", "subjective norms", "perceived behavioral control", "intentions" and "behaviors".

This section explains why the research methods are selected to answer the research questions. Based on the definition of academic honesty proposed in Chapter 2, this chapter grants a more detailed consideration of the current study instrument. Given the lack of available instrument which provides a suitable measure for the construct of upholding academic truth. The instrumentation strategies that have been used to fill the research gap are discussed. In addition, the basic principles of data analysis for modifying an instrument and testing TPB models are introduced. Moreover, a detailed account of the sampling procedures and ethical review of this study are presented.

3.1 Participants

The target participants in the current research project were current tertiary students in Hong Kong. Hong Kong was a unique place where Asian and Western people met in her colonial history. In addition, "pressure for grades" was a common cause of students 'violation of academic honesty. Furthermore, there were more and more local news about academic dishonesty from this unique place. For example, a university educator in the Mainland plagiarized and self-plagiarized more than 15 papers (Zhuang, 2018). Another example, two university educators in two Hong Kong public universities had been found that there were

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40% of the similarity on their jointed publications; these educators expressed that they did not have enough awareness of plagiarism when they wrote the manuscripts (Wang, 2018). In addition, some DSE students disclosed that they have experiences in collusion of doing assignments. Therefore, Hong Kong is a good start to explore tertiary students' academic honesty.

A convenient sampling method was conducted for all public universities in Hong Kong (8 in total, 2017-2018 academic years) during a three-week period in March 2018. Students from their university libraries, canteens, study areas and cafés had been invited to join in the current research project. Inclusion criteria required participants: 1) self-reported 18-year-old or older, 2) self-reported as a Hong Kong tertiary student, and 3) willing for participating in the current study.

3.2 Measures

A systematic search had been conducted to search for an appropriate instrument, there was found that no instrument could be used to this study, and thus, a research measure had been modified from existing literature.

3.2.1 Rationale of scenario

In the context of tertiary education such as information and communication technology, behavioral research had been considered to be of importance (Jafarkarimi et al., 2016). Tertiary teachers had paid more attention to school assignment ethics (Riemenschneider et al.,

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2011). The current research aimed to explore the reasons that influence tertiary students' ethical decision-making regarding certain academic activities such as Facebook chatting, online group projects, online editing services. A study questionnaire with a scenario-based design would be helpful for assessing tertiary students' intentions and behaviors of maintaining academic honesty regarding school assignments. The basic principles of scenario design had been provided below.

3.2.1.1 Scenario setting

McClung and Schneider (2015) carried out a conceptual synthesis of academic misconducts, proposing academically misconducts regarding school assignments include plagiarism, collusion and falsification. Therefore, these scenarios were designed to be some moral dilemmas, including 1) plagiarism (multiple submission, essay reuse and essay purchase), 2) collusion (group project contributions, unauthorized collaboration and unauthorized sharing of works) and 3) falsification (omitting respondent's opinions without reporting, reference list falsification and interview data falsification). In each scenario, the first paragraph was designed to measure the level of a tendency for academic misconducts among the tertiary students and the second paragraph was to measure the level of upholding academic truth. All scenarios of plagiarism, collusion and falsification were provided in Appendix C.

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3.2.1.2 Scenario design

Considering the definition of academic honesty (avoiding academic misconducts and upholding academic truth) and the theoretical framework of TPB, nine scenarios were designed to use as the item stimuli. The item was the question unit. A common practice of scenario-based questionnaires in academic settings provides a particular scenario and ask participants to response a sequence of questions concerning the particular scenario (Jafarkarimi et al., 2016).

Four scenarios were revised from the previous studies of Riemenschneider et al (2011) and Barrett & Cox (2005). Five scenarios had been modified according to the guidelines of Jafarkarimi et al., 2016. The proposed criterion was as follows:

1) There is a dilemma ahead,
2) It should contain a clear ethical-decision of the fictional person,
3) It should include choices to fit people with low or high ethical standards, and
4) It should be brief and straightforward (without technical terms).

Following Jafarkarimi et al. (2016), each scenario presented a particular academic situation which was clear from the beginning that there was a dilemma ahead (e.g. time pressure) among the fictional persons regarding ethical-decision making. The designed scenarios were precise, with an average of 94 words per scenario.

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Scenario 1 (multiple submissions)

The first scenario was modified from the studies of Riemenschneider et al., 2011 and based on the proposed criterion of Jafarkarimi et al. (2016) to assess 1) avoiding academic misconducts: avoiding plagiarism and 2) upholding academic truth: expressing truthful viewpoints (Figure 3, chapter 1, section 1.6.4).

Firstly, scenario one clearly stated a dilemma to a student, Susan. She had not yet started to write her assignment which was almost due. Secondly, this scenario contained a clear ethical decision for the fictional person (Susan), who should or should not follow her Facebook friend's self-plagiarism suggestion. Thirdly, Susan's ethical decision making called for an agreement on a broad range of ethical standards. Finally, the number of words in this scenario was 62, which was easily digestible. The whole content of scenario one might refer to Appendix C.

Scenario 2 (group project contributions)

The second scenario was modified from the studies of Barrett & Cox, 2005, Riemenschneider et al., 2011 and Stone et al., 2012. The scenario stood according to the proposed criterion of Jafarkarimi et al. (2016) for evaluating 1) avoiding academic misconducts: avoiding collusion and 2) upholding academic truth: reporting peer's academic misconducts (Figure 3, chapter 1, section 1.6.4).

Primarily, three students, Amy, Bill and Cathy were assigned to perform a school project

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together. These students had divided their contributions in the beginning. Amy and Cathy had uploaded their finished tasks to a digital program. While Bill did not participate in the divided tasks and asked Amy to include his name in the project. The dilemma was asked the respondents to indicate their opinions from “strongly disagree” to “strongly agree” to Amy’s behavior: Amy had submitted the group project with all the names of her group members. The decision of Amy’s dilemma was used to assess respondents’ perception of avoiding collusion. Another dilemma was after Amy had given the group project into the course teacher with all the names of her group members, Cathy reported to their teacher that Bill did not perform anything in the group project. This dilemma was used to evaluate respondents’ perception of upholding the truth in the area of reporting peer cheating. The full content of scenario two might refer to Appendix C.

Scenario 3 (omit respondent’s opinions without reporting)

The third scenario was built upon the concept of falsification behavior from the study of McClung and Schneider (2015) and the proposed criterion of Jafarkarimi et al. (2016). This scenario was designed to assess 1) avoiding academic misconducts: avoiding falsification by the first paragraph and 2) upholding academic truth: reporting the fictional student’s self-academic misconducts by the second paragraph (Figure 3, chapter 1, section 1.6.4).

The story began with a student, Eric, who participated in a school survey project. He collected the opinions of 32 participants. He discovered that one of the participants had

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opposing responses to the other 31 respondents during the data analysis process. He did not report the respondent's opinion because these opinions invalidated his questionnaire. This section of the scenario was used to stimulate tertiary students to think about data forgery.

The next section crafted a self-conflict, Eric received an outstanding result in his questionnaire study. He felt guilty because his teacher praised him in front of the class. The conflict was to conceal the truth or betray himself. The story of Eric had ended very soon. Eric reported his incorrect behavior to the course teacher that he had ignored the opinions of one interviewee. This section of the scenario was used to stimulate tertiary students to think about self-report academic misconducts. The full story of scenario three might refer to Appendix C.

Scenario 4 (unauthorized collaboration)

The fourth scenario was modified from the studies of Riemenschneider et al., 2011 and based on the proposed criterion of Jafarkarimi et al. (2016) to assess 1) avoiding academic misconducts: avoiding collusion and 2) upholding academic truth: expressing truthful viewpoints (Figure 3, chapter 1, section 1.6.4).

The scenario four clearly showed the main characters, Gigi and Henry to the respondents. Gigi and Henry took the same statistical method course. According to the rule of the course, the multiple-choice assignment should be done separately. Gigi and Henry were busy with internships and they decided to share the work. An academically dishonest

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behavior was described that Gigi did the first part, and Henry completed the final part of the assignment. Each of them misrepresenting a group's work was just their own personal work.

Another section, Henry told his friend Irene about the unauthorized statistical task. Irene immediately pointed out that Gigi and Henry were wrong. They should report to the teacher what they have done. Here, Irene just expressed her truthful views: 1) the unauthorized statistical tasks and 2) reporting academic misconduct. The entire contents of scenario four had been shown in Appendix C.

Scenario 5 (Reference list falsification)

The fifth scenario was one of the academically dishonest incidences from the studies of Kwong et al., 2010. This scenario was based on the proposed criterion Jafarkarimi et al. (2016) for evaluating 1) avoiding academic misconducts: avoiding falsification and 2) upholding academic truth: reporting self- academic misconducts (Figure 3, chapter 1, section 1.6.4).

A student, Ken did not have the motivation to write an essay. After completing the essay, he did not check the references that he used and provided a list of forged references in his essay. This section allowed respondents to express their views of Ken's action. Another section told respondents that Ken later attended a moral lecture which conducted by his university. After attending the lecture, he told the course instructor that he provided a forged reference list in the essay. At this point, Ken had undergone a significant change in his moral

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value. The entire contents of scenario five had been shown in Appendix C.

Scenario 6 (Essay reuse)

The sixth scenario was built upon the concept of recycling behavior from the study of McClung and Schneider (2015) and the proposed criterion of Jafarkarimi et al. (2016). This scenario was designed to assess 1) avoiding academic misconducts: avoiding plagiarism by the first paragraph and 2) upholding academic truth: reporting peer-academic misconducts by the second paragraph (Figure 3, chapter 1, section 1.6.4).

The story began with a junior student, Lily, who became a friend with a senior student, Mark. Mark gave Lily an essay assignment for reference. Lily sent Mark's assignment to an online editorial company for word processing and submitted the edited assignment as her own work.

The next paragraph appeared a conflict between Lily and Mark. Lily told Mark that she had achieved excellent results in the editorial assignment. Mark told Lily that she had committed academic dishonesty and that she should report her behavior to her course instructor. Two months later, Lily still refused to report her actions. Mark reported Lily's actions to Lily's course lecturer. This section of the scenario was used to arouse tertiary students to think about peer-report academic misconducts. The full story of scenario six might refer to Appendix C.

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Scenario 7 (Essay purchase)

The seventh scenario was modified from one of the measurement items from the study of Kwong et al., 2010 and based on the proposed criterion of Jafarkarimi et al. (2016) to assess 1) avoiding academic misconducts: avoiding plagiarism and 2) upholding academic truth: reporting self-academic misconduct (Figure 3, chapter 1, section 1.6.4).

The scenario seven clearly presented the main characters, Nancy to the respondents. Nancy was anxious to write an English essay for a social science course because of her poor English writing skills. The poor English writing often occurred in English-as-a-second-language students (Pecorari, 2003). This scenario provided a dynamic situation to the respondents that the course teacher did not require his students to submit their essays through any plagiarism detection tool. This situation had driven the main character, Nancy to purchase an online essay. However, Nancy heard that a senior student was caught purchasing an online thesis. The university postponed the senior student's graduation. Nancy was very worried. At the ending of the scenario, Nancy reported her cheating behavior to her course teacher. Her teacher found that her essay had a 60% similarity index. The entire contents of scenario seven had been shown in Appendix C.

Scenario 8 (Unauthorized sharing works)

The eighth scenario was one of the academically dishonest incidences from the studies of McClung and Schneider (2015). This scenario was based on the proposed criterion

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Jafarkarimi et al. (2016) for evaluating 1) avoiding academic misconducts: avoiding collusion and 2) upholding academic truth: reporting peer-academic misconducts (Figure 3, chapter 1, section 1.6.4).

Two students, Olivia and Pan took a psychology course. The individual assignments were very complex which require each student to study the four theories in only two weeks. The academic misconduct described that Olivia and Pan violated the rule of individual assignments, where Olivia and Pan worked together to reduce effort and get higher marks.

A month later, Olivia and Pan both achieved very good results. Their classmate, Ross knew that Oliva and Pan shared their work in the individual assignment and reported it to the course teacher. The entire contents of scenario eight had been shown in Appendix C.

Scenario 9 (Interview data falsification)

The ninth scenario was built upon the concept of data falsification behavior from the handbook of "City University of Hong Kong", 2017 and" the Education University of Hong Kong", 2016. According to proposed criteria of Jafarkarimi et al. (2016), this scenario was designed to assess 1) avoiding academic misconducts: avoiding falsification by the first paragraph and 2) upholding academic truth: restoring academic honesty by the second paragraph (Figure 3, chapter 1, section 1.6.4).

The story began with a student, Queenie, who participated in an international competition. The awards in this competition were very attractive. She needed plenty of time

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for preparing this competition. At the same time, she had to submit a homework report on 20 detailed interviews for her university course. Queenie chose to pretend to have had interviewed 20 interviewees and provided fake information in this dilemma.

The next paragraph told the respondents that Queenie failed in the course because her course lecturer discovered the falsified results. She had to re-take the course. This time, Queenie had done all the course work honestly. This part of this scenario was used to motivate tertiary students to think about resuming academic honesty by correcting mistakes. The complete story of scenario nine could be found in Appendix C.

3.2.2 Rationale of item

Items were the unit of the measurement questions. The item design followed a set of specific guidelines from DeVellis (2012) to modify items from existing scales of academic dishonesty and classroom whistle-blowing. The goal of the current study measure was to assess “intentions” and “behaviors” of tertiary learners to maintain academic honesty. An item pool had also been generated for explicit expression with the purpose of the modified instrument. According to the literature review of McClung and Schneider (2015), Macfarlane et al. (2016) and Meng et al. (2016), and together with the handbooks of all Hong Kong public universities such as “The Education University of Hong Kong”, 2017 and “The Hong Kong University of Science and Technology”, 2015, the definition of academic honesty was refined into two constructs: avoiding academic misconducts and upholding academic

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truth (Figure 3, chapter 1, section 1.6.4). Therefore, the item design was chosen as the measurement purpose of these two constructs.

3.2.2.1 Academic honesty experiences

Each of the nine scenarios contained four items for measuring the experiences of academic honesty. These four items were placed after a scenario for evaluating tertiary students' experiences of avoiding academic misconducts and upholding academic truth. The first two items were based on the first paragraph and were used to report the frequency of avoiding academic misconducts. The last two items were based on the last paragraph for reporting the frequency of upholding academic truth. The participants were informed to read each scenario and then give their opinion on the item of the experience with five options: "Never", "Rarely", "Sometimes", "Often" and "Never". An example of scenario one, which was designed according to the scenarios:

"Scenario 1

It was 11 o'clock at night. Susan was on Facebook chatting with her friends. She had not started writing her essay assignment which was due the next day. One of her friends, ***Tim, suggested that Susan submit part of her previous work that she had submitted for another course.***

Another friend on Facebook, ***John pointed out that Tim's suggestion was not honest."***

The first item of scenario one was asked participants to report their personal experiences

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in avoiding academic misconducts. This item was based on the first paragraph of scenario one which described Tim's experience of proposing self-plagiarism: "I have had Tim's experience." The second item was asked participants to report on the experiences of people around them in avoiding academic misconducts. This item was in consonance with the first paragraph (proposed self-plagiarism) of scenario one "People around me have had Tim's experience."

On the other hand, the third item was designed for assessing respondents' personal experience of upholding academic truth. This item, "I have had John's experience.", based on the last paragraph of scenario one, described John's experience in pointing out his Facebook friend, Tim that his idea was not an honest thing to do. The fourth item was asked respondents to report on the experiences of people around them in upholding academic truth. According to the last paragraph of scenario one (pointing out Tim's suggestion was not an honest thing to do), this item was "People around me have had John's experience."

3.2.2.2 A theory-driven approach

DeVellis (2012) suggested theory could help to improve the clarity of the instrument construct. A conceptual paper by Meng et al. (2014) reviewed the application of TPB in the academic misconducts of existing literature and reported that the TPB framework provided a significantly enhanced outline for predicting how academic dishonesty occurred. Thus, this study used a theory-driven approach to modify an instrument. 45 items were assigned to the

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TPB components (attitude toward behavior, subjective norm, perceived behavioral control, intention and behavior of avoiding academic misconducts). Another 45 items were specified to the TPB components of upholding academic truth ("attitudes toward behavior", "subjective norms", "perceived behavioral control", "intentions" and "behaviors" of upholding academic truth). These items were selected from the item pool (Appendix) and modified for measurement purpose.

3.2.2.3 Distribution of items

Ten items for each scenario were developed to explore the intentions and behaviors of the two constructs: avoiding academic misconducts and upholding academic truth. The distribution of items used to investigate intentions and behaviors was shown in Table 1. Construct 1 was used to measure the components of TPB regarding avoiding academic misconducts. There were 5 sub-scales: 1) attitude towards behavior of avoiding academic misconducts, 2) subjective norms of avoiding academic misconducts, 3) perceived behavioral control of avoiding academic misconducts, 4) intentions of avoiding academic misconducts, and 5) behaviors of avoiding academic misconducts. Similarly, construct 2 was used to measure the components of TPB regarding upholding academic truth. There were another 5 sub-scales: 1) attitude towards behavior of upholding academic truth, 2) subjective norms of upholding academic truth, 3) perceived behavioral control of upholding academic truth, 4) intentions of upholding academic truth, and 5) behaviors of upholding academic truth.

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Table 1. *The Distribution of Items*

Component	Item number
Construct 1: Avoiding academic misconducts	
Attitude toward behavior	1, 11, 21, 31, 41, 51, 61, 71, 81
Subjective norm	2, 12, 22, 32, 42, 52, 62, 72, 82
Perceived behavioral control	3, 13, 23, 33, 43, 53, 63, 73, 83
Intention	4, 14, 24, 34, 44, 54, 64, 74, 84
Behavior	5, 15, 25, 35, 45, 55, 65, 75, 85
Construct 2: Upholding academic truth	
Attitude toward behavior	6, 16, 26, 36, 46, 56, 66, 76, 86
Subjective norm	7, 17, 27, 37, 47, 57, 67, 77, 87
Perceived behavioral control	8, 18, 28, 38, 48, 58, 68, 78, 88
Intention	9, 19, 29, 39, 49, 59, 69, 79, 89
Behavior	10, 20, 30, 40, 50, 60, 70, 80, 90

Note. Reverse scoring was applied to the items of construct 1: avoiding academic misconducts

There were 10 items located in each scenario for evaluating the moral dilemma of academic misconducts. Scenario settings and item distribution were described as 1) plagiarism: multiple submission (item 1 to 10), essay reuse (item 51 to 60) and essay

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purchase (item 61 to 70), 2) collusion: Group project contributions (item 11 to 20), unauthorized collaboration (item 31 to 40) and unauthorized sharing of works (item 71 to 80) and 3) falsification: Omitting respondent's opinions without reporting (item 21 to 30), reference list falsification (item 41 to 50) and interview data falsification(item 81 to 90).

Moreover, reverse scoring was applied to the items of construct 1: avoiding academic misconducts (item 1 to 5, 11 to 15, 21 to 25, 31 to 35, 41 to 45, 51 to 55, 61 to 65, 71 to 75, 81 to 85). There were five example items of scenario one: 1) If I were Susan's Facebook friend, I would support Susan to follow Tim's suggestion, 2) If I followed Tim's suggestion, people around me would accept it, 3) Tim's suggestion would be easy for me to follow, 4) If I were in Susan's situation, I would intend to follow Tim's suggestion, and 5) If I were in Susan's situation, I would actually follow Tim's suggestion. The complete set of scenarios and items was shown in Appendix C.

3.2.2.4 Option design

These ninety items were designed to the 5-point "Likert scale" (1 = "*Strongly Disagree"*, 2 = "*Disagree"*, 3 = "*Neither Agree nor Disagree"*, 4 = "*Agree"*, 5 = "*Strongly Agree"*) for assessing the constructs: avoiding academic misconducts and upholding academic truth. Each construct contained five sub-scales that were used to investigate tertiary students' "attitude toward behavior", "subjective norm", "perceived behavioral control", "intention" and "behavior". The content of the ten sub-scales was modified according to

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existing scales of academic dishonesty (Beck and Ajzen, 1991; Harding et al., 2007; Riemenschneider et al., 2011; Stone et al., 2012). Each scale contained 9 items which were placed in the nine scenarios. These scenarios reflected the moral dilemmas such as multiple submissions, unauthorized sharing work and reference list falsification.

3.2.3 Item review panel

University educators, language experts and tertiary students were members of the item panel and were responsible for reviewing the modified instrument, including scenario and item design. The Delphi method was essential for collecting anonymous judgments from the item review panel using a series of individual questionnaires and feedbacks (Skulmoski, Hartman & Krahn, 2007). This study applied the Delphi method for obtaining personal feedback for improving the quality of instrument judgement without the concern of social pressure (Brady, 2015).

3.2.3.1 Preliminary instrument review (5 scenarios)

Experts reviewing the instrument would receive an assessment of the relevance and clarity of the instrument (DeVellis, 2012). The initial instrument, including five scenarios and fifty items, were reviewed by a panel of six university educators from a university of education. These university educators included two chair professors ("Department of Health and Physical Education", and "Department of Psychology"), three associate professors ("Department of Curriculum and Instruction", "Department of International of Education and Lifelong

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Learning", and "Department of Psychology"), and an assistant professor ("Department of Psychology"). In addition, these educators had advanced knowledge in scale development, model examination and student support.

Experts' advice could be supportive for the content and construct validity (Wolfe and Smith, 2007). E-mails and Google Forms were the primary communication methods. All university educators were provided the study proposal, the background information and the preliminary instrument via e-mails and Google Forms with the Delphi method. To promote the communication effectiveness, personal face-to-face meetings and telephone calls were used for individual university educators. In the four-month period, feedback from all university educators was obtained. The principal researcher considered the university educator's feedback and modified the instrument. Then an American English tutor from a university of education was invited to assess the language of the instrument. Considering the language advice, the instrument was revised and tested by three tertiary students. These students stated that the 5-scenario instrument was easy to understand and fill in. Thus, four additional scenarios (essay reuse, essay purchase, unauthorized sharing work and interview data falsification) were designed and the study instrument review was initiated.

3.2.3.2 Study instrument review (9 scenarios)

In accordance with the steps of the preliminary instrument review, four designed scenarios were added to the preliminary instrument. 10 variables in the 10 sub-scale (such as

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attitudes toward the behavior of avoiding academic misconducts and intentions of upholding academic truth) were designed for measuring the components of TPB. Given considerations of social desirability in the landmark research (Beck and Ajzen, 1991), a scale of social desirability independent was included. This study adopted the ten items "Marlowe-Crowne Social Desirability Scale (MCSDS)" as Li & Li (2008) suggested this scale was suitable for the Chinese population. These items were:

1. I have never intensely disliked anyone.
2. I sometimes feel resentful when I don't get my way.
3. No matter whom I'm talking to, I 'm always a good listener.
4. There have been occasions when I took advantage of someone.
5. I'm always willing to admit it when I make a mistake.
6. I sometimes try to get even rather than forgive and forget.
7. There have been occasions when I felt like smashing things.
8. There have been times when I was quite jealous of the good fortune of others.
9. I have never felt that I was punished without cause.
10. I have never deliberately said something that hurt someone's feeling.

According to the suggestions of this panel, the modified version of the Chinese version items is added align to the English version. These ten items had been assessed by the panel of tertiary educators and students. The bilingual version is shown in Appendix C. In the total of

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147 items were designed for the study instrument. The instrument had four parts, 1) experiences of avoiding academic misconducts and upholding academic truth: 36 items; 2) scenarios: 90 items, 3) MCSDS: 10 items and 4) demographic: 11 items.

University educator review

The principal researcher considered the university educator's feedback and modified the instrument. Furthermore, sixteen university educators (Including chair professors, associate professors and assistant professors) from four universities in Hong Kong had been invited for reviewing the revised questionnaire through Google Forms. Eight university educators provided feedback to this modified instrument. The teaching experiences of these eight university educators were from six to thirty-nine years. These university educators provided feedback including the agreement of the suitability of the questionnaire and the language use of the sentence structure. All university educators agreed that the proposed questionnaire could help to explore university students' academic honesty in assignments.

Language expert review

Following the language of Chapman and Lupton's 2004 study which was the previous study for exploring Hong Kong tertiary students' academic dishonesty, the instrument for this study was also written in English. Three international English tutors in an Education university reviewed the language of the questionnaire and provided the feedback. These international tutors from the UK, Ukraine and the United States, as well as these tutors often

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taught students in the academic environment of Hong Kong. To enhance the quality of language, an American language consultant from a University of Education (Department of Graduate School; Department of Linguistics and Modern Language Studies) was invited to assess the English usage of the questionnaire. With the help from a language consultant, the principal investigator modified the language expression of the questionnaire. After several rounds of discussions with the panel of university educators and language consultants, the questionnaire test began.

Instrument user review

An on-site questionnaire testing was conducted in March 2018 across the five Hong Kong Universities. Five undergraduates and five postgraduates were invited to fill in the measures for assessing the discrepancy of the questionnaire clarity between tertiary educators and tertiary students. In this questionnaire testing, the average time for the five undergraduates and five postgraduates to complete these measures was 15.2 and 11.3 minutes, respectively. These tertiary students indicated that they understood and did not find anything confusing about the measures. These participants also stated that this questionnaire could reflect the research aim to explore tertiary students' academic honesty regarding school assignments. This questionnaire testing obtained the preliminary validity of the modified instrument.

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3.3 Data analysis

Data analysis of the current study involved 3 phases: 1) descriptive analyses were performed using "SPSS 24.0 (IBM Corp, released 2016)", 2) Rasch analyses of psychometric properties examinations for developing scales and calibrate students' (person) measures were analyzed using Winsteps 4.0.1 (Linacre, 2018), and 3) the path analyses of model testing were conducted using Lavaan (Rosseel, 2012), a "R package for Structural Equation Model (SEM) in R (R Core Team, 2017: URL http://www.R-project.org/)".

The significance of this analysis approach helped to convert ordinal raw data into interval measures from the ordered category responses for a linear measurement (Linacre, 2006). This approach of data analysis had been applied in the study of Yan and Sin (2015) to explore the academic intention and practice among school principals in relation to the inclusive education by applying "the Theory of Planned Behavior (TPB)" through examining "the psychometric properties", converting the ordinal data of the raw data set into the interval data and conducting the path analysis. Applying SEM in the current study was that SEM could conduct the path analysis simultaneously to each path (Chang, 1998).

3.3.1 Data analysis to descriptive information

Before moving to the research objectives. Tertiary students' experiences of academic honesty were analyzed by SPSS 24.0 (IBM Corp, released 2016). Frequency statistics of tertiary students' and their classmates' experiences of plagiarism (multiple submission, essay

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reuse and essay purchase) collusion (group project contributions, unauthorized collaboration and unauthorized sharing of works) and falsification (omitting respondent's opinions without reporting, reference list falsification and interview data falsification) were conducted. The report of frequency statistics is presented in section 4.4.1 of Chapter 4.

3.3.2 Data analysis for research objective two

To modify and examine the study instrument

Before examining the psychometric properties of the modified instrument, data preparation was planned to refine the information. The data preparation was performed by Rasch analysis using Winsteps 4.0.1 (Linacre, 2018). Once the data was prepared, the psychometric properties in this modified instrument had been also examined by Rasch rating scale analysis through Winsteps 4.0.1 (Linacre, 2018). After these analyses, Rasch analysis was used to convert ordinal scores to interval scores of the tertiary students' (person) measure. Analyses implications are presented below.

3.3.2.1 Data preparation

Rasch analysis had been applied for preparing the data for solving unfitting items and response problems (Wright and Stone, 1979). This Rasch analysis could enhance the effectiveness of further analysis. The method of data preparation had followed the guideline of Linacre, 2017 to identify misfit data, remove this misfit data and then reanalyze the refined data. The item fit statistic test was widely used to determinate the infit and outfit mean

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squares (MNSQ), an acceptable range of" item MnSq was between 0.5-1.5" (Wright & Linacre, 1994). This criterion, "MNSQ in a range of 0.5 and 1.5" was used as the cut-off value of MNSQ fit statistics in the current study. For the person fit statistic test, an acceptable value of MnSq was < |2| (Linacre, 2018). This criterion (MNSQ is < |2|) was applied to "the cut-off value of person MNSQ fit statistics" in the current study. The report of data preparation is presented in section 4.4.2 of Chapter 4.

3.3.2.2 Psychometric properties

The current study had applied Rasch analysis for examining "the psychometric properties" of the study instrument using "Winsteps 4.0.1" (Linacre, 2018). Rasch analysis had been successfully applied in special educational needs (Yan and Sin, 2015) and workplace bullying (Ma, Wang and Chien, 2017) in addressing psychometric properties of study instruments that under the framework of TPB. These two studies had used the following criteria: 1) "Rasch item reliability", 2) "Rasch person reliability", 3) "Variance explained by measures" and 4) "score category function". The indices of the Rasch analysis were obtained from Linacre (2018).

For the first and second criteria, Rasch item and person reliability helped to estimate the replicability of item/person which destined research can provide similar results if repetitive the procedures (Bond, 2007). Replicability could be improved when performing in-depth testing to similar research settings to obtain more innovative ideas. This criterion (the value

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was over 0.7) were used as the acceptable value of the amount of item and person reliability in this study. The report of the item and person reliability is presented in section 4.4.3 of Chapter 4.

The third criterion, variance explained by measures which associate with "the proportion of variance" regarding "the observed data" that could be described by "person abilities", "item difficulties" and "structures of rating scales" (Linacre, 2006). A higher proportion of variance indicated that both items and persons were better predicted. The acceptable value was over 40% indicating fairly good scaling quality of the psychometric properties (Ma et al., 2017). This criterion (the value was over 40%) was used as the acceptable value of the amount of "variance explained by measures" in the current study. A report of the proportion of variance is presented in section 4.4.3 of Chapter 4.

Lastly, score category function was assessed by checking the step thresholds difficulties of the rating scales through Linacre's 2018 proposed guidelines. The scores category function of the ten sub-scales had been examined for determining whether participants of the current study used the provided options (from "strongly disagree" to "strongly agree") appropriately (Linacre, 2018). This criterion was the intersection point (related to the provided options) between consecutive categories advancing monotonically (Linacre, 2018). For example, the values of the 5-point rating scale functioned well, these values indicated a high level of

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performance categories linked to a high measure of the latent trait (Ma et al., 2017). The report of the score category function is presented in section 4.4.3 of Chapter 4.

3.3.2.3 Student's measures conversion

The rationale of converting student's measures from ordinal scores to interval scores was associated with an inherent limitation for the traditional analytical methods as classical test theory. The format of the modified instrument was designed into a 5-likekert scale to obtain respondents' opinions. The path analysis in research objective two required linear scores of the data, therefore, previous studies (e.g. Leong and Qiu, 2013; Ma et al., 2017 and Yan and Sin, 2015) were highly recommended that the ordinal scores should be converted to interval scores for preventing misleading interpretation of findings. Rasch analysis had overcome the limitation of classical test theory by using Winsteps 4.0.1 (Linacre, 2018).

3.3.3 Data analysis for research objective three

To test the TPB models for exploring tertiary students' intentions and behaviors of academically honesty

The current study aimed to study the relationships between tertiary students' intention and behavior of maintaining academic honesty regarding school assignments under the TPB framework e.g. "attitudes toward behavior", "subjective norms" and "behavioral perceived control"). Tertiary students of 8 Hong Kong universities were surveyed. Tertiary students' responses from the designed 90 items of ten sub-scales had been calibrated through Rasch

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analysis. The data then subjected to path analysis using Lavaan (Rosseel, 2012), the R package for Structural Equation Model in "R (R Core Team, 2017: URL http://www.R-project.org/)".

As suggested by Kline and Ebrary (2011), the fit statistics applied to the current study for examining the model data fit regarding path analysis included "chi-square (χ^2)", p-value, relative chi-square (χ^2 /df), comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) and standardized root mean squared residual (SRMR). Using CFI for one of the fit indices as underestimations of fit can be avoided even if the sample size was small (Bentler, 1990). Chang (1998) had applied CFI in a study with 181 university student sample in Hong Kong.

The indications of good model fit criteria of these fit statistics were followed the existing studies such as Yan and Sin (2015) and the guidelines of Kline and Ebrary (2011), χ^2 /df value was less than three, χ^2 p-value was not significant, "CFI" and "TLI" values were not less than 0.95, "RMSEA" was not greater than 0.05 and SRMR was not greater than 0.08.

3.4 Sampling procedures

After the study instrument had been modified, a research survey was conducted in March 2018. The effectiveness of survey research was high for measuring the responses (such as subjective norms, intentions and attitudes toward avoiding academic misconducts) of behavioral and social science studies (Ruel, Wagner III and Giespie, 2016). Decisions to

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make before conducting the survey was important to the whole study.

3.4.1 Sample size

The number of the sample for the current study was referred to these criteria: 1) ten respondents for an item (Riemenschneider et al., 2011), 2) the sample size of respondents (sample size: from 90 to 454) of the related research (Beck and Ajzen, 1991; Du et al., 2011; Harding et al., 2007; Riemenschneider et al., 2011; Stone et al., 2007; Stone et al., 2009; Stone et al., 2010; Stone et al., 2012), and 3) number of participants (sample size: 209) from the related studies using Rasch analysis together with path analysis to apply TPB for studying educational issues (Yan and Sin 2015), and 4) the response rate of the landmarked research, there were 146 tertiary students joined the survey research in the 1991 study by Beck and Ajzen. In the landmarked research, the "response rate" was 90% and the proposed "sample size" was 163. Taking into account these criteria, the proposed "sample size" for the current study was 200.

3.4.2 On-site survey

The pen-and-paper survey was in use for encouraging participation, ensuring the quality of data collected and reducing respondent fatigue (Ruel, Wagner and Gillespie 2016). The researcher invited the students from the campsite (the canteen, cafe, library, study areas and computer rooms) of eight Hong Kong public universities for participating in the current survey in March 2018. These eight public universities included 1) "Hong Kong Baptist

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University", 2) "City University of Hong Kong", 3) "Lingnan University, Hong Kong", 4) "the Education University of Hong Kong", 5) "the Chinese University of Hong Kong", 6) "the Hong Kong Polytechnic University", 7) "the University of Hong Kong" and 8) "the Hong Kong University of Science and Technology".

To maximize proportions of subjects answering the questionnaire, the researcher showed and explained the information sheet together with the consent of the current study to the tertiary students (Leung, 2011). After getting consent from the students, a questionnaire with instruction was provided. The students were also reminded that the opinions would be treated as anonymity. A collection container was shown to the students.

3.5 Ethical review

Approvals for this study were granted by "the Human Research Ethics Committee" following the application procedures suggested by" the Education University of Hong Kong" (Appendix A & B), the pilot testing (Reference number: 2016-2017-0368) and present research study (Reference number: 2017-2018-0327). The instrument review panel and participants in this research were voluntary. Invitation letters were provided to the participants for informing the purpose of the study. Potential participants were also guaranteed that their responses were confidential. The findings of data collection would be reported through the publications of a doctoral thesis or academic journals.

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Chapter 4: Findings

Chapter three identified research methods that had been used for empirical investigations of the TPB models, Model 1: avoiding academic misconducts and Model 2: upholding academic truth. This chapter reported the results of the "descriptive analysis", "Rasch analysis" and "path analysis". The collected information was analyzed with research objectives posed in this thesis: 1) to modify and evaluate an instrument to assess two constructs: avoiding academic misconducts and upholding academic truth thought "the Theory of Planned Behavior (TPB)" and 2) to test TPB models to understand the decision-making process of tertiary student regarding academic honesty.

4.1 Descriptive analysis

Data collection occurred in a 3-week period in March 2018. Inclusion criteria of participants were 1) self-reported age was 18 years or older, 2) self-reported as a tertiary student in any Hong Kong tertiary institution, and 3) agreed to join the current study. 229 tertiary learners had been invited to join this research, 207 tertiary students accepted the invitation and filled in the modified instrument. 22 tertiary students who declined to fill in the modified instrument due to lack of time during the mid-term period. The response rate of this sample was 90.39%.

4.1.1 Demographic information

The convenience sample included 207 tertiary students who had been studying in one of

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the Hong Kong public universities. Frequency and descriptive data were determined for providing demographic information of respondents. Table 1 summaries the characteristics of respondents according to demographic question 1, 3, 7, 8, 9 and 10. The remaining demographic information would also be reported.

Table 2. "*Demographic Characteristics of Participants* (N = 207)"

Characteristics	n	%
Gender		
Male students	94	45.41
Female students	108	52.17
Non-indicated	5	2.42
Educational level at the time of the survey		
Undergraduates	137	66.18
Postgraduates	65	31.40
Non-indicated	5	2.42
Study mode at the survey time		
Full-time	197	95.17
Part-time	4	1.93
Non-indicated	6	2.90
Finance status of the study program		
Self-finance	77	37.20
Non-self-finance	122	58.94
Non-indicated	8	3.86
Place of birth		
Hong Kong	106	51.20
China	83	40.10
Others	12	5.80
Non-indicated	6	2.90
Religion		
With religion	34	16.43
Non-religion	151	72.94
Non-indicated	22	10.63

This sample of tertiary students reflected a similar proportion of gender, male (45.41%)

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and female (52.17%). The "age range" of the participants indicated from 18 to 35 years, and the average age (SD) was 21.45 years (2.76). Frequently reported ages were 19 (15.9%), 20 (15.0%), 21 (17.4%), 22 (10.1%) and 23 (9.7%). The highest level of education obtained included from high school graduates to doctorates. The level of education reflected both undergraduate and postgraduate study levels, most of which were undergraduate students (66.18%) and a few, postgraduate students (31.40%).

Most of the respondents studied as full-time learners (95.17%). The financial statuses were 37.20% of self-finance students and 58.94% of non-self-finance students. Responses to the place of birth included Hong Kong (51.20%), China (40.10%) and others (5.8%). The response from other places of birth reported as these tertiary students were originally from Africa, Canada, India, Indonesia, Korea, Macao, Malaysia, Pakistan, Sweden and the U.S.

Almost 90% of the sample indicated their religion status. Most were non-religious (72.94%) and the minority, with religion (16.43%). The religious affiliations included Buddhist (3.3%), Catholic (13.2%), Christian (63.7%), Hindu (3.3%), Islam (6.6%), Japanese religion (3.3%) and Muslim (6.6%).

195 tertiary students reported that they used electronic devices every day, both for learning and non-learning purposes, with average usage was 7.48 hours. The minimum daily usage was 1 hour, and the maximum was 20 hours. About two-thirds of these students used electronic devices for 3.71 hours to 11.25 hours per day (mean / standard deviation: 7.48+/-

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3.77).

In addition, the total score of the 10 items “Marlowe-Crowne Social Desirability Scale (MCSDS)” was 10. Participants’ average MCSDS score was 4.61 (standard deviation: +/- 2.20). Lower MCSDS scores might indicate that participants were less concerned with social approval (e.g. in line social conventions) and were more willing to answer those survey items truthfully that accurately represented themselves.

4.1.2 Experiences of avoiding academic misconducts

Figure 7 gives information about the experiences of avoiding academic misconducts in these three categories: plagiarism, collusion and falsification. In general, respondents reported that they avoided academic misconducts as higher than they believed others to avoid academic misconducts. Furthermore, the correlations between the academic misconducts and participants’ responses in term of attitude (Table 3), intention (Table 4) and behavior (Table 5) are presented below.

4.1.2.1 Experiences of avoiding plagiarisms

Figure 7 showed that some respondents had experienced avoiding plagiarisms in these three categories, 1) avoiding multiple submissions: scenario 1 (personal experiences: 68.1% and perceived other people’s experiences: 34.8%); 2) avoiding essay reuses: scenario 6 (personal experiences: 71.7% and perceived other people’s experiences: 54.1%) and 3) avoiding essay purchases: scenario 7 (personal experiences: 82.4% and perceived other

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people's experiences: 63.1%).

The finding of scenario 1 showed that even if an essay assignment was about to due, tertiary students would avoid to follow a suggestion of self-plagiarism. In addition, the findings of scenario 6 showed that although tertiary students had a shared essay from senior tertiary students, tertiary students could avoid reusing this essay for their course assignment. Similarly, the finding of scenario 7 showed the situation of essay purchase was not so hard for tertiary students to avoid purchasing papers. In short, most of the respondents had to avoid plagiarism experiences. In particular, respondents reported that they often avoided purchasing essay papers and they believed other tertiary students also avoid purchasing essay papers.

4.1.2.2 Experiences of avoiding collusions

Just a small percentage of tertiary students had experienced avoiding academic dishonesty in the situation of collusions (Figure 1): 1) Group project contributions: scenario 2 (personal experiences: 20.1% and perceived other people's experiences: 6.4%), 2) unauthorized collaborations: scenario 4 (personal experiences: 34.1% and perceived other people's experiences: 17.6%) and 3) unauthorized sharing works: scenario 8 (personal experiences: 45.8% and perceived other people's experiences: 33.0%). These finding highlighted the fact that few respondents had to avoid collusion experiences in group project contributions. 79.9% of respondents reported that they could not avoid academic misconducts

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in the group project contributions. Almost 94% of tertiary students were considered committing academic misconducts in the contribution of group projects.

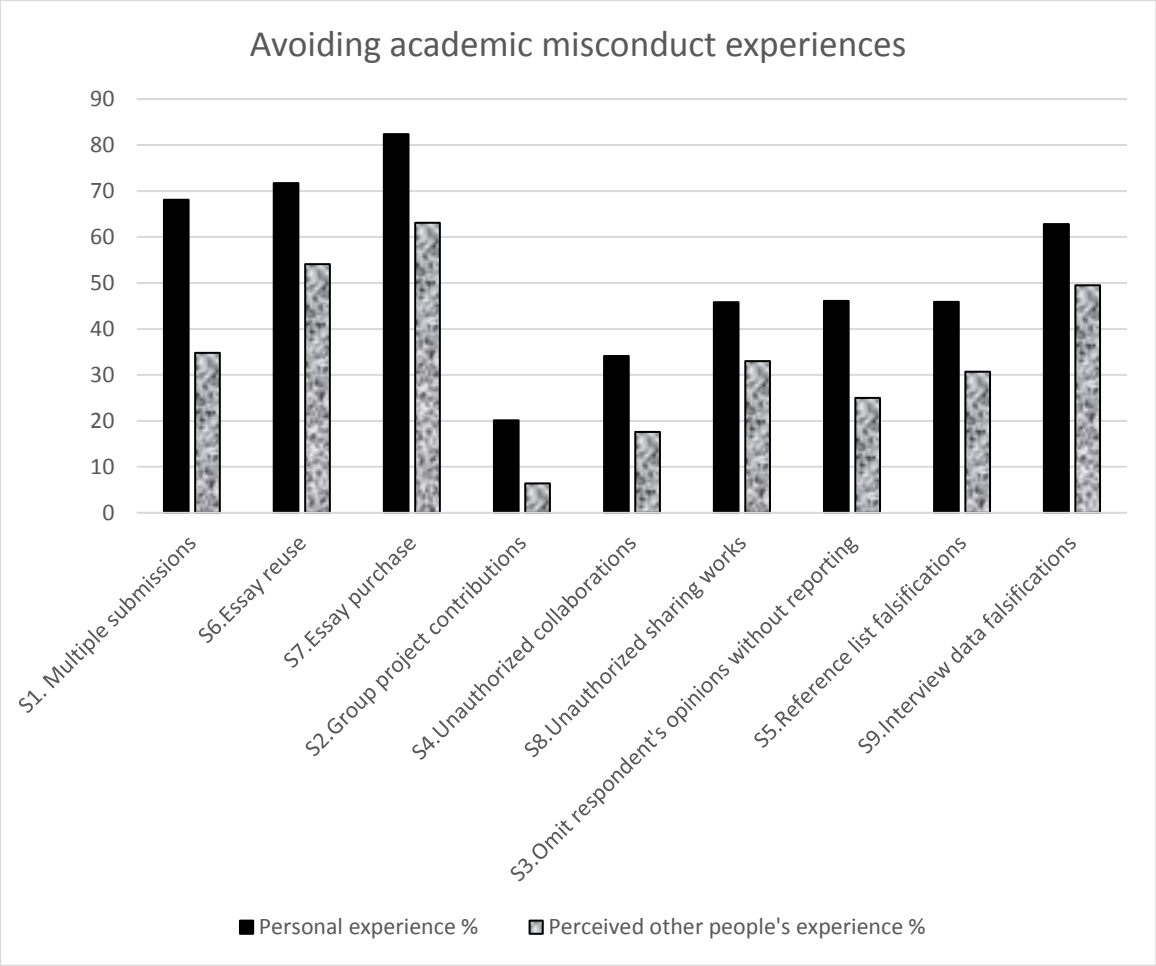

Figure 7. Avoiding academic misconduct experiences

Note. S = scenario. Plagiarism: S1, S6 and S7; collusion: S2, S4 and S8 and falsification: S3, S5 and S9.

The finding of scenario 2 indicated that even if one of the group members did not participate in a school assignment, the tertiary students did not have much experience to avoid submitting the school assignment with all the group members' names in a limited time. That aside, the finding of scenario 4 showed that although the course outline emphasized that

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a multiple-choice statistical assignment should be worked on an individual basis, tertiary students could not avoid sharing their answers with classmates under time constraints. Then again, the findings of scenario 8 presented that the tertiary students would share their assignment work with classmates in order to reduce their workload when performing a complex individual assignment.

4.1.2.3 Experiences of avoiding falsifications

Nearly half of tertiary students had the experience of avoiding academic misconducts in the situation of falsifications (Figure 1): 1) avoiding to omit respondent's opinions without reporting: scenario 3 (personal experiences: 46.1% and perceived other people's experiences: 25.0%), 2) avoiding reference list falsifications: scenario 5 (personal experiences: 45.9% and perceived other people's experiences: 30.7%), and 3) avoiding interview data falsifications: scenario 9 (personal experiences: 62.8% and perceived other people's experiences: 49.5%).

Results of scenario 5 showed that tertiary students would not make a proper reference list if these students did not have the motivation to write an essay. Additionally, the findings of scenario 3 showed that tertiary students would ignore the opposite opinion without reporting. Similarly, the findings of scenario 9 presented that there was no time to prepare for twenty detailed interviews and that tertiary students would pretend to conduct twenty interviews and provide falsified information on school assignments. In brief, in order to avoid falsification, tertiary students had more experience in avoiding

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interview data falsification. About half of the tertiary students had experience of omitting respondent's opinions and without reporting and reference list falsifications.

4.1.3 Experience of upholding academic truth

Tertiary students stated that the personal experiences of holding academic truth were lower than perceived other people's experiences (Figure 8). This information showed the experiences of upholding academic truth in three categories: 1) expressing truth viewpoints, 2) reporting incorrect behaviors and 3) correcting a mistake. In general, the respondents reported that their personal experiences of upholding academic truth were lower than they perceived other people's experiences of upholding academic truth.

4.1.3.1 Experiences of expressing truth viewpoints

About 50% of respondents had the experience of expressing truth viewpoints in the situation of plagiarism and unauthorized collaboration (Figure 8): 1) multiple submissions: scenario 1 (personal experiences: 55.4% and perceived other people's experiences: 62.7%), and 2) unauthorized collaborations: scenario 4 (personal experiences: 51.0% and perceived other people's experiences: 61.3%). Overall, these findings indicated that half of the respondents had to avoid plagiarism and unauthorized sharing works experiences. About half of the tertiary students could express their views on the truth when they encountered academic misconducts.

The finding of scenario 1 showed that around half of the tertiary students would express

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their views on self-plagiarism, which was not an honest thing. Similarly, the findings of scenario 4 showed that half of the tertiary students would express their views on unauthorized collaborations were wrong and that, their classmates should report to their course lecturer. In short, half of the tertiary students had the experiences of expressing viewpoints of truth to their peers.

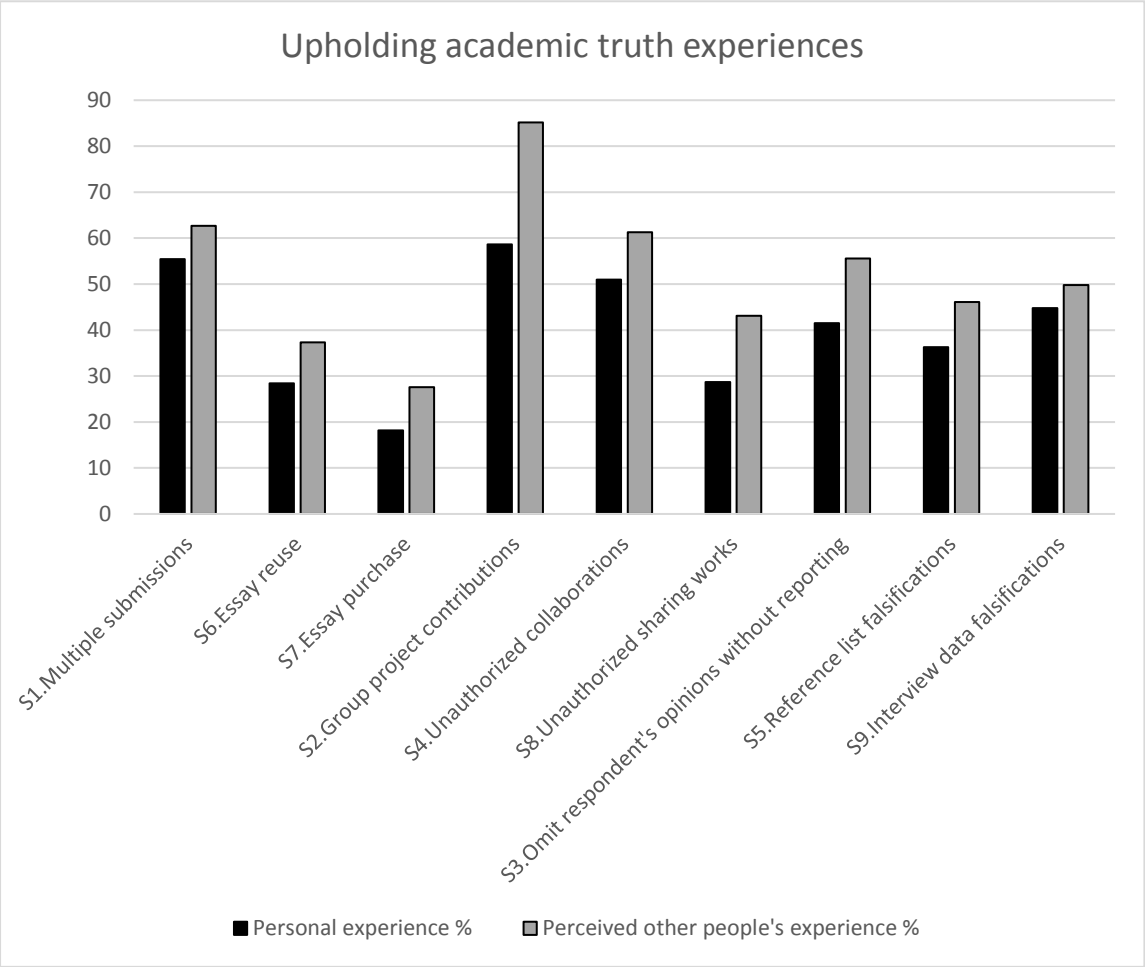

Figure 8. Upholding academic truth experiences

Note. S = scenario. Expressing truth viewpoints: S1 and S4; reporting self-incorrect behaviors S3, S5 and S7; reporting peer-incorrect behavior: S2, S6 and 8 and correcting a mistake: S9

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4.1.3.2 Experiences of reporting incorrect behaviors

Experiences of reporting self-incorrect behaviors

According to Figure 8, half of the tertiary students had the experience of upholding academic truth in the situation of reporting self-incorrect behaviors: 1) Omit respondent's opinions without reporting: scenario 3 (personal experiences: 41.5% and perceived other people's experiences: 55.6%), 2) reference list falsifications: scenario 5 (personal experiences: 36.3% and perceived other people's experiences: 46.1%) and 3) essay purchase: scenario 7 (personal experiences: 18.2% and perceived other people's experiences: 27.6%). These finding highlighted that respondents had a sense of reporting self-incorrect behaviors in data falsifications, reference list falsifications and essay purchases.

Experiences of reporting peer-incorrect behaviors

Figure 8 presented tertiary students' experience of upholding academic truth in the situation of reporting peer-incorrect behaviors: 1) Group project contributions: scenario 2 (personal experiences: 58.6% and perceived other people's experiences: 85.2%), 2) essay reuses: scenario 6 (personal experiences: 28.4% and perceived other people's experiences: 37.3%) and 3) unauthorized sharing works: scenario 8 (personal experiences: 28.7% and perceived other people's experiences: 43.1%). These finding highlighted that respondents had a strong sense of reporting peer-incorrect behaviors in group project contributions.

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4.1.3.3 Experiences of restoring academic honesty

Nearly half of tertiary students had the experience of upholding academic truth in the situation of restoring academic honesty by correcting a mistake (Figure 8). Results of the survey in scenario 9 showed tertiary students had corrected a mistake experience of interview information falsifications after the punishment (44.8%). These tertiary students would think their classmates would also be honest to re-take the course after the punishment (49.7%).

4.2 Rasch analysis

4.2.1 Data preparation

Data preparation in Rasch analysis was the foundational step of the Rasch and path analyses. This data preparation was performed through "the Rasch Rating Scale Model" (RSM; Andrich, 1978). The raw data set was prepared into refined information to enhance its effectiveness for further analysis. The unfitting items and response issues would be solved by Rasch analysis (Wright and Stone, 1979). This study based on the guideline of Linacre, 2017 to identify misfit data, remove this misfit data and then reanalyze the refined data. The missing data were treated as empty cells for the pairwise deletion during the data analysis.

To identify the misfit data, item and person fit statistics: 1) infit mean square (MnSq) and 2) outfit MnSq had been applied for examining whether an item or a person well fit to "the RSM". For "the item fit statistic test" (both infit and outfit), a satisfactory range of "MnSq was between 0.5-1.5" (Wright & Linacre, 1994). The test identified five misfit items

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of scenario two (item 11, 12, 13, 14 and 15) which did not locate in the acceptable range (Table 3).

Table 3. Psychometric properties of misfit items

Item	INFIT MNSQ	OUTFIT MNSQ
11	1.65	1.75
12	1.66	1.83
13	1.70	1.81
14	1.69	1.81
15	1.75	1.81

According to these results of the five misfit items, the rest of the items of scenario two (item 16, 17, 18, 19, and 20) were also excluded. For the person fit statistic test, an acceptable range of MnSq was < |2| Linacre (2018). Thus, there were 17 to 27 misfit persons of the data which were excluded by using a pairwise approach before reanalyzing the data.

4.2.2 Examine of psychometric properties

A Rasch analysis was reanalyzed, some statistics were considered to examine psychometric properties of this modified instrument. These statistics included as follows: 1) Rasch item reliability, 2) Rasch person reliability, 3) Variance explained by measures which referred to proportions of variance regarding the observed data that could be described by the "person abilities", "item difficulties" and "rating scale structures" (Linacre, 2006) and 4) Score category function by checking the step thresholds. There were four thresholds in a five-category scoring. The results of Rasch item reliability, variance explained by measures and Rasch person reliability are shown in Table 4.

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Table 4 showed the Rasch item reliability is from 0.97 to 0.98 which indicated enough predicted consistency if researchers administrated the same items to similar participants (Bond and Fox, 2007). Furthermore, the Rasch person reliability showed an acceptable "replicability of person-ordering" along "the latent trait scale" (Yan & Sin, 2015). The higher person reliability indicated that there had wider ability range among the participants, in similarly, the higher item reliability showed that there had a wide range item difficulty for each item (Linacre, 2017).

Table 4. Psychometric properties of academic honesty scales

Scale	**Rasch reliability**		**Variance explained by measures (%)**
	Item	Person	
Construct 1: Avoiding academic misconducts			
Attitude toward behavior	0.98	0.77	52.4
Subjective norm	0.98	0.79	51.3
Perceived behavioral control	0.98	0.79	53.1
Intention	0.98	0.74	49.4
Behavior	0.98	0.75	51.6
Construct 2: Upholding academic truth			
Attitude toward behavior	0.97	0.83	54.3
Subjective norm	0.98	0.81	52.0
Perceived behavioral control	0.98	0.81	50.0
Intention	0.98	0.81	50.2
Behavior	0.98	0.81	51.5

Table 4 also presented that the variance explained by measures also reached acceptable "proportions of variance" in "observed data" which could be explicated by the "person abilities", "item difficulties" and "rating scales structures" (Linacre, 2017). Moreover, rating structures presented 5-category rating scales with a well-functioned step threshold as the figures of each step advance monotonically (Table 5).

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Table 5. The step threshold of psychometric properties of academic honesty scales

Scale	**Step threshold (Category function)**			
	Step 1	Step 2	Step 3	Step 4
Construct 1: Avoiding academic misconducts				
Attitude toward behavior	-2.13	-.69	.39	2.43
Subjective norm	-2.13	-.87	.15	2.85
Perceived behavioral control	-1.38	-.76	-.03	2.18
Intention	-1.91	-.73	-.07	2.71
Behavior	-1.63	-.68	-.05	2.36
Construct 2: Upholding academic truth				
Attitude toward behavior	-2.17	-.33	.32	2.19
Subjective norm	-2.26	-.39	.33	2.31
Perceived behavioral control	-2.10	-.42	.43	2.09
Intention	-2.02	-.23	.34	1.91
Behavior	-1.68	-.28	.38	1.58

A threshold was a point between adjacent categories in which the probability of selecting either category was equal. Since all items in the modified instrument had submitted five categories of ratings, there were four thresholds. Figure 9 showed an example of a statement for an instrument item.

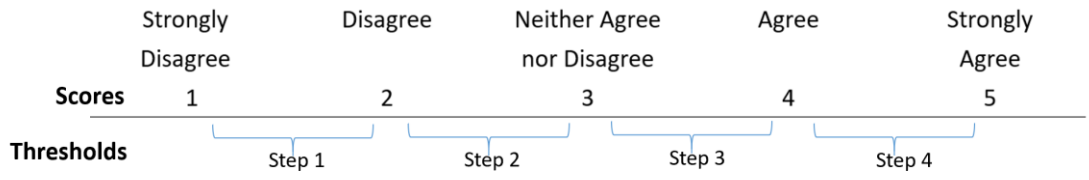

Figure 9. The association of the score category function and threshold

4.2.3 Data conversion

The results of Rasch analysis showed that all scales fit Rasch model well to the constructs. As the ten scales were unidimensional, the raw ordinal scores (from the 5-Likert

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scales) could be transformed to interval scores to provide linear measurements (Linacre, 2017). This transformation method had been applied in education psychology (Leong and Qiu, 2013), inclusive education (Yan and Sin, 2015) and physical medicine (Bouchard, Duquette and Mayo, 2017). The interval scores from Rasch analysis were formerly input to the path analysis. Before path analysis, Exploratory Factor Analysis (EFA) had been conducted through "SPSS 24.0 (IBM Corp, released 2016)" on the items of the study instrument to ascertain the factor structures for the scales of avoiding academic misconducts and upholding academic truth. The results of EFA showed that two distinct components extracted. The correlation between two components range from -.53 to -.19.

4.3 Path analysis

Rasch analysis had been applied for study the psychometric properties of the modified scales then convert the raw ordinal scores to interval scores of the ten scales. The interval scores were subjected to the hypothesis path model (Figure 3) for determining which model could be the best suited to fit the current data. All hypothesis paths were tested for estimating the significance of the path coefficients which were interpreted as regression coefficients in multiple regression (Kline, 2011). Upon confirming the measurement model, a bootstrapping procedure with 1000 resamples was performed in" R (R core team, 2017)" through "lavaan" (Rosseel, 2012). For handling the missing values, listwise deletion (the default behavior) in lavaan was considered (Rosseel, 2012).

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4.3.1 Model 1: Avoiding academic misconducts

The correlation matrix shows the pairwise relationship between two variables of avoiding academic misconducts.

All hypothesis paths of the avoiding academic misconducts construct had been tested by fitting Model 1a as depicted in Figure 1 to the current data through SEM. Since Model 1a was a saturated model, this model showed "a perfect fit" to the data with model "degree of freedom (*df*) = 0 and chi-square (χ^2) =0". The estimates and statistical significance of individual path coefficients are shown in Figure 10.

Table 6. *Inter-item Correlations Matrix of Avoiding Academic Misconducts*

Measure	1	2	3	4	5
1. Attitude toward behavior	1.00				
2. Subjective norm	.88	1.00			
3. Perceived behavior control	.62	.65	1.00		
4. Intention	.88	.82	.70	1.00	
5. Behavior	.88	.84	.68	.96	1.00

Note. All coefficients are significant at p < .01

According to Figure 10, the direct paths from "subjective norm" to "intention" and "perceived behavioral control" to "behavior" were not significant. Therefore, we modified the model by deleting these two paths and fit the model to the data by using SEM again.

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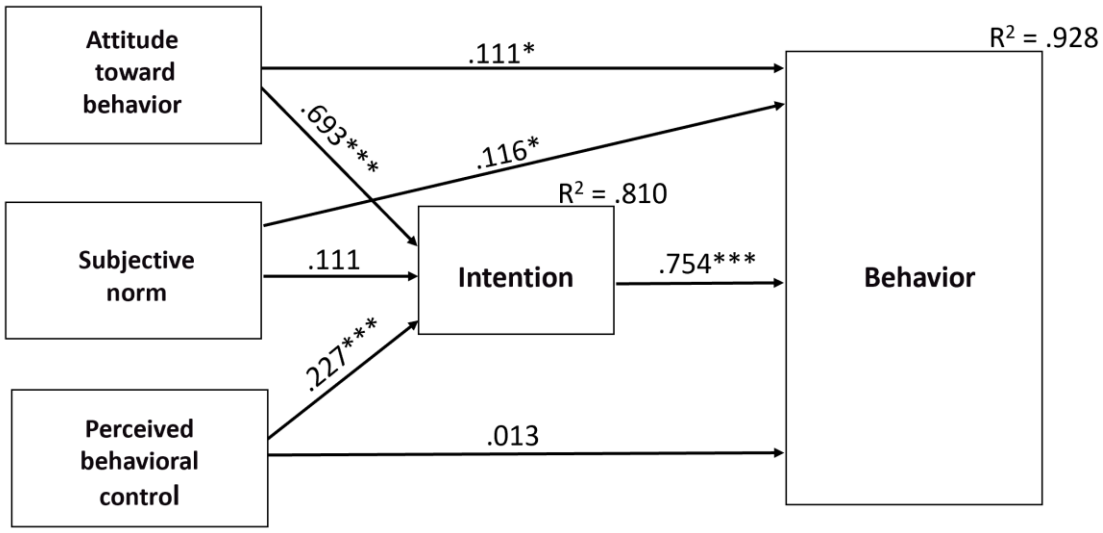

Figure 10. Model 1a: A saturated model of avoiding academic misconducts

Note. Numbers on arrows represents standardized path coefficients; R^2 represents the "proportion of the variance explained by the model". "*p<.05; **p<.01; ***p<.001"

The modified model (Model 1b, see Figure 11) had "chi-square statistic: $\chi^2 = 2.286$, $df = 2$, $p = 0.319$" and "the fit statistic: comparative fit index (CFI) = 1", "Tucker-Lewis index (TLI) = 0.999", "root mean square error of approximation (RMSEA) = 0.030" and "standardized root mean squared residual (SRMR) = 0.008" suggesting the model fit was adequate.

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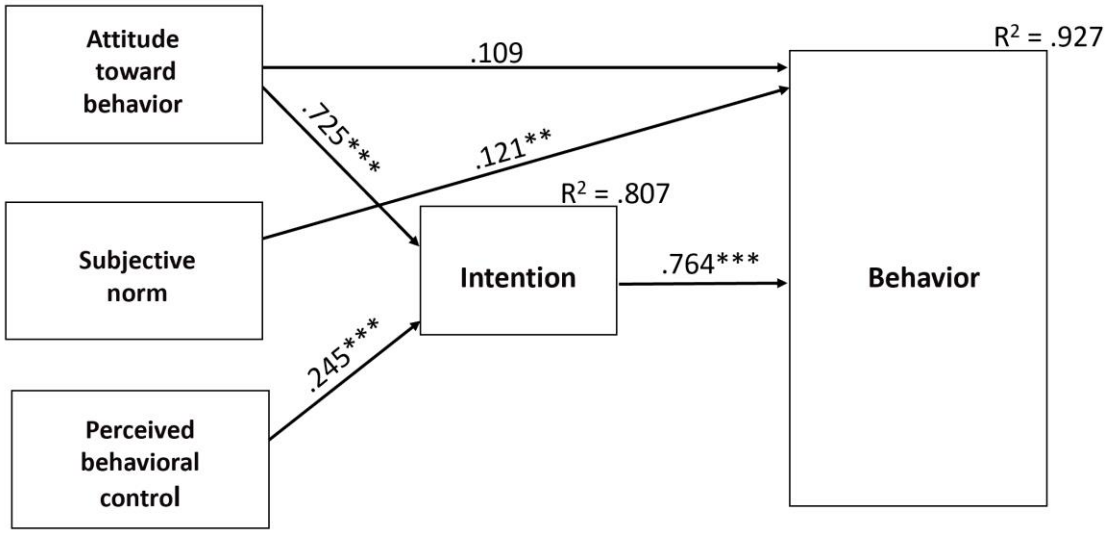

Figure 11. Model 1b: The final model of avoiding academic misconducts

Note. Numbers on arrows represents standardized path coefficients; R^2 represents "the proportion of the variance explained by the model". "*p<.05; **p<.01; ***p<.001"

Similarly, we further modified the model by deleting the non-significant path, that is, the path from the attitude toward behavior to behavior and fit the data to the modified model (Model 1c, see Figure 12) by using SEM. Model 1c had chi-square statistics, $\chi^2 = 6.206$, df=3, $p = 0.102$ and the fit statistic: "CFI = 0.997", "TLI = 0.999", "RMSEA = 0.081" and "SRMR = 0.009" suggesting that "the model fit" has adequate fit.

However, when we compare Model 1b and Model 1c, "the chi-square difference" between the two models was significant, $\Delta\chi^2 = 3.92$, $\Delta df = 1$, $p = .048$, showing that Model 1b was significantly better than Model 1c. Therefore, we chose Model 1b as the final model.

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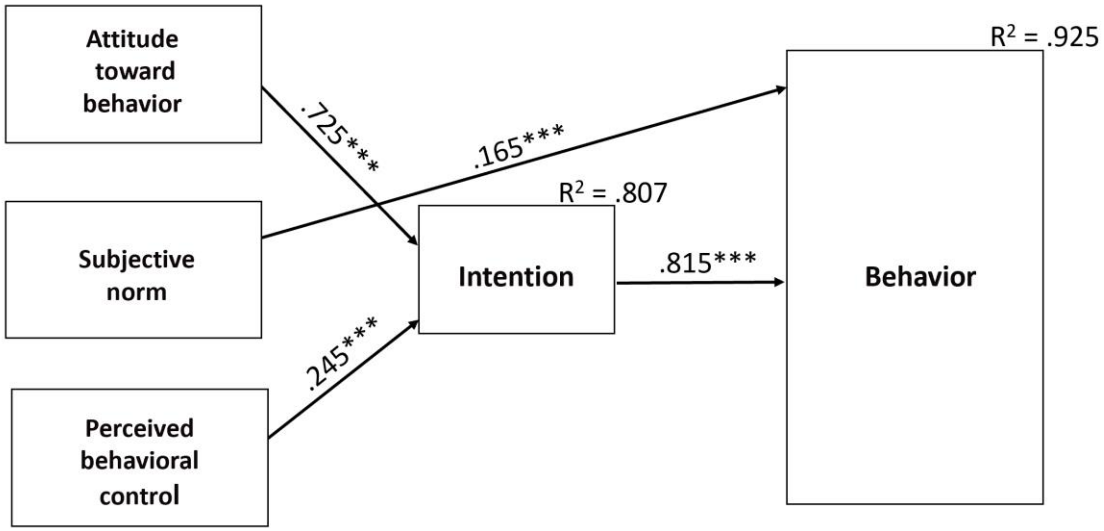

Figure 12. Model 1c: The second-best model of avoiding academic misconducts

Note. Numbers on arrows represents standardized path coefficients; R^2 represents "the proportion of the variance explained by the model". "*p<.05; **p<.01; ***p<.001"

According to the Model 1b. the following hypotheses were being supported: H1a ("Attitude toward behavior" to "intention"), H1c ("Perceived behavioral control" to "intention"), H1d "Attitude toward behavior" to "behavior"), H1e ("Subjective norm" to "behavior"), H1f ("Perceived behavioral control" to "intention") and H1g ("Intention" to "behavior").

Furthermore, both the indirect effect from attitude toward behavior to behavior via intention (estimates = .532, 95% bootstrapped bias-corrected interval (BCCI) = [0.41, 0.75]) and the indirect effect from perceived behavioral control to behavior through intention (estimates = .304, 95% BCCI = [0.11, 0.66]) were significant. The results suggested that intention mediated the association between attitude toward avoiding academic misconducts

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and the behavior of avoiding academic honesty, and the association between perceived control in avoiding academic honesty and the behavior of avoiding academic honesty.

4.3.2 Model two: Upholding academic truth

The correlation matrix showed the linear relationship between two variables of upholding academic truth in Table 7.

Table 7. *Inter-item Correlations Matrix of Upholding Academic Truth*

Measure	1	2	3	4	5
1. Attitude toward behavior	1.00				
2. Subjective norm	.89	1.00			
3. Perceived behavior control	.85	.82	1.00		
4. Intention	.92	.87	.91	1.00	
5. Behavior	.89	.85	.93	.97	1.00

Note. All coefficients are significant at $p < .01$

All hypothesis paths of the upholding academic truth construct had been tested by fitting Model 2a as depicted in Figure 1 to the data through SEM. Since Model 2a was a "saturated model", this model indicated a perfect fit for the current data with the model "degree of freedom (df) = 0 and chi-square (χ^2) =0". The estimates and statistical significance of individual path coefficients are illustrated in Figure 13.

According to Figure 13, the direct paths from "subjective norm" to "intention", "attitude toward behavior" and "subjective norm" to "behavior" were not significant. Therefore, we modified the model by deleting these three paths and fit the model to the data by using SEM again.

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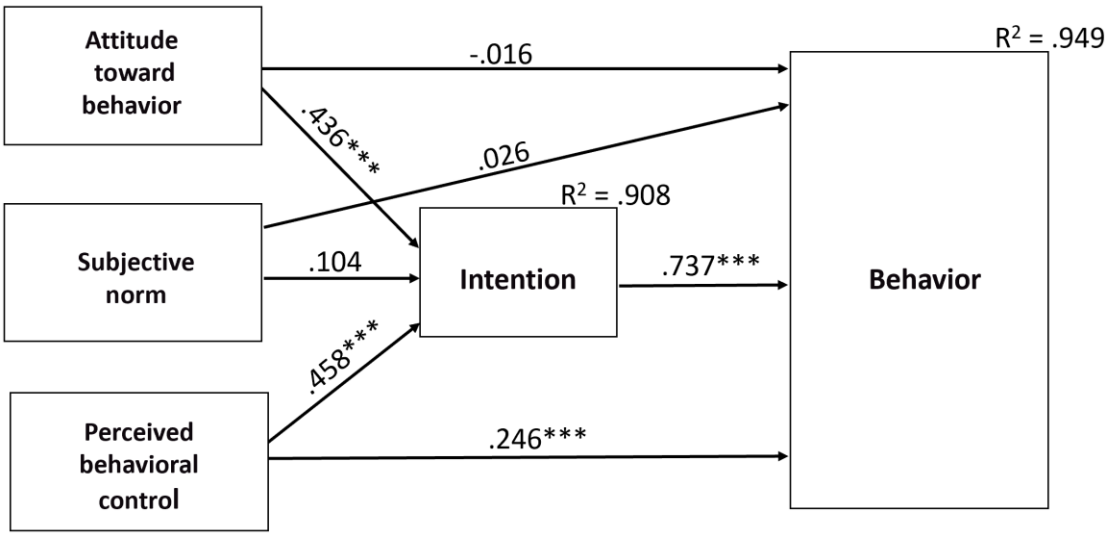

Figure 13. Model 2a: A saturated model of upholding academic truth

Note. Numbers on arrows represent standardized path coefficients; R^2 represents "the proportion of the variance explained by the model". "*p<.05; **p<.01; ***p<.001"

The modified model (Model 2b, see Figure 14) had "chi-square statistic: $\chi^2 = 3.810$, $df = 3$, $p = 0.283$" and the fit statistic: "comparative fit index (CFI) = 0.999", "Tucker-Lewis index (TLI) = 0.998", "root mean square error of approximation (RMSEA) = 0.041" and "standardized root mean squared residual (SRMR) = 0.007" suggesting the model fit was adequate. Therefore, we chose Model 2b to be "the final model".

According to the results of Model 2b, these hypotheses were being supported: H2a ("Attitude toward behavior to intention"), H2c ("Perceived behavioral control to intention"), H2f ("Perceived behavioral control to behavior") and H2g ("Intention to behavior").

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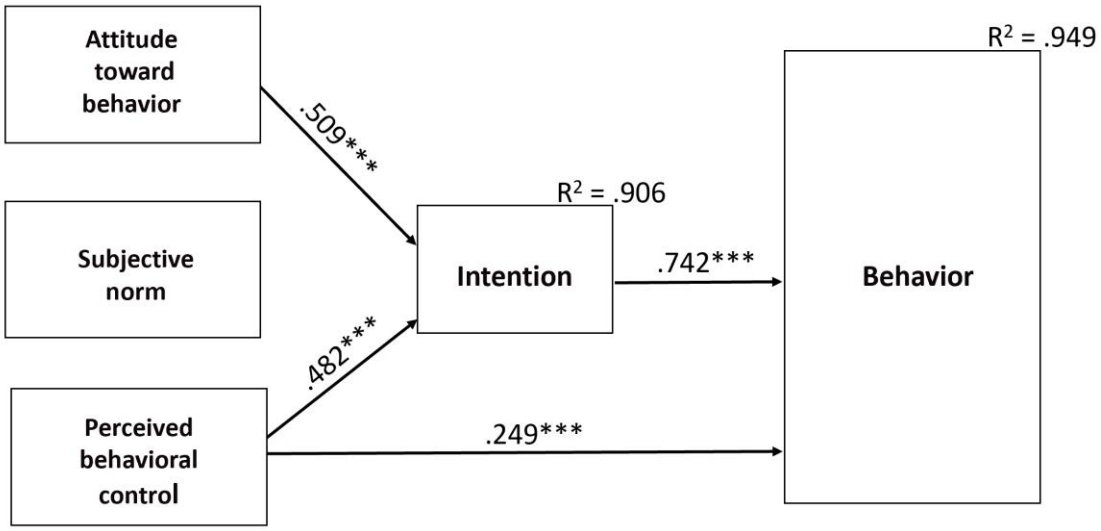

Figure 14. Model 2b: "The final model" of upholding academic truth

Note. Numbers on arrows represent standardized path coefficients; R^2 represents "the proportion of the variance explained by the model". "*p<.05; **p<.01; ***p<.001"

Moreover, both the indirect effect from attitude toward behavior to behavior via intention (estimates = .378, 95% BCCI = [0.200, 0.495]) and the indirect effect from perceived behavioral control to behavior through intention (estimates = .357, 95% BCCI = [0.270, 0.466]) were significant. The results suggested that intention mediated the association between attitude toward upholding academic truth and the behavior of upholding academic truth, and the association between perceived control in upholding academic truth and the behavior of upholding academic truth.

4.4 Models and demographic information

Demographic data were collected through the questionnaire survey. To show the differences of gender, educational levels and places of birth, some of these results were

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graphically presented. The mean of the item is set to zero logits. Therefore, a positive mean score indicates a greater level of avoiding academic misconducts and upholding academic truth.

4.4.1 Gender

Figure 15 showed the components of TPB in the model of avoiding academic misconducts. An independent-sample t-test result showed that there was significant difference in mean scores of "attitude toward behavior" ($t_{179} = 2.30$, $p < .05$), "subjective norm" ($t_{183} = 2.67$, $p < .05$), "perceived behavioral control" ($t_{186} = 3.10$, $p < .05$ and "intention" ($t_{178} = 2.21$, $p < .05$; except "behavior" ($t_{183} = 1.63$, $p > .05$) between male and female students.

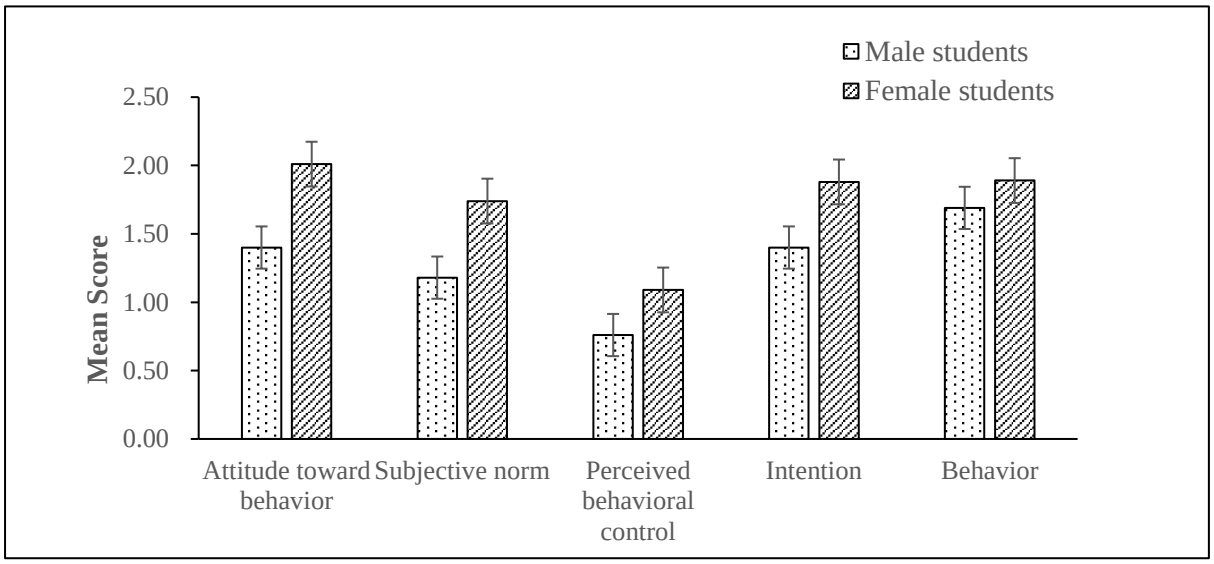

Figure 15. Comparison of mean score of TPB components in avoiding academic misconducts for gender differences

Figure 16 showed the components of TPB in the model of upholding academic truth. An independent-sample t-test result showed that there was no significant difference in mean

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scores of "attitude toward behavior" (t_{174} = -.08, p > .05), "subjective norm" (t_{180} = -.81, p > .05 "perceived behavioral control" (t_{180} = -.19 p > .05), "intention" (t_{181} = .09, p > .05) and "behavior" (t_{180} = -.72, p > .05)between male and female students.

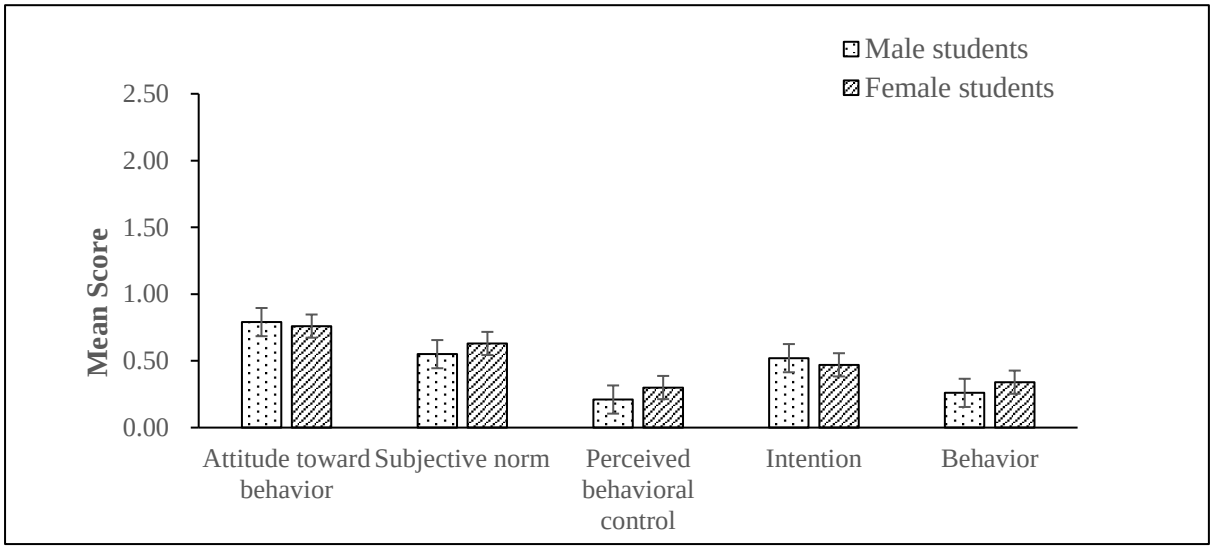

Figure 16. Comparison of mean score of TPB components in upholding academic truth for gender differences

4.4.2 Educational level

Figure 17 showed the components of TPB including attitude toward behavior, subjective, perceived behavioral control, intention and behavior in the model of avoiding academic misconducts. An independent-sample t-test result showed that there was significant difference in mean scores of "attitude toward behavior" (t_{179} = 2.7, p < .05), "subjective norm" (t_{183} = 2.26, p < .05), "perceived behavioral control" (t_{186} = 2.74, p < .05), "intention" (t_{178} = 2.83, p <.05) and "behavior" (t_{183} = 2.98, p <.05) between undergraduate and postgraduate students.

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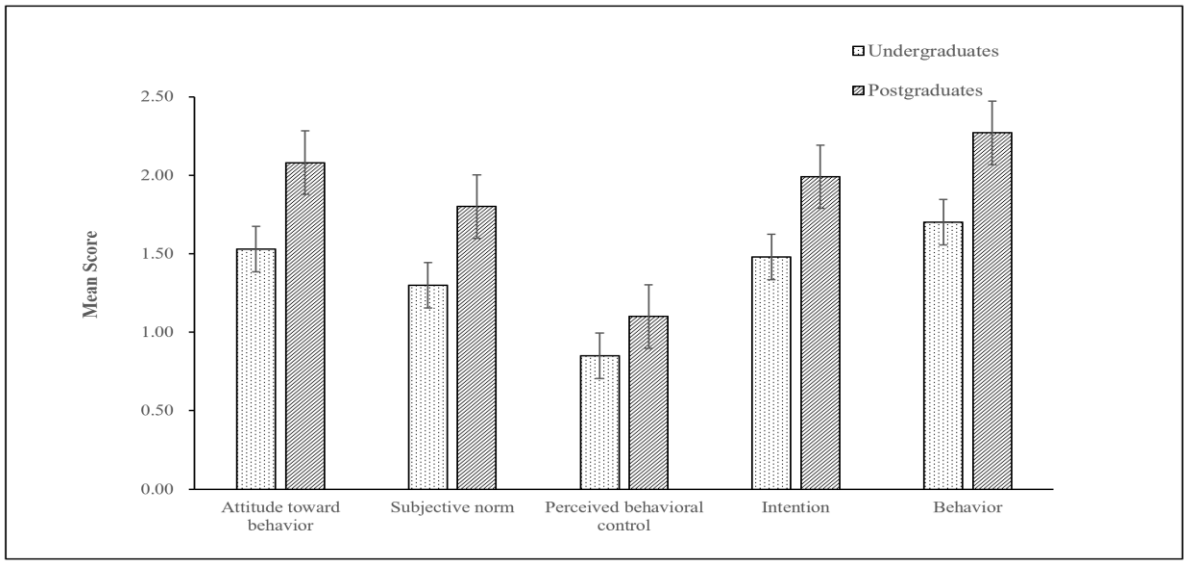

Figure 17. Comparison of mean score of TPB components in avoiding academic conducts for educational level differences

On the other hand, figure 18 illustrated the TPB components in the model of upholding academic truth.

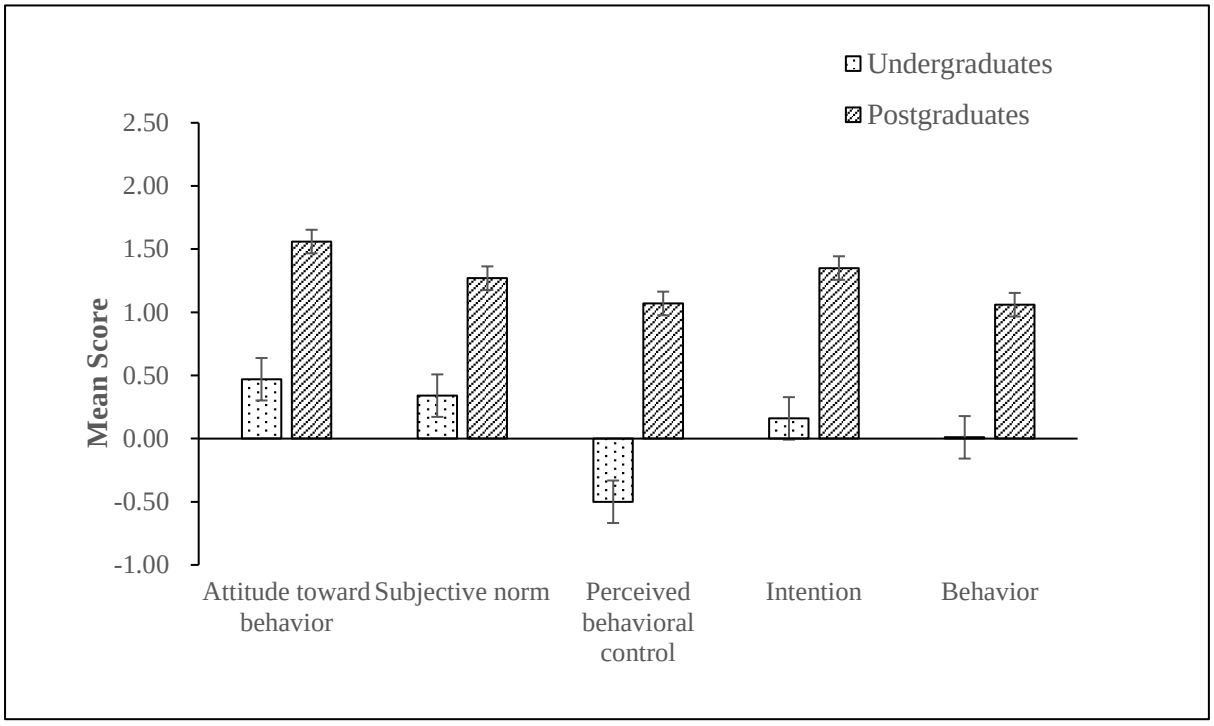

Figure 18. Comparison of mean score of TPB components in upholding academic truth for educational level differences

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An independent-sample t-test result showed that there was significant difference in mean scores of "attitude toward behavior" (t_{174} = -3.94, p < .05), "subjective norm" (t_{180} = -4.06, p < .05), "perceived behavioral control" ($t_{71.293}$ = -4.06, p < .05), "intention" ($t_{68.606}$ = -3.54, p < .05) and "behavior" ($t_{70.03}$ = -3.63, p < .05) between undergraduate and postgraduate students.

4.4.3 Places of birth

Figure 19 showed the components of TPB in the model of avoiding academic misconducts.

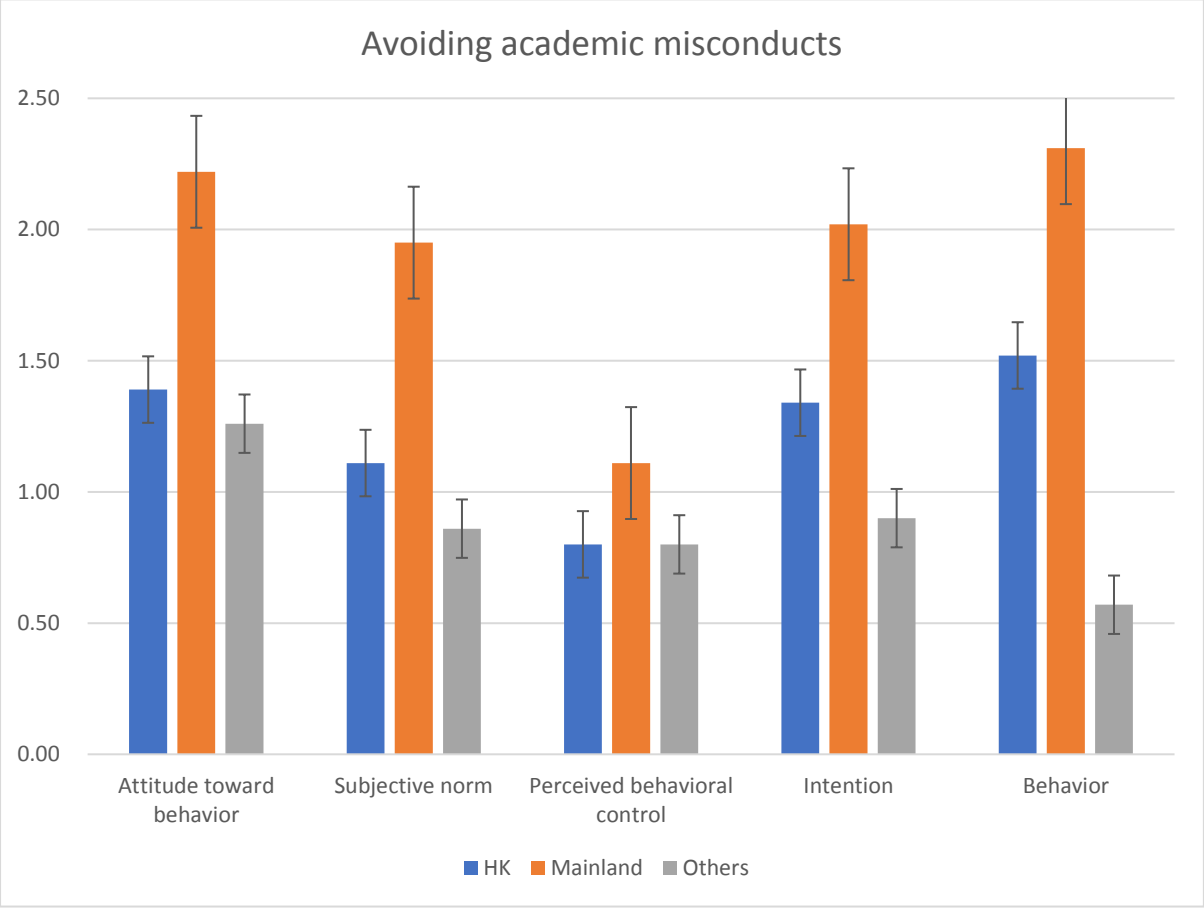

Figure 19. Comparison of mean score of TPB components in avoiding academic misconducts for place of birth differences

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An independent-sample t-test result showed that there was significant difference in mean scores of "attitude toward behavior" ($t_{166} = 3.48$, $p < .05$), "subjective norm" ($t_{170} = 3.57$, $p < .05$), "perceived behavioral control" ($t_{174} = 2.36$, $p < .05$) "intention" ($t_{168} = 3.45$, $p < .05$) and "behavior" ($t_{171} = 4.09$, $p < .05$) between Hong Kong and non-local students. Figure 20 showed the components of upholding academic truth model.

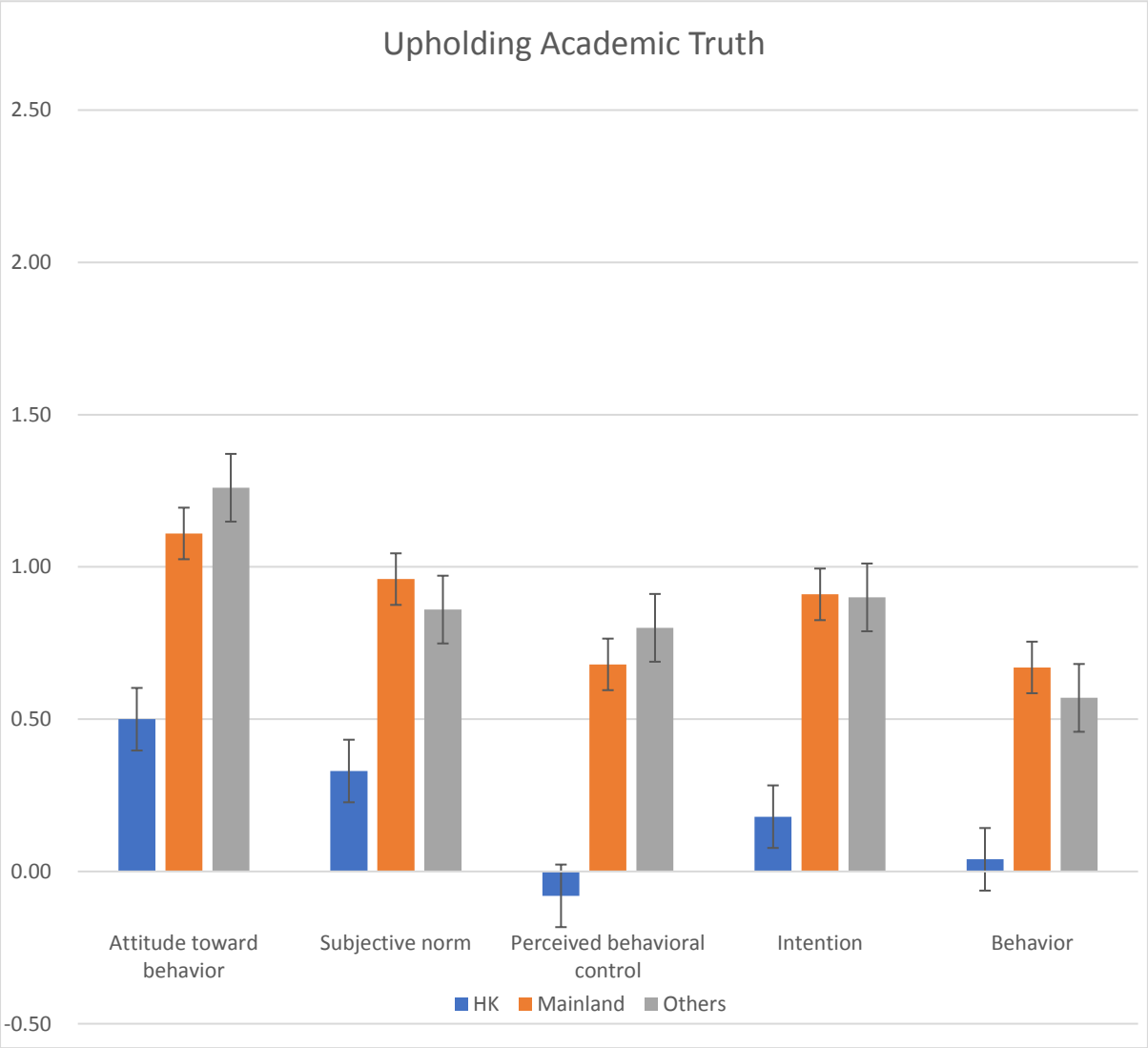

Figure 20. Comparison of mean score of TPB components in upholding academic truth for place of birth differences

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In addition, an independent-sample t-test result of upholding academic truth showed that there was significant difference in mean scores of "attitude toward behavior" (t_{162} = -2.48, $p < .05$), "subjective norm" (t_{168} = -3.83, $p < .05$), "perceived behavioral control" (t_{167} = -3.68, $p < .05$), and "intention" (t_{168} = -3.24, $p < .05$) and "behavior" (t_{167} = -3.26 $p < .05$) between Hong Kong and non-local students.

This chapter presented the results of the current study that examined the psychometric characteristics of the modified instrument. A demographic profile of the study participants was presented. Results associated with research objectives were described. For the research objective one: To modify an instrument and examine its psychometric properties, the findings provided evidence of the "person reliability", "item reliability" and "variance explained by measures" and "category functions" of the modified instrument. This modified instrument had been used to achieving research objective two: to test the TPB models for exploring tertiary students' intention and behavior of academic honesty. The finding is going to discuss and concluded in the next chapter.

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Chapter 5: Discussions

The discussion section in this chapter is in the same order as the finding section in Chapter 4 for providing a reader-friendly approach. This approach provides a parallel order for presenting implications and applications of the findings in contrast to existing studies. In addition, new knowledge of the findings and limitations of this study are discussed.

5.1 Descriptive analysis

"Descriptive statistics" deliver a brief description of the participants that had been reported. In the current study, "descriptive analysis" has been applied "SPSS 24.0 (IBM Corp, released 2016)" to provide the information of the participants.

5.1.1 Demographic information

Demographic information of the modified questionnaire (Appendix C, p.12) can provide the background of the participants in the current study including age, gender, mode of study, and place of birth.

5.1.2 Experiences of avoiding academic misconducts

Each student has experienced a minor mistake; in some situations, most students are honest, and in very difficult circumstances, some students make immoral decisions (Kish-ephart et al., 2010 and Stone et al., 2012). Past experiences of academic misconduct such as plagiarisms, collusions and falsifications would be the indicators of future cheating behavior. The following section discusses what had been found and its implications of tertiary students'

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academic honesty regarding school assignments.

5.1.2.1 Experience of avoiding plagiarisms

Multiple submissions

According to Figure 7 (Chapter 4, section 4.1.2.1), 68.1% of respondents said that they had experience of avoiding suggesting Facebook friends to self-plagiarism (scenario one). Scenario one was a Facebook user (Tim) suggested another Facebook user (Susan) to submit part of her previous work as part of another course she had submitted. Not surprisingly, respondents believed fewer people around them (34.8%) had avoided giving self-plagiarism advice to a Facebook friend. These tertiary students might think that it was not the serious academic misconduct to suggest others to self-plagiarism.

Essay reuses

According to Figure 7 (Chapter 4, section 4.1.2.1), 71.7% of respondents reported that they had the experience in avoiding essay reuses (scenario six). The scenario six designed to tell the respondents that Lily was a first-year university student. Her essay had achieved good results because Lily sent a previous essay from a senior student to an Online Editing Company for word processing and submitted the edited paper as her own work.

Similarly, respondents believed that fewer people around them (54.1%) had avoiding easy reuse experiences. These tertiary students might think that the benefits of reusing senior students' course work could be better rewarded, such as getting excellent results (Passow et

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al., 2006). The cost of editing services could be affordable by these tertiary students (Passow et al., 2006). In addition, reusing edited essay was not easily found as plagiarism (Law, Ting and Jerome, 2013).

Essay purchases

According to Figure 7 (Chapter 4, section 4.1.2.1), 82.4% of respondents reported that they had very high-frequency experience in avoiding essay purchases (scenario seven). The scenario seven described that Nancy faced a dilemma, she was anxious to write an English essay and her course lecturer did not require students to submit their essays through any plagiarism detection tools. Nancy purchased an essay which had a 60% similarity index.

Interestingly, respondents perceived 63.1% of people around them had avoiding easy purchase experiences. These tertiary students might think the benefits of purchasing papers had better returns such as obtaining higher scores (Passow et al., 2006). The cost of an essay writing service could be affordable by these tertiary students (Passow et al., 2006). Additionally, the penalty was not so high in the assignment of being detected for plagiarism might not fail the course (Law, Ting and Jerome, 2013). On the other hand, it was exposed that some course lecturers did not require students to submit essays through plagiarism testing tools. It was suggested that tertiary teachers should be sensitive to helping students avoid plagiarism.

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5.1.2.2 Experience of avoiding collusions

Collusion is commonly considered to be less serious than plagiarism (Fraser, 2014).

Group project contributions

According to Figure 7 (Chapter 4, section 4.1.2.1), 20.1% of respondents reported that they had the experience in avoiding uneven group project contributions (scenario two). Scenario two is intended to tell the respondents that three students: Amy, Bill and Cathy should finish their group assignment. Bill did not participate in the assignment and he asked Amy to include his name in the assignment. Amy followed Bill's request and submitted the assignment with all the group members' names.

Respondents believed that the small number of people around them (6.4%) had avoided uneven group project contributions. Collaborative learning emphasized cooperative efforts among students for enhancing student learning benefits (Sabin and Sabin, 1994). However, some tertiary students did not participate in their group project, and their academic abilities would be weakened or undetermined (Fraser, 2014). Therefore, tertiary teachers would consider an appropriate number of collaborative school assignments.

Unauthorized collaborations

According to Figure 7 (Chapter 4, section 4.1.2.1), 34.1% of respondents reported that they had the experience in avoiding unauthorized collaborations (scenario four). The scenario four tells that a student did the first part, and another did the last part of the individual

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multiple-choice statistic assignment.

Respondents believed that people around them (17.6%) had avoided unauthorized collaborations. These tertiary students might consider that course instructors were less likely to find unauthorized collaboration. The punishment of an assignment would not be so high (Passow et al., 2006).

Collaborative learning emphasized cooperative efforts among students for enhancing student learning benefits (Sabin and Sabin, 1994). However, some tertiary students did not fully participate in their course assignment, and their knowledge and skills would be weakened or undetermined (Fraser, 2014). Therefore, tertiary teachers would consider allowing students to complete school assignments in the classroom.

Unauthorized sharing works

According to Figure 7 (Chapter 4, section 4.1.2.1), 45.8% of respondents reported that they had the experience in avoiding unauthorized sharing works (scenario eight). The scenario eight told a student to work with another student to prepare an independent course work, which is presented as his or her own way.

Respondents believed that people around them (33.0%) had avoided unauthorized sharing works. These tertiary students might consider that course instructors were less likely to find unauthorized sharing works. The punishment of an assignment would not be so high (Passow et al., 2006).

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Collaborative learning emphasized cooperative efforts among students for enhancing student learning benefits (Sabin and Sabin, 1994). However, some tertiary students did not fully participate in their course work, and their knowledge and skills would be weakened or undetermined (Fraser, 2014). Therefore, tertiary teachers would consider students' abilities to school works and provide flexible ways for learning assessments.

5.1.2.3 Experience of avoiding falsifications

Avoiding omit respondent's opinions without reporting

According to Figure 7 (Chapter 4, section 4.1.2.1), 46.1% of respondents reported that they had the experience in avoiding omit respondent's opinions without reporting (scenario three). The scenario three tells respondents that a student did not actually report the opposite opinions in the questionnaire report.

Respondents believed that one-quarter of people around them had avoided omitting the respondent's opinions without reporting. These tertiary students might consider that course instructors were less likely to find this incorrect behavior. The punishment of an assignment would be high (Passow et al., 2006).

Avoiding reference list falsifications

According to Figure 7 (Chapter 4, section 4.1.2.1), 45.9% of respondents reported that they had the experience in avoiding reference list falsifications (scenario five). Scenario five designed to tell respondents that a student provided a falsified reference list in an essay.

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Similarly, respondents believed that fewer people around them (30.7%) had avoided reference list falsifications experiences. These tertiary students might think that making up a reference list, if students did not actually read, it was not cheating or it just minor violations (Kwong et al., 2010).

Avoiding interview data falsifications

According to Figure 7 (Chapter 4, section 4.1.2.1), 62.8% of respondents reported that they had the experience in avoiding interview data falsifications (scenario nine). Scenario nine designed to tell respondents that a student provided falsified interview data in a report. Similarly, respondents believed that fewer people around them (49.5%) had avoided interview data falsification experiences. These tertiary students might think that the extra-curricular activity was very important, so they would make up data they had not really done (Kwong et al., 2010).

5.1.3 Experiences of upholding academic truth

McCabe and some scholars have advocated the academic honor code to develop a favorable academically honesty values. The academic honor code, alike the ethical code is the imperative elements to create and enforce an ethical culture in academic settings (Stone et al., 2012). Stone et al. (2012) have suggested that schools and organizations could take steps to enforce the academic honesty cultures by creating codes of ethics, introducing the ethical code to all members of the institution (including teachers and students) and enforcing the

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codes of ethics.

5.1.3.1 Experiences of expressing truth viewpoints

According to Figure 8 (Chapter 4, section 4.1.3.1), around half of respondents reported that they had the experience to express the truth points of views in the cases of multiple submissions and unauthorized collaborations. In the first case (scenario one), 55.4% of tertiary students reported they had pointed out that the suggestion for self-plagiarism suggestion was not honest. In the second case (scenario four), 51.0% of tertiary students indicated they had pointed out that their peers were not authorized to share work, and their peers should report their incorrect behaviors to their course lecturers.

5.1.3.2 Experiences of reporting incorrect behaviors

The whistleblower can be a tertiary student, notifying other students or teachers to disclose wrongdoing (Bernardi et al., 2014).

Experiences of reporting peer-incorrect behaviors

According to Figure 8 (Chapter 4, section 4.1.3.1), some respondents reported that they had the experience in reporting peer-incorrect behaviors in the cases of 1) Group project contributions (scenario 2), 2) essay reuses (scenario 6), and 3) unauthorized sharing works (scenario 8).

In the first case of group project contributions (scenario 2), 58.6% had told their course lecturer that their peers had not participated in the group projects. Tertiary students said that

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there should be no free-rider in group projects, these students suggested their school should revise the group assignment policy by awarding same marks to all students of a group project, due to uneven contributions in the real academic situations (Lim and See, 2001).

According to Figure 7 (Chapter 4, section 4.1.3.1), Almost 80% tertiary students had observed free-riders in group assignments. Lim and See (2001) showed how tertiary students feel about free-riders, these students said that tutors normally ignore the problem of free-riders and consider it is a group problem.

In the second case of essay reuses (scenario six), 28.4% of tertiary students indicated they told the junior students' course lecturers about the cheating behavior of the junior students who sent their previous essays to the Online Editing Companies for word processing and submitted the edited essay as the junior students' own work. In the third case of unauthorized sharing works, (scenario eight), 28.7 % of tertiary students indicated they told their course lecturers that their peers had shared their work in the individual assignment.

Experiences of reporting self-incorrect behaviors

According to Figure 8 (Chapter 4, section 4.1.3.1), some respondents reported that they had the experience in reporting self-incorrect behaviors in the cases of 1) Omit respondent's opinions without reporting (scenario 3), 2) reference list falsifications (scenario 5), and 3) essay purchase (scenario 7).

In the first case (scenario 3), 41.5% had told their course lecturer that they had omitted

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one respondent's opinions in their questionnaire projects.

In the second case (scenario five), 36.3% of tertiary students indicated they told their course lecturers that they provided falsified reference lists in their essays after attending ethical lectures.

In the third case, (scenario seven), 18.2 % of tertiary students indicated they told their course lecturers that they purchased online essays after understanding the consequence of purchasing online essays.

5.1.3.3 Experiences of correcting a mistake

No one has never been wrong; in some cases, most people are honest, and in very difficult circumstances, some people make unethical choices (Kish-ephart et al., 2010 and Stone et al., 2012).

According to Figure 8 (Chapter 4, section 4.1.3.1), nearly half of tertiary students had the experience of upholding academic truth in the situation of correcting a mistake. The results of the survey in scenario 9 indicated that tertiary students had the experience of correcting a mistake of interview information falsifications after the punishment (44.8%). These tertiary students would think their classmates would also be honest to re-take the course after the punishment (49.7%).

The experiences of avoiding academic misconducts and upholding academic truth had

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provided some ideas to tertiary educators for anticipating the possible academic misconducts in the current academic settings. However, the results of these experiences might imply those students had encountered such academic misconducts at the survey time. For those students who had not encountered such academic misconducts, the modified questionnaire had provided the situational setting in nine scenarios to help the respondents thought about their decision-making in facing unfavorable situations. These scenarios revealed tertiary students' intentions and behaviors of avoiding academic honesty and upholding academic truth even if these respondents did not encounter such academic settings.

Tertiary students' behaviors in maintaining academic honesty in school assignments have been assessed. First, in avoiding academic misconducts, it was found that attitude toward behavior and perceived behavioral control are related to intention of avoiding academic misconducts. Secondly, subjective norm and intention are related to behavior. On the other hand, attitude toward behavior and perceived behavioral control are related to intention of upholding academic truth. In addition, perceived behavioral control and intention are related to behavior of upholding academic truth.

5.2 "Rasch analysis"

The aim of the current study was to reveal Hong Kong tertiary students' intention and behavior of academically honesty. Since the definition of academic honesty includes two constructs: avoiding academic misconducts and upholding academic truth, the research gap

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addressed for the research aim is the lack of quantitative instruments to quantify the information of upholding the truth such as adhering to academic guidelines, expressing truth viewpoints and reporting self-incorrect behaviors). This study requires an instrument that focuses on school assignments in tertiary education adopts the 2-construct definition of academic honesty. Thus, an instrument was modified, and its psychometric properties were examined.

Objective 1: to modify an instrument and examine its psychometric properties

An instrument was modified according to the guidelines of DeVellis (2012) to provide a measurement tool of academic honesty for this study. The guidelines include: 1) identifying the measuring purpose, 2) generating an item pool, 3) identifying tool formats, 4) obtaining expert reviews, 5) Considering social desirability score, 6) administering a pilot testing and 7) evaluating the tool. All steps of these guidelines had been performed and an instrument was modified.

5.2.1 Data preparation

Data preparation through Rasch analysis is one of the strengths of this study. Preparing raw data as accurate information that can be effectively used for further analysis. The data preparation process followed the guideline of Linacre (2018) which consists of three steps: 1) identifying problem data, 2) removing problem data and 3) re-analyzing data. The criteria were used of these three steps had been shown in chapter 3.

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The primary consideration of data preparation was to identify problem data. Key aspects of problem data (misfit persons and items) could be identified by the **m**ea**n**-**sq**uare (MNSQ) statistic. MNSQ was a "chi-squared statistic divided by its degrees of freedom". A value of MNSQ from 0.5 to 1.5 indicated the data could provide useful information, so the range of MNSQ could be an indicator for identifying the misfit data (Wright and Linacre, 1994). Accordingly, the raw data had been tested by Rasch analysis using Winsteps 4.0.1 (Linacre, 2018). The INFIT and OUTFIT statistics determined that item 11, 12, 13, 14 and 15 of scenario two (Group project contributions) were problem data, as these items provided INFIT MNSQ from 1.65 to 1.75 and OUTFIT MNSQ from 1.75 to 1.83.

Following the second consideration of removing problem data, item 11, 12, 13, 14 and 15 were removed. These items were in scenario 2 (group project contributions). The content of scenario 2 presented as follow:

"Amy, Bill and Cathy had to complete a group project together. They decided on their contributions. The night before the project was due, Amy and Cathy uploaded their tasks to Microsoft OneNote (a digital program). Amy and Cathy alerted Bill several times, but he did not participate in the project. Amy and Cathy worked for three hours to complete Bill's task. Then Bill asked Amy to include his name in their project. ***Amy submitted the project with all the group members' names.***

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The next day, ***Cathy told the course lecturer that Bill had not participated in the project."***

These misfit items were: item 11) If I were in Amy's situation, I would support Amy's behavior; item 12) If I performed Amy's behavior, people around me would accept it; item 13) Amy's behavior would be easy for me to perform; 14) If I were in Amy's situation, I would intend to perform Amy's behavior and 15) If I were in Amy's situation, I would actually perform Amy's behavior. According to the low experience of tertiary students to avoid committing of group project collusion and the high experience of tertiary students to report group project collusion, it presented that respondents' decision-making of group project collusion was different from other scenarios.

The rest of the items of scenario two (item 16, 17, 18, 19, and 20) were also excluded from the ten sub-scales. These misfit items were: item 16) If I were in Cathy's situation, I would support Cathy's behavior; item 17) If I performed Cathy's behavior, people around me would accept it; item 18) Cathy's behavior would be easy for me to perform; 19) If I were in Cathy's situation, I would intend to perform Cathy's behavior and 20) If I were in Cathy's situation, I would actually perform Cathy's behavior. Although these items were excluded, there were still eight items for assessing each sub-scale that were more items than related research studies such as the study of Harding et al., 2007.

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Considering the second step of data preparation, person fit statistic test was used to detect misfit people who reported unexpected responses due to unpredicted causes such as carelessness. The acceptable range of INFIT and OUTFIT MnSq of person fit was < |2| (Linacre, 2018). Depending on the acceptable range, 17 to 27 participants who were out of the acceptable range were excluded using pairwise deletion. Pairwise deletion attempted to minimize information loss through the available-case analysis. Even though some cases were considered excluded, the sample size was still satisfied in accordance with the criteria of this study. After identifying and excluding the misfit data, the data was prepared for testing the psychometric properties of the modified instrument.

5.2.2 Examination of psychometric properties

In addition, the criteria of examining psychometric properties used in a study by Yan and Sin's (2015) study had been examined. These criteria include 1) item reliabilities, 2) person reliabilities, 3) variance explained by measures and 4) category function.

5.2.2.1 "Validity" of the modified instrument

The "validity" of the current study tool had been constructed by following the guidelines of Devellis (2012). The validity of this instrument was also compared to the validity judgements of Wilson (2005), and Wolfe and Smith (2007). Firstly, eleven university educators who are chair professors, associate professors and assistant professors from four universities in Hong Kong had reviewed the content of the modified instrument. Secondly,

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the language applicability of this instrument was assessed by three international tutors who often taught tertiary students English reading, writing and speaking. Thirdly, the language quality of this instrument was consulted by an American language consultant who is an expert of modern linguistics. Finally, the content and construct validity of each scale had been examined by tertiary educators and students by comparing the definition of TPB components. Therefore, this modified instrument has been validated for the measurement purpose with its scenario design, item design and scoring options.

5.2.2.2 Reliability of the modified instrument

The reliability results given in Table 3 showed that both construct one (avoiding academic misconducts) and construct two (upholding academic truth) satisfied the criteria for assessing psychometric properties. At first, the Rasch item reliability of construct one and construct two were 0.98 and 0.97 to 0.98, respectively. These results indicated that the ten sub-scales of the two constructs conformed to Rasch model and these sub-scales could be administrated to another similar sample (Linacre, 2018). In addition, the Rasch person reliability of construct one and construct two were 0.74 to 0.79 and 0.81 to 0.83, respectively, indicating acceptable person reliability. Regarding the results of the item and person reliability, the measurement of reproducibility of this modified instrument was assured (Linacre, 2018).

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5.2.2.3 Quality of the modified instrument

The five-option Likert scale design showed that the modified instrument was suited (Revilla, Saris and Krosnick, 2014). The rating scale structures of this instrument were examined by testing the category function to determine whether the participants had used all the rating option opportunities appropriately. The results of the category function were presented monotonically increasing from step 1 to step 4, supporting the rating scale structures for all sub-scales.

Another essential point confirmed that the variance explained by measures for construct one and construct two were 49.4% to 53.1% and 50.0 to 54.3, respectively. These results indicated that both construct one and construct two could provide useful information about item difficulties, rating scale structures and person abilities (Linacre, 2018).

More evidence about the quality of the modified instrument is grounded on the responses of tertiary students. The pilot testing was conducted at five public universities in Hong Kong. Fourteen tertiary students filled in the instrument and stated that this instrument was clear and easy to understand. In addition, a relatively high response rate in the main study was an important indicator of survey quality. 229 tertiary students tried to fill in the instrument and only 22 students withdrew due to lack of time. Accordingly, the response rate of this sample was 90.39%, which was much higher than that of Harding et al. (2007): the response rate was 52% from American engineering and humanities tertiary students and

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Stone et al. (2012): the response rate was 49% from American business tertiary students.

All in all, a panel of tertiary educators assessed the purpose, relevance and clarity of the modified instrument. Furthermore, current tertiary students filled in the questionnaire, stating that the questionnaire could be easy for understanding and related to the research purpose. Additionally, Rasch analysis had been performed to examine the psychometric properties of this modified instrument, indicating that this instrument could be used for this study. The research objective one was achieved, an instrument for exploring tertiary students' intention and behavior of avoiding academic misconducts and upholding academic truth had been modified for filling the research gap.

5.2.3 Data conversion

This interpretation of data preparation demonstrated how Rasch analysis worked well in data preparation. More importantly, the Rasch analysis could transform the ordinal scores from 5-Likert scales to interval scores for improving the accuracy of students' measure for the second research objective.

5.3 Path analysis

This modified instrument was also used to test the hypotheses by run through academic activities, but a main path that go path analysis of TPB models (Model 1: avoiding academic misconducts and Model 2: upholding academic truth). These TPB models were evaluated by the direct and indirect effects on behavior of avoiding academic misconducts and upholding

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academic truth between the TPB components, namely, “attitudes toward behavior”, “subjective norms”, “perceived behavioral control” and “intentions”. The current study provided a new paradigm for empirical testing of TPB through SEM to understand “the decision-making process” utilized by tertiary learners to consider avoiding academically misconducts and upholding academic truth.

(Objective two: To test the TPB models for exploring tertiary students’ intention and behavior of academic honesty, Path analysis)

Path analysis was applied for assessing a number of pathways to connect a variable to another (Lunenburg and Irby, 2008). For example, the relationship of attitude towards avoiding collusion and behavior of avoiding collusion, it would be a non-major path that ran through academic activities, but the main path that went through avoiding collusion behaviors. In the current study, it would be associated with adhering to academic guidelines, if a student considers perceived social pressure seriously, he or she may have a stronger probability to commit collusion.

Since academic honesty was defined as avoiding academic misconducts and avoiding academic truth, test two TPB models: construct one (the behavior of avoiding academic misconducts) and construct two (the behavior of upholding academic truth). Path analysis extended regression techniques, allowing for maximum likelihood simultaneous estimation and providing convenient ways for testing mediation effects in an R package (Rosseel, 2012),

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such as the Bootstrap method by using random sampling methods (MacKinnon, Lockwood and Williams, 2004). Regarding the effectiveness and efficiency of path analysis which was selected to explore the academic honesty decision-making process of tertiary students.

This study followed the path analysis procedure of Kline and Ebay's (2011), which consisted of 4 stages: 1) specifying the model, 2) estimating the model, 3) evaluating the model fit (If a good fit was obtained, go to step 4; but not get, repeat from step 1), and 4) testing parameters.

Specification of the model was a paramount important process before testing models (Kline and Ebray, 2011), while limited studies had performed the model specification before model testings (Harding et al. 2007). The model specification was based on the guideline of Kline and Ebray (2011) for reflecting the association assumptions of the TPB components. The model specifications for Model one and Model two were reviewed.

5.3.1 Model 1: Avoiding academic misconducts

The method of data analysis used to explore the intentions and behaviors was SEM with variables. SEM was an appropriate approach in this study. Since TPB had been applied and validated in many dishonesty research (Chang, 1998; Mayhew et al., 2009 and Riemenschneider et al., 2011), this research also applied SEM to specify the study models and to test the relationships of the variables.

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5.3.1.1 Model specifications

All paths of the hypotheses were firstly tested for specifying the model using path analysis. Model 1a was a saturated model that was rejected because all estimated parameters were used as data points. According to step three, the analysis should be repeated from the first step.

Looking back at the results of the saturated model (Model 1a), the path hypothesis from subjective norms to intentions was not supported. This finding highlighted subjective norms of avoiding academic dishonesty was not directly related to intentions of avoiding academic dishonesty, which was consistent with Chang's (1998) Hong Kong study. Since Chang (1998) proposed future research should consider linking subjective norms to attitude towards behavior and removing the link from subjective norms to intention.

Another path hypothesis from perceived behavioral control to behavior was also not supported. Then, these two non-significant paths were deleted for re-specifying another model (Model 1b) and SEM had performed again.

Model 1b had been identified as a suitable model for evaluating avoiding academic misconducts, "chi-square statistic: $\chi^2 = 2.286$, $df = 2$, $p = 0.319$. The fit statistic: CFI = 1, TLI = 0.999, RMSEA= 0.030 and SRMR = 0.008)". Surprisingly, Model 1b showed that the path from attitude toward behavior to behavior was not significant. Concerning this result, the non-significant path from attitude toward behavior to behavior was removed. SEM was

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conducted again to this model (Model 1c).

When Model 1b was compared to Model 1c, the "chi-square difference" between these two models was significant, $\Delta\chi^2 = 3.92$, $\Delta df = 1$, $p = .048$, indicating that Model 1b was significantly better than Model 1c. For that reason, Model 1b was identified as the final model of avoiding academic misconducts construct in this study.

5.3.1.2 Intentions of avoiding academic misconducts

The results showed that, Model 1b (Figure 6b) provided a better model-fit for explaining tertiary students' intention of avoiding academic misconducts. Thus, Model 1b was used to explain tertiary students' intentions to avoid academic misconducts regarding school assignments. The major contribution of the current study was to study TPB components by path analysis using SEM. Based on the correlations of Model 1b, hypotheses (H1a to 1c) would be discussed here.

H1a: Tertiary students' "attitude toward behavior" is positively related to "intention" - supported

The path from attitudes toward behavior to intentions was significantly related in Model 1b. This result indicated that H1a was supported. Thus, attitude toward behavior of avoiding academic misconducts can be a predictor that is consistent with prior studies that tertiary students' attitudes toward avoiding academic misconducts (such as Passow et al., 2006 and Riemenschneider et al., 2011).

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Attitudes toward behavior for avoiding academic misconducts can be associated with tertiary students' responsibility, cost and benefits (Passow et al., 2006). The responsibility of the need for students to take action in the face of wrongdoing (Fisherman, 2014). Tertiary students' attitude toward avoiding academic misconducts is positively related to intention of avoiding academic misconducts. The tertiary students may evaluate the costs and benefits with their responsibility to avoid academic misconducts.

An example from scenario one, tertiary students avoid proposing a self-plagiarism suggestion to a Facebook friend. The tertiary students may recognize that if they did not suggest a friend to self-plagiarize, they will not have any loss of costs or benefit. On the other point of view, the essay assignment may be a small proportion of a term grade. Also, the tertiary students may know the detection possibility is high. Thus, the tertiary students would take their responsibility to avoid proposing a self-plagiarism suggestion to a Facebook friend.

H1b: Tertiary students' "subjective norm" is positively related to "intention" – not supported

The path from subjective norm of avoiding academic misconducts to intention of avoiding academic misconducts was not significantly related in Model 1b. This result indicated that H1b was not supported. Hence, subjective norm of avoiding academic misconducts could not be a predictor that was not consistent with prior research (including Ajzen, 1991 and Riemenschneider et al., 2011). Chang (1998) suggested subjective norm

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may link to attitude of behavior to enhancing to the predicting power of intention. There was new knowledge about the function of the social norm in predicting intentions of avoiding academic misconducts.

Another result of "Marlowe-Crowne Social Desirability Scale (MCSDS)" indicated participants in the current study had the low number of socially desirable responses (score mean: 4.61) of 10-item MCSDS. This result implied that the participants were willing to answer survey items truthfully and representing themselves accurately. Unfortunately, there was no relevant study of the systematic review for comparing the socially desirable and social norm effects.

H1c: Tertiary students' "perceived behavioral control" is positively related to "intention" - supported

The path from "perceived behavioral control to intention" is significantly related in Model 1b. This result indicates that H1c was supported. Thus, perceived behavioral control of avoiding academic misconducts could be a predictor that is consistent with prior studies by Riemenschneider et al., (2011). Analyses showed tertiary students' intentions of avoiding academic misconducts could be explained through "attitudes toward behavior and perceived behavioral control".

According to the results of the path coefficients in Model 1b, it could be seen that tertiary students' "perceived behavioral control" of avoiding academic misconducts can be

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the stronger influence of intention of avoiding academic misconducts. In other words, the implications of Model 1b are very imperative. The detail is the level of "perceived behavioral control" can predict the level of "intention" to avoid academic misconducts. For example, students have lower scores of "perceived behavioral controls" will be more likely to attempt to avoid academic misconducts. From this model, attitude toward behavior can also predict the level of intention to avoid academic misconducts. For instance, students are favorable to avoid plagiarism, these students would be more probable trying to prevent plagiarism. After discussing the hypotheses, H1a, H1b and H1c, the project design map (Figure 4) has been revisited to examine these assumptions and research question one.

Addressing research question 1:

Can tertiary students' intentions to avoid academic misconducts regarding school assignments be predicted by "attitude towards behavior, subjective norm and perceived behavioral control"?

Three hypotheses have been examined by path analysis for answering the first research question about tertiary students' intention of avoiding academic misconducts regarding school assignments with the influential factors: 1) "the attitudes toward behavior", 2) "the subjective norms", and 3) "the perceived behavioral control". This study relies on the results of the questionnaire survey which has been collected 207 tertiary students' opinions. The

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questionnaire has been included 24 questionnaire items to assess Hong Kong tertiary students' intention of avoiding academic misconducts.

First, the intention of Hong Kong tertiary students to avoid academic misconducts regarding school assignments is closely related to tertiary students' attitude toward avoiding academic misconducts. It is implied that those tertiary students have lower scores of the attitude toward avoiding academic misconduct items will have a higher level of academic honesty. Second, the intention of Hong Kong tertiary students to avoid academic misconducts regarding school assignments is not related to tertiary students' subjective norm of avoiding academic misconducts. According to Figure 11, the subjective norm of avoiding academic misconducts do not help to assess the direct relationship with the intention of avoiding academic misconducts. A further investigation on the role of subjective norm will be introduced. Finally, the intention of tertiary students to avoid academic misconducts regarding school assignments is closely related to tertiary students' perceived behavioral control of avoiding academic misconducts. It is indicated that those tertiary students have lower scores of the perceived behavioral control items can have a higher level of academic honesty. Therefore, research question one has been addressed that tertiary students' intentions to avoid academic misconducts regarding school assignments will be foreseen by "attitude towards behavior" and "perceived behavioral control".

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5.3.1.3 Behaviors of avoiding academic misconducts

Results showed that, Model 1b (Figure 6b) provided a better model-fit for explaining tertiary students' behavior of avoiding academic misconducts. Thus, Model 1b was used to explore tertiary students' behavior of avoiding academic misconducts regarding school assignments. This is the main contribution of the current study to exam TPB components through path analysis using SEM. Following the correlations of Model 1b, hypotheses (H1d to 1g) are going to discuss.

H1d: Tertiary students' "attitude toward is positively related to behavior" -not supported

The path from attitudes toward behavior of avoiding academic misconducts to behavior of avoiding academic misconducts was not significantly related in Model 1b. This result indicates that H1d was not supported. Thus, attitude toward behavior of avoiding academic misconducts cannot be a predictor for behavior of avoiding academic misconducts. Comparing to the relevant studies of the systematic review, no research investigates the path from attitude toward behavior to behavior. To verify this result, it is recommended to further study in this field.

H1e: Tertiary students' "subjective norm is positively related to behavior" - supported

The path from subjective norm of avoiding academic misconducts to behavior of avoiding academic misconducts is significantly related in Model 1b. This result indicates that H1e is being supported. Thus, subjective norm of avoiding academic misconducts can be a

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direct predictor for of avoiding academic misconducts. Compared with the related studies of the systematic review, there is also no research on the path from "subjective norm to behavior". To confirm this result, it is recommended to further study the extended function of subjective norm.

H1f: Tertiary students' "perceived behavioral control is positively related to behavior" - not supported

The path from "perceived behavioral control" of avoiding academic misconducts to behavior of avoiding academic misconducts is not significantly related in Model 1b. This result indicates that H1f: Tertiary students' "perceived behavioral control is positively related to behavior" of avoiding academic misconducts is not positively related to behavior of avoiding academic misconducts is supported. Thus, perceived behavioral control of avoiding academic misconducts cannot be a predictor as the landmarked study, Beck and Ajzen (1991).

H1g: Tertiary students' intention is positively related to behavior - supported

The path from intention of avoiding academic misconducts to behavior of avoiding academic misconducts is significantly related in Model 1b. This result indicates that H1g is supported. Hence, as a landmarked study, Beck and Ajzen (1991), intention of avoiding academic dishonesty can be a mediator.

Addressing research question 2:

Can tertiary students' behaviors to avoid academic misconducts regarding school

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assignments be predicted by "attitude towards behavior, subjective norm, perceived behavioral control and intention"?

Research question two has been addressed that tertiary students' behaviors to avoid academic misconducts regarding school assignments will be predicted by attitude towards avoiding academic misconducts and intention of avoiding academic misconducts. Overall, these findings are accordance with previous findings among tertiary students. For example, avoiding academic misconducts intention can be confirmed its association to avoiding academic misconducts behavior. Beck and Ajzen (1991) found that a high level of avoiding academic misconducts intention contributed to a better performance of avoiding academic misconducts. Similarly, Riemenschneider (2011) reported that a high level of attitude and "perceived behavioral control" in avoiding academic misconducts predicted a better performance of avoiding academic misconducts. This study proposes a new function of subjective norm as Riemenschneider (2011) believed that the TPB components may have other function on indigenous communities.

5.1.2.4 Proportion of the variance explained by models

Construct one (Model 1b): The behavior of avoiding academic misconducts

According to the Model 1b (Ch.4, Figure 5), There appears to be accounted for intention of avoiding academic misconducts predictors by "attitude toward behavior and perceived behavioral control" in the model given that approximately 80.7% of its variance was

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explained by two of the TPB components. In addition, intention of avoiding academic misconducts predictors ("attitudes toward behavior and perceived behavioral control") with "subjective norms" together explain 92.7% of variance in avoiding academically dishonest behavior. The implications of this model are very important for tertiary educators who help tertiary students avoid academic misconducts.

Importantly, "intention" is the stronger direct "predictor of behavior" ($\beta = .76$, $p < .001$). Changing behavior could be indirectly influenced by "attitudes toward behavior and perceived behavioral control" through the intention. More importantly, the association of "perceived behavioral control" and behavior is not support according to Model 1a ($\beta = .01$, $p > .05$). This finding reveals that students may require more support and opportunities to avoid academic misconducts.

The interesting particularity of Model 1b is the subjective norm which has not been significantly associated with intentions (H1b), nonetheless, a hypothesized path (H1e) from subjective norm to behavior has direct effect to behavior ($\beta = .12$, $p < .01$). This finding may be related to the different point of view of academic misconducts among Hong Kong and American learners (Chapmen and Lupton, 2004). Since the relationship between the intention and "subjective norm" has been tested in "TRA and TPB" for decades regarding the context of American students (Fishbein, 1979; Beck and Ajzen, 1991), the finding of this relationship may be associated with cultural differences of subjective norms between Hong Kong and

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American learners. In other words, subjective norm can directly affect the behavior of avoiding academic misconducts if students have the stronger feeling of social pressure of avoiding academic misconducts. This finding has contributed that school may create a supportive social environment to tertiary students for avoiding academic misconducts.

5.3.2 Model 2: Upholding academic truth

5.3.2.1 Model specifications

Construct two (Model 2): the behavior of upholding academic truth

Path analysis had been performed in the same manner as the construct of avoiding academic misconducts according to Kline and Ebray's (2011) guideline. The specification of path analysis model was tested by fitting model using SEM. The model (Model 2a) was a saturated model ($df = 0$ and $\chi^2 = 0$). Considering the results of Model 2a, the non-significant paths: from "subjective norm to intentions", "attitudes toward behavior to behavior" and "subjective norms to behavior" were removed for specifying a model (Model 2b) and SEM was performed again. Model 2b had been specified as the final model, "$\chi^2 = 3.810$, $df = 3$, $p = 0.283$, CFI = 0.999, TLI = 0.998, RMSEA = 0.041 and SRMR = 0.007". Therefore, Model 2b had been specified as the final model.

About the model fit indices, Model 1b and model 2b were identified to be the appropriate models for meeting the second research objective. The implications of exploring the effect of the independent variables (such as attitude toward behavior) and the dependent

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variables (such as behavior of avoiding academic misconducts) would be discussed below.

5.3.2.2 Intentions of upholding academic truth

Results showed that, Model 2b (Figure 14) provided a better model-fit for explaining tertiary students' intention of upholding academic truth. Thus, Model 2b was used to exploring tertiary students' intention of upholding academic truth regarding school assignments. A main contribution of the current study was to study TPB components through path analysis using SEM. In addition, following the correlations of Model 2b, new insights into the precise definition of academic honesty. The hypotheses (H2a to 2c) will be discussed.

"H2a: Tertiary students' attitude toward behavior is positively related to intention" - supported

The path from attitudes toward behavior upholding academic truth to intention upholding academic truth is significantly related in Model 2b. This result indicates that H2a is supported. Accordingly, attitude toward upholding academic truth can be used as a predictor for reporting others' cheating intention. Attitude toward upholding academic truth is associated with a tertiary student who has a favorable evaluation of upholding academic truth including 1) expressing truthful viewpoints to prohibit academic misconducts, 2) reporting academic misconducts of peer and self-study to tell the truth and 3) restoring academic honesty by correct mistakes (Figure 3, chapter 1: 1.6.4).

Tertiary students may think expressing a true view of prohibiting academic misconduct

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of their peers may be not time-consuming. On the other hand, these students may consider expressing their true views of prohibiting academic misconduct as their responsibility to maintain an honest academic environment. Over 55% of tertiary students express their true views of prohibiting self-plagiarism in Facebook chats, their views may be influential several Facebook friends to hold the same view for avoiding self-plagiarism (scenario one). The results of unauthorized collaborations (scenario four) show that more than 50% of the respondents have the experience of expressing their true views to their peer for prohibiting unauthorized collaboration.

Tertiary students may intend to report peer and self-study academic misconducts for telling the truth is their responsibility for upholding academic truth, and even these students think that they may lose their friendship or their assignment scores. Every student experience making big or small mistakes from their childhood to tertiary education. Students' attitude toward restoring academic honesty intend to correct their mistake is strong.

"H2b: Tertiary students' subjective norm is positively related to intention" – not supported

The path "from subjective norm to intention" is not significantly related in Model 2b. This result indicates that H2b is not supported. It is imperative to think about that subjective norms of upholding academic truth cannot be a predictor. This result is inconsistency with previous studies like Stone et al., (2012). Respondents' "subjective norms" are linked to the behavior of people around them such as peers and teachers, these people consider reporting

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academic misconducts is not the common and unusual practice in academic environments (Whitley, Nelson and Jones, 1999). According to the finding, respondents do not perceive these people will accept them to report academic misconducts. These respondents have perceived if they report peer-academic cheating to the course teacher, they may lose their friendship because they bring penalties to their friends, and they may make the course teacher busy for bringing extra work to the teacher.

On the other hand, the respondents' "subjective norm" will be a weak indicator when these respondents believe that the behavior of people around them including peers and teachers are continuing to cheat or ignoring academic misconduct reporting (Stone et al., 2007). It is difficult to collect sufficient evidence for judging an academic misconduct case. Some teachers are very busy in their routine teaching, these teachers may not want to handle the suspected cheating cases. Consequently, the cheaters may continue to commit academic misconducts. The behaviors of these teachers and cheater may cultivate a strange school norm in an academic environment. This strange school norm may affect respondents' intention of upholding academic truth.

Perhaps the result of 10-item MCSDS may be a brief indication that participants are generally less concerned with social approval in the situation of upholding academic truth such as reporting academic misconducts. There is limited evidence for explaining the social approval in the academic setting of upholding academic truth. Future recommendation of

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improving the explanation power of social approval study will present in the next chapter.

"H2c: Tertiary students' perceived behavioral control is positively related to intention" - supported

The path "from perceived behavioral control" of upholding academic truth to intention of upholding academic truth is significantly related in Model 2b. This result indicates that H2c is supported. The intention of upholding academic truth including restoring academic honesty. Almost half of the respondents have had the experience of restoring academic honesty by correcting the mistake of interview information falsification (scenario nine). Respondents consider that they can follow the course assignment and honestly to re-take the failed course because they have had experienced correcting mistakes before the time of the survey. There is a lack of knowledge about a definitive function for perceived behavioral control of upholding academic truth such as expressing truthful viewpoints, it can be a predictor of intention of upholding academic truth based on this TPB framework. It requires further research to explore its definitive functions in the future.

Addressing research question 3:

"Can tertiary students' intentions to uphold academic truth regarding school assignments be predicted by attitude towards behavior, subjective norm and perceived behavioral control?"

Research question three has been addressed that tertiary students' intentions to uphold academic truth regarding school assignments will be predicted by attitude towards upholding

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academic truth and perceived behavioral control of upholding academic truth.

5.3.2.3 Behaviors of upholding academic truth

Results showed that, Model 2b (Figure 14) provided a better model-fit for explaining tertiary students' behavior of upholding academic truth. Thus, Model 2b was used to explore tertiary students' behavior of upholding academic truth. This is the major involvement of this study to test the TPB components through path analysis using SEM. Following the correlations of Model 2b, hypotheses (H2d to 2g) are going to discuss.

H2d: Tertiary students' attitude toward is positively related to behavior – not supported

The path from attitudes toward behavior of upholding academic truth to behavior of upholding academic truth is not significantly related in Model 2b. This result indicates that this hypothesis, H2d is not supported. It is consistent with Riemenschneider et al. (2011).

Comparing with expressing truthful viewpoints, only 28.7% of the respondents had the experience of reporting peer-academic misconducts about unauthorized sharing works (scenario eight). Listwise, 28.4% of the respondents stated that they had the experience of reporting peer-academically misconducts regarding essay reuses (scenario six). These results reveal the respondents have more experiences to express the truthful views than reporting peer academic cheating. In line with the findings of Stone et al. (2012), tertiary students require a firm belief to convince themselves that reporting peer-academic misconducts will bring them more benefits. For reporting self-cheating that are required future studies to

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elaborate.

"H2e: Tertiary students' subjective norm is positively related to behavior" – not supported

The path from subjective norm of upholding academic truth to behavior of upholding academic truth is not significantly related in Model 2b. This result indicates that this hypothesis, H2e is not supported. Respondents perceived that people around the respondents including peers and teachers may not support these respondents to uphold academic honesty such as reporting peer-academic misconducts. A student whistle-blower needs to have a firm belief to initiative himself or herself for reporting an incident of academic misconduct, this belief is driven by his or her courage (refer to chapter 2, section 2.2.3.2). Courage is associated with a student's learning value. When a student believes that report cheating is not a student's learning value, this student will not report cheating. Beyond the student' learning value, tertiary students may believe that cheating behaviors do not affect the academic achievements'. On the other hand, reporting cheating may undermine the reputation of the student whistle-blower (Bernardi et al., 2012). Firstly, the student believes that people around them like peers who may not consider the student to be a friend. Secondly, the student believes that people around them include teachers and students who may consider the student to be a cheater because this student knows how to cheat. Lastly, the student is a cheater who has had cheated, it is very hard to commit to reporting cheating.

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"H2f: Tertiary students' perceived behavioral control is positively related to behavior" - supported

The path "from perceived behavioral control" of upholding academic truth to behavior of upholding academic truth is significantly related in Model 2b. This result indicates that this hypothesis, H2f is supported. It is consistent with related research, Stone et al. (2012). Tertiary students' perceived behavioral control is associated with controllability which means tertiary students consider upholding academic truth is under the control of these students' desire even if the time is limit and the pressure is high (refer to chapter 2, section 2.2.3.2).

Scenario one has shown that a student, John who expresses a truthful point of view to prohibiting self-plagiarism. Respondents have indicated that in fact, who will actually express the same point of view of John, "John pointed out that Tim's suggestion of self-plagiarism was not honest" during an online chat. Respondents may consider expressing a truthful point of view which is a controlled cost such as the respondents can continue to chat or not chat that means respondents have less responsibility to handle the academic dishonesty issue. On the other hand, if John is a course teacher, the responsibility of John in dealing with self-plagiarism issues can be a time-consuming duty that may be beyond John's control.

H2g: Tertiary students' intention is positively related to behavior - supported

The path from intention of upholding academic truth to behavior of upholding academic truth is significantly related in Model 2b. This result indicates that this hypothesis, H2g is

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supported. It is consistent with Riemenschneider (2011). Tertiary students' intention is associated with tertiary students' considerable probabilities to his or her commitment to uphold academic truth. Scenario nine, a student Queenie has had committed academic misconducts during a time demanding interview report. Respondents will correct their academic misbehavior after the punishment (failed the course). Tertiary students may think that they can control their honest behavior with their teachers because teachers will pay more attention to them, and these students will balance the cost of further punishment. For these reasons, tertiary students will actually take actions of correcting mistakes like Queenie.

Addressing research question 4:

"Can tertiary students' behaviors to uphold academic truth regarding school assignments be predicted by attitude towards behavior, subjective norm, perceived behavioral control and intention?"

Research question four has been addressed that tertiary students' behaviors to uphold academic truth regarding school assignments will be foreseen by perceived behavioral control and intention of upholding academic truth.

To review the path of Model 2b, perceived behavioral control and intention of upholding academic truth have the significant direct effect to behavior of upholding academic truth. In addition, the indirect effects from "attitude toward behavior and perceived behavioral control" via intention have been interpreted. In addition, the findings showed that subjective

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norms of upholding academic truth were not directly related to intentions and behaviors of upholding academic truth, which were consistent with Chang's (1998) Hong Kong study. Thus, it has been suggested that future research can consider linking the path of subjective norms to attitude.

On the whole of Model 1b and Model 2b, all hypotheses have been elaborated. Model 1b is suggested that students with lower scores of "attitudes toward behavior, subjective norm, perceived behavioral control and intention" would be more likely to avoid academic misconducts. Conversely, Model 2b is suggested that students with higher scores of "attitudes toward behavior, subjective norms, perceived behavioral control and intentions" of upholding academic truth would be more likely to actin honesty when doing assignments and reporting cheatings.

5.3.2.4 Proportion of the variance explained by models

Construct two (Model 2b): The behavior of upholding academic truth

According to the Model 2b (Ch.4, Figure 7), approximately 74.2% of the variance of intention was accounted for intention of upholding academic truth predictors by "attitudes toward behavior and perceived behavior control". "Intentions and perceived behavioral control" together explained 94.9% of variance in upholding academic truth behavior. The implications of this model were very imperative for tertiary educators who help tertiary students uphold academic truth.

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Notably, “intention” was the stronger direct “predictor of behavior” (β = .742, $p < .001$). Changing behavior could be indirectly influenced by attitudes toward behavior and “perceived behavioral” control through the intentions. The results suggested that intentions mediated the association between “attitudes toward behavior” and the behavior of upholding academic truth. In addition, the association between perceived control in upholding academic truth and the behavior of upholding academic truth was significant (β = .249, $p < .001$). This finding implied that the current sample of tertiary students had required the support of perceived behavioral control in upholding academic truth.

More importantly, the association of subjective norm and intention was not to support in Model 2a (β = .104, $p > .05$). This finding also showed that students’ subjective norm of upholding academic truth requiring further investigations because the subjective norm is not only non-significantly related to intention but also to behavior (β = .026, $p > .05$).

5.4 Models and demographic information

Demographic information often provided the characteristics of a population. Characteristics such as gender, educational level and places of birth were allowed to better understand certain background of the participants. By comparing the groups of participants, demographic information about current tertiary students, and in turn, helped to initiative a study plan for future research.

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5.4.1 Gender

The bar chart in Figure 15 showed the components of TPB in the model of avoiding academic misconducts between male and female students. Such comparison presented that there was a gender difference between male and female students. The bar chart illustrated the mean score of male and female tertiary students avoiding academic misconducts model. It could be seen that the mean scores of all TPB components including attitude toward behavior, subjective norm, perceived behavioral control, intention and behavior of avoiding academic misconducts of female students were higher than those mean scores of male students in avoiding academic misconducts model.

In particular, the attitude toward behavior of avoiding academic misconducts had showed with higher mean scores than other independent variables such as subjective norm and perceived behavioral control. This result was aligned with Whitley, Nelson & Jones's (1999) results of a meta-analysis, female students would have more positive attitude toward avoiding academic misconduct behaviors than male students. The finding of this study indicated than male students who had entered traditionally male-dominated academic majors might compete with other students for higher grades. On the other hand, the male students also had lower mean scores of subjective norm and perceived behavioral control of avoiding academic misconducts. In other word, the perception of male students of high degrees of competition for grades and pressure for success were positively related to committing

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academic misconducts. In contrast to the construct of avoiding academic misconducts, the comparison of mean scores between male and female students presented another information.

Figure 16 showed the components of TPB in the model of upholding academic truth. In general, female and male students showed similar concerns in upholding academic truth. Both male and female students had low mean scores (below 1). These results were in line with Stone et al.'s (2012) study, the TPB variables were related to the upholding academic truth culture. It was agreed with McCabe, Trevino & Butterfield's (2002) opinion to extend honor codes which might modify tertiary student' academic honesty rules to the academic settings. Tertiary administrators not only required students to avoid academic misconducts, but also required students to uphold academic truth. These demographic results of gender were very important to tertiary administrators.

5.4.2 Educational level

The graph of figure 17 illustrated the TPB components of avoiding academic misconducts including attitude toward behavior, subjective norm, perceived behavioral control, intention and behavior of avoiding academic misconducts among undergraduates and postgraduates. The bar chart illustrated the mean score of undergraduates and postgraduates avoiding academic misconducts model. It could be seen that the mean scores of all TPB components including attitude toward behavior, subjective norm, perceived behavioral control, intention and behavior of avoiding academic misconducts of postgraduate students

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were higher than those mean scores of undergraduate students in avoiding academic misconducts construct.

Overall, postgraduate students showed more positive than undergraduate students in avoiding academic misconducts. Specifically, the attitude, intention and behavior of avoiding academic misconducts among postgraduate students had showed with higher mean scores than undergraduate students. This result was aligned with Molnar's (2015) results of a longitudinal study, students who were in higher level of education would had more positive concerns to avoid academic misconduct behaviors than freshmen. The finding of this study indicated than postgraduate students found academic misconducts less acceptable so postgraduate students would be more positive to avoid academic misconducts.

Figure 18 showed the components of TPB in the model of upholding academic truth. In general, postgraduate students showed more positive concerns in upholding academic truth. Surprisingly, the undergraduate students had very low mean scores of TPB components in the upholding academic truth construct. In particular, perceived behavioral control of upholding academic truth was negative. The mean of the item is set to zero logits. Therefore, a negative mean score indicates a lower level of upholding academic truth. This new information of upholding academic truth required further research including a qualitative approach of interviews to provide a meaningful opinion.

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5.4.3 Places of birth

Figure 19 showed the components of TPB in the model of avoiding academic misconducts. In general, participants from the Mainland showed more positive concerns in avoiding academic misconducts and upholding academic truth. The mean of the item is set to zero logits. Therefore, a positive mean score indicates a greater level of avoiding academic misconducts and upholding academic truth. Furthermore, the participants from Hong Kong had considered that behavioral control was less easy to uphold academic truth. Overall, the participants from the Mainland had maintained a higher level of upholding academic truth than the undergraduates (Figure 20). There were limited information for comparing Hong Kong and Mainland tertiary students. Due to this constraint, a study of comparing the ethical sensitivity for American and Hong Kong tertiary business students (Rawwas et al., 2007). This study found that Hong Kong tertiary business students were less sensitive to academic misconducts than American tertiary business students (Rawwas et al., 2007) . Surprisingly, the participants who were from Hong Kong had negative mean scores in perceived behavioral control (Figure 20). This finding would be the new information to the administrators of tertiary education in Hong Kong for improving the tertiary student's control in upholding academic truth such as expressing academic truth to prohibited academic misconducts, reporting academic misconducts and helping other students to restore academic truth through correcting mistakes of committing academic misconducts.

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5.5 Limitations of the study

Given that the small "sample size" of the population in Chinese, the generalizability of the participants can be considered, while when reviewing the demographics of the current study, the percentages of births in "Hong Kong" and "China" are found to be 51.20% and 40.10% respectively. Moreover, the use of a convenience sample restricts the generalizability beyond the population such as age, educational level, study mode (Full-time and part-time) and religion. It is recommended to recruit participants from randomized sampling methods. The data of demographic information from the respondents had not been designed as the additional variables in the current study because the current study was a primary study for examining a modified research instrument and exploring the original TPB components. Therefore, it is suggested future study may consider adding some variables (such as gender, level of education, study mode and place of birth) to the TPB models (including avoiding academic misconducts and upholding academic truth) for enhancing the prediction power by modifying the TPB models of the current study.

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Chapter 6: Conclusion and recommendations

6.1 Conclusion

The current study has reviewed academic honesty literature, compared the literature with student's handbooks to refine the definition of academic honesty. This definition is included two constructs: avoiding academic misconducts and upholding academic truth (Ch.1, section 1.6.4, Figure 3). A systematic search of five database literature search engines has been performed to find any appropriate instrument that meets the research aim: to explore Hong Kong tertiary student's intention and behavior of academic honesty regarding school assignments. After reviewing 1807 existing related research articles, it has been found that there is no suitable instrument for assessing the construct of upholding academic truth (a research niche). Thus, this study requires to modify the academic dishonesty instruments from existing studies (such as Beck and Ajzen, 1991, Riemenschneider et al., 2011 and Stone et al., 2012) to fill the research niche.

The literature review of has an impact on academic honesty which has contributed to link the existing of research gap in existing studies (Macfarlane et al., 2014). This study complemented previous literature such as Stone et al., (2012), The Education University of Hong Kong (2016) and Wu, 2010 to refine the definition of academic honesty. This definition has summarized that there are two constructs: 1) Avoiding academic misconducts including avoiding academic plagiarism, avoiding academic collusion and avoiding academic

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falsification, and 2) Upholding academic truth including expressing the truth, reporting academic misconducts and restoring academic truth (Figure 3). This refined definition has been applied to the study instrument which is validated by the item panel and obtained good psychometric properties with reference of existing literature such as Linacre (2018); Wolfe and Smith (2007); and Yan and Sin (2015).

The modified instrument builds upon the study of Riemenschneider et al. (2011) to provide some scenarios and items for assessing tertiary students' intentions and behaviors of academic honesty. In the current study, the modified instrument satisfies content and construct validity through a questionnaire assessment panel (including tertiary school educators and students). In addition, research findings of psychometric properties provide evidence of "Rasch item reliabilities", "Rasch person reliabilities", "variance explained by measures" and "step threshold of category function". Rasch analysis helps not only to achieve the research objective two: to modify an instrument for filling the research gap and examine its psychometric properties, but also to convert student measures from the ordinal scores to the interval scores. The converted student measures are subjected to path analysis for improving the accuracy of the measurements.

Another research objective also has attained: To test the research hypotheses through TPB models for exploring tertiary students' intentions and behaviors of academic honesty. Through the hypothesis TPB models, new insights have been brought into the relation of

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academic honesty intention and behavior. Furthermore, the implications of this study allow future investigations of academic honesty focusing not only on the construct of avoiding academic misconducts but also on upholding academic truth. This study also highlights that the TPB component, the subjective norm of avoiding academic misconducts may have differences between tertiary learners in the United States of America and Hong Kong. For some advice of avoiding academic misconduct, see section 6.2 of this chapter.

In comparing the instrument modification with previous research of Riemenschneider et al. (2011), several improvements have been noted. Firstly, the additional four scenarios have broadened the scenario-based questionnaire to assess intention and behavior of ethical decision-making regarding school assignments. Secondly, the participant group is extended from undergraduate students to undergraduate and postgraduate students. Thirdly, the student measures have been converted to interval scores from ordinal scores to improve the accuracy of measurement for path analysis. These improvements help to support further exploration of the academic honesty project with randomly recruited participants. To review, this study has been in line with the study purpose of exploring Hong Kong tertiary students' intention and behavior of academic honesty. The research objectives have been completed for improving the existing study instrument and testing the relationship of variables by TPB models. The improvements include that a modified instrument is useful in academic honesty research and tertiary settings respectively.

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Tertiary educators interested in the TPB models also recommend advancing these study implications to reveal the latest information on TPB. Although it is hard in some ways to draw firm conclusions from the data, there is little doubt that three components have led to the intention of academic honesty as well as the American learners and Hong Kong learners. Despite this uncertainty, in particular, the subjective norm is related to the cultural differences between the Chinese and other nations. It is suggested to compare the intentions and behaviors of academically honesty among different nations such as the Mainland. Since this current study has investigated the intentions and behaviors of academically honesty in tertiary students, the students' support for avoiding academic misconducts and upholding academic truth can be reassessed and reframed. The reassessment of tertiary students' support is recommended such as collecting qualitative data from interviews for enriching information of reframing administration; conducting longitudinal research for evaluating the existing and reframing systems that maintain academic honesty.

6.2 Recommendations for future research

The main constraint identified by the research project is the time limit for the researcher as who is a part-time doctoral student. The contributions of this current academic honesty study including the comprehensiveness of the literature review, research methods, data analysis and discussions have been presented in previous chapter. Some suggestions to address the constraints and advance the contributions are proposed for future studies. These

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recommendations are beyond the scope of this current study but deserve further studies. There are 9 recommendations have been made to researchers and practitioners who are interested in exploring academic honesty topics for improving educational purposes such as knowledge transfer, academic moral education, and academic achievement in learning and teaching.

6.2.1 A mixed-method approach for enriching academic honesty study

This study has found that collusion events are very common in Hong Kong academic settings. Hong Kong tertiary students have limited experiences (Ch.4, section 4.1.2) to avoid collusions based on the academic situations, including scenario 2: avoiding uneven group project contributions (existing free riders who do not participate in group projects), scenario 4: avoiding unauthorized sharing answers of individual multiple-choice statistical tasks and scenario 8: avoiding unauthorized sharing work of an individual school assignment in a psychology course. It is interesting to study this phenomenon of collusion between tertiary teachers and students with qualitative research approach by conducting classroom observations, individual interviews, honesty discussion forums, teaching method feedbacks, school assessment methods and students' learning reports. According to the results of the current quantitative study, these qualitative methods can provide more information on tertiary teachers and students' thoughts.

Research development resources of mixed-methods designs are abundant on some

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university websites, such as “the Center for Innovation in Research and Teaching” (“Grand Canyon University”, n.d.). This website of the Center for Innovation in Research and Teaching provides several resources for research methods, including an “explanatory sequential mixed-method design”. The “explanatory sequential mixed-method design” is recommended for gaining an in-depth understanding into the quantitative results of a population such as the cultural relevance of Hong Kong tertiary students (Creswell, 2014 and Rong, 2013). There are two phases in this mixed-method design: 1) quantitative methods such as a self-reported questionnaire survey and 2) qualitative methods including face-to-face focus group interviews. (Ivankova, Creswell and Stick, 2006).

In this current study, more than 90 % of tertiary students believe that people around them have a collusion experience when the contribution of the group project is uneven (Chapter 4, Section 4.1.2.2). This collusion experience is related to a free-rider who does not participate to what is expected to be contributed in a group project. The free-rider may defend against not contributing the group project by mentioning their own reasons such as being sick, being too nervous and being busy with other school assignments (Lim and See, 2001). Some of the tertiary students may accept these reasons and submit the group project with all the group members’ names including the free-rider (see Appendix C: scenario 2, p.3). In the current research, the academic dishonesty experience of tertiary students can be found, so it is necessary to recognize the reasons for accepting or avoiding academic collusion in future

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research.

This current research has found that tertiary students are ethical ambivalence about avoiding academic collusion (Ch.4, section 4.1.2.2). Future research can consider how to address the limitation of the current study by building on existing articles such as a mixed-method study in Singapore (Lim and See, 2001). For example, tertiary students have reported in a 2001 study of Lim and See that tertiary student's teammates did not cooperate, causing many disagreements and some teammates were easily absent during the project meeting. Another Singaporean tertiary student has indicated that cheating was sometimes the norm in the school, if a tertiary student's friend cheats, the tertiary student will also cheat because every student is cheating and why not cheating (Lim and See, 2001). This Singaporean study has applied a focus group interview research method to collect tertiary students' perspectives of academic collusion after developing a questionnaire.

Focus group interviews can provide an in-depth and up-to-date understanding of the quantitative results of Hong Kong tertiary students (Creswell, 2014 and Rong, 2013). Studies using the explanatory sequential mixed-method design to explore tertiary students' academic honesty regarding school assignments in Hong Kong are very limited, and it is strongly recommended to apply this mix-method design to interpret quantitative data. In addition, there are some suggestions from the 2018 study of Nyumba, Wilson, Derrick, and Mukherjee, (2018) to improve the practice of focus group discussions including 1) to provide a rationale

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of data selection and interpretation, 2) to facilitate focus group discussions by experienced moderators who have rich knowledge of academic honesty, 3) to report the findings systematically such as the order of research design, data collection, analysis and interpretation, 4) to beware of bias such as dominance (a participant leading the discussion) and halo (the perceived experience) effects and 5) to make a clear organization of the study components such as research questions, methods and analysis. This current study has used a research design map (Figure 4) for connecting the conceptual framework, study aims, research methods, reliability, validity to research questions (Ch.1, section 1.7), a research design map is recommended for future academic honesty studies.

Nearly 90% of tertiary students believe that people around them have the experience of reporting collusion to the responsible teachers (Chapter 4, Section 4.1.3.2). Based on a mixed-method design study, Singaporean tertiary students were annoyed and desperate because these students thought that the institutions in Singapore should exclude any free-rider on campus, and unfair assignment scoring systems, but the institutions did not (Lim and See, 2001). Nearly 20 years ago, these opinions about Singaporean institutions may not only misrepresent the recent views of Singaporean tertiary students but also misrepresent the recent views of Hong Kong tertiary students. Furthermore, Singaporean tertiary students realized that teachers' judgements were unfair, which allowed free-riders to get the same grade as the learners who spend a lot of working effort (Lim & See, 2001). It is hard to say

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that tertiary learners in Hong Kong and Singapore hold the same point of views on academic collusions in group school projects without collecting focus group interviews. Furthermore, these tertiary students in Singapore expressed that the institutions and responsible course teachers are accountable to exclude the free-riders on campus. What are the responsibilities of tertiary students and free-riders to avoid academic collusion regarding school assignments? It can be a research question for future studies.

In scenario 4, Hong Kong tertiary students have limited experiences (less than 20%) to avoid unauthorized individual multiple-choice statistical tasks (Ch.4, section 4.1.2.2). In this current study, the quantitative data showed the percentage of tertiary students' experiences in this collusion (see Appendix C: scenario 4, p.5). However, this quantitative data did not tell readers why so few tertiary students can avoid unauthorized individual multiple-choice statistical tasks. Local research is really limited to apply qualitative methods for exploring the collusion behavior of tertiary students. According to Lim and See (2001), cheating was very common in an educational institution in Singapore, those students were desperate and had no choice because these students really did not know the how to pass the course assessment, the only way was to commit academic collusion for passing the course. These results may not be applicable to other Singaporean educational institutions or outside Singapore, so it is recommended to use an explanatory sequential mixed-method for gaining insight into the quantitative results of a population such as the cultural relevance of tertiary students in Hong

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Kong (Creswell, 2014 and Rong, 2013).

6.2.2 Longitudinal study designs

The current study employs cross-sectional data collection method for gaining the preliminary evaluation of tertiary students' academic honesty regarding school assignments in Hong Kong. A longitudinal study design is recommended for further study. Longitudinal studies may take many different forms, including 1) repeated cross-sectional studies to compare target populations at different sampling times, 2) prospective studies to compare the same participants to follow over a period of time, and 3) retrospective studies to compare a group of participants who have experienced relevant activities or events ("Caruana, Roman, Hernández-Sánchez & Solli", 2015). These forms of longitudinal studies help researchers to follow the changes of time period through data collection in different time zone. Everyone, even the most upright person, may have a difficult time to be honest (Ruhe, 1991).

There is an example, attitudes of tertiary students in this study may reflect values of academic honesty in a particularly difficult period in scenario 4 (Appendix C, p.5). Two students, Gigi and Henry were busy with their internships, they took the same course of statistics and committed unauthorized collaboration of a multiple-choice assignment. Gigi did the first part and Henry did the last part of the assignment. Each of them turned in the first and last parts of the assignment of their individual course work. More than 80% of tertiary students in Hong Kong could not avoid this unauthorized collaboration regarding course

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assignments at the time of the survey in this current research (Ch.4, section 4.1.2.2).

Scenario 4 designed the reasons for the academic collusion between Gigi and Henry including time constraints and assignment design. They each turned in the first and last parts of the assignment of their individual course work. The risk factors for the academic collusion among Gigi and Henry may include time constraint, learning motivation of statistics and assignment design. These risk factors may affect fewer, the same or more in different time zones. In addition, if the assignment design as a classroom assignment, students can interact with the teacher's guidance in a statistics tutorial. This assignment design may reduce the risk factors of academic collusion. Every student can be assessed their personal statistics skills by an examination. On the other hand, the moral development of avoiding academic misconducts and upholding academic truth can be a moderator of the relationship between the past and present academic honesty experiences across tertiary learners in Hong Kong. Therefore, for assessing the association between potential factors of avoiding academic misconducts and moral developments of upholding academic truth, longitudinal research approach such as repeated cross-sectional studies, prospective studies or retrospective studies may be considered to advance academic honesty strategies. A longitudinal study is proposed for several academic years with more data collection to clarify the relationship between the personal experience of maintaining academic integrity and the theory of planned behavioral models.

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Past academic misconduct experiences of tertiary students can provide insights into further research for solving the problems of academic misconducts such as plagiarism, collusion, and falsification. There are three ways to avoid academic misconducts by understanding, avoiding and detecting the academic misconducts.

6.2.3 Avoiding plagiarism

In this current study, three scenarios were designed for assessing plagiarism in some moral dilemmas, including 1) self-plagiarism (scenario 1), 2) essay reuse (scenario 6) and 3) essay purchase (scenario 7). When introducing a school curriculum, tertiary teachers can use these scenarios to start discussing plagiarism and suggest playing the scenario roles in a classroom.

For example, the course teacher may invite some students to perform self-plagiarism role-playing. In scenario 1 (see Appendix 1, p.2), three students are invited to act out the role of Susan, Tim and John. The second page of the modified questionnaire can be then distributed to these students. The course teacher reads the questionnaire items aloud and asks the students to fill in the agreement: “strongly disagree”, “disagree”, “neither agree nor disagree”, “agree” or “strongly agree”. Collect the second page of the current research questionnaire and remain anonymous. The discussion begins with three questions: 1) what self-plagiarism is, 2) ways to avoid self-plagiarism in school assignments, and 3) methods of detecting self-plagiarism.

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To discuss what self-plagiarism is, self-plagiarism seems ridiculous, but it is a very real problem with heavy consequences. Dissimilar to plagiarism, self-plagiarism can be hard to be interpreted as academic theft issues because people cannot steal things from themselves (Šupak and Bilić-Zulle, 2013). Self-plagiarism refers to the submission of a writing paper for 2 or more school courses lacking the permissions of all instructors (including supervisors, advisors and examiners) in relevant school courses ("The Education University of Hong" Kong, 2016).

The first way to avoid self-plagiarism in school assignments is to seek the permissions from all teachers in relevant school courses when students want to base their previous work as part of their future work. In scenario 1, Susan is a *deadline fighter* (Hong Kong, colloquial) who start processing school assignments only before the due date (Wiktionary, 2018). When there is a doubt about how to deal with the urgent deadlines of school assignments, the safeguard measures are to consult the relevant course teacher (The Hong Kong Polytechnic University, 2018).

Avoiding this urgent situation, students can plan, start and completer their assignments in order to prevent doing students' assignment at the last minute and consult course teachers when students are in doubt about the late assessment. An example of handling delay school assignments has been presented in Chapter 2, 2.2.3.1. On the other hand, course teachers have foreseen that their students are deadline fighters and try to teach them to manage their time

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and school assignments. Nadinloyi, Hajloo, Garamaleki and Sadeghi (2013) have suggested that time management can help students perform certain goal-directed activities to effectively use time for facilitating study productivity and alleviating learning stress.

A 3-stage goal-setting program, 'Become a Better Healthcare Professional', which had been presented in a 'Wellbeing and Professionalism' seminar to share the ways to enhance learners' motivation through the personal best goal (Ng & Or, 017). This goal-setting program consists of three stages including 1) aware of my pace, 2) proclaiming my ability, and 3) witnessing my success. This goal-setting program can be considered to adapt to fit the need of tertiary learners and rename as 'Become a Better Time Manager'.

For the time management issue of the tertiary students, tertiary teachers can start from the first stage: 'aware of my pace', this goal setting program to list negative thoughts about the school assignment. For example, I am afraid I cannot effectively use my time. Next, the student is asked to write down some things that challenge the negative thought. For instance, If I work smart and not just hard, I usually can effectively use my time. Then the student is asked to write down a new positive thought to replace the old negative thought, like this: If I study smart, I can effectively use my time. Lastly, tertiary students may ask teachers how to effectively use time. When students are aware of their need for time management, tertiary teachers should take the opportunity to introduce time management skills. As a smart teacher, who needs to seize important moments to teach students.

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As a smart learner, he or she also needs conscious planning and thoughtful decision-making of time management. Some suggestions for time management are as follows: 1) for important and urgent activities such as a school assignment due today, please do it first, 2) for important and non-urgent activities such as ongoing school work, going out with friends or exercise, please schedule it and do it later 3) for not important and non-urgent activities, such as low-priority extracurricular activities, please delegate as much as possible it if you can, 4) for activities that are not important and non-urgent, such as reading Facebook feeds, watching YouTube or sorting spam emails, please do it last or not at all 5) when the school assignment or task are completed, enjoying your free time as doing some things you like such as eSports and friends going out (Town Square Business Resource Center, n.d.; Travers, Morisano and Locke, 2015).

The second stage of 'Become a Better Time Manager' is 'proclaim my ability', and there are activities that can determine a learner's ability in managing time (Ng and Or., 2017, December). A tertiary teacher can ask a tertiary student to write down his or her abilities in the last successful time management. For example, I defined and understood the problem of time management. For another example, I can solve the problem of time management. These recording activities can help tertiary students to build the self-confidence.

The third stage of 'Become a Better Time Manager' is 'witness my success', and there are activities to help students understand their talents of managing time (Ng and Or., 2017,

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December). A tertiary teacher can ask a student to list his or her management time-related talents. For example, I can show my learning plan to my parents. For another example, I can arrange my learning at a comfortable pace. These activities help to build a tertiary student's positive self-belief. The proposal for a 3-stage program, 'Become a Better Time Manager' deserves further study to guide tertiary students in managing their time.

Understanding how to detect plagiarism is the best way for tertiary teachers to teach avoiding plagiarism and detect plagiarism. There are several existing plagiarism detection software such as Turnitin is a commercial, plagiarism detection service for the education industry (Turnitin, 2019), VeriGuide is a bilingual (in Chinese and English) text-based similarity detecting engine which is developed by the teachers from Faculty of Engineering in "The Chinese University of Hong Kong" ("The Chinese University of Hong Kong", 2018) and Plagiarism Checker is free of charge but requiring Google or Yahoo browsers (Pappas, 2013).

A Hong Kong senior lecturer and coordinator of English Language Support Services at Lingnan University has suggested that using 'Turnitin' (a plagiarism detection tool) can raise the alertness of original writing quality and reduce academic honesty issues through providing one-on-one feedbacks in tertiary student writing tasks (LeBane, 2016). Most universities in Hong Kong use Turnitin for plagiarism checks including "Lingnan University" ("Lingnan University, Hong Kong", n.d.), "The Education University of Hong Kong" ("The

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Education University of Hong Kong", 2016), "The University of Hong Kong" ("The University of Hong Kong", 2017c), "The Hong Kong Polytechnic University" ("The Hong Kong Polytechnic University", 2014), so this section focuses on Turnitin.

Turnitin examines paper submissions to match the textual similarity to its database and provides original reports, and tertiary students can only view their own paper submission reports (Batane, T. (2010). The Turnitin report shows the textual similarity to the existing papers and the percentages of textual similarities across the whole paper, this report allows tertiary students to know how to avoid plagiarism and self-plagiarism, then in order to encourage students to read more existing papers and use literature to support their own ideas (Graham-Matheson and Starr, 2013). Even though Turnitin promotes fairness and learning motivation of the academic settings, Turnitin has some limitations, including the inability to recognize paraphrase texts and the over sensitivity of similar words previously used in another common research area (Batane, T. (2010). These limitations cease tertiary teachers to use Turnitin to detect plagiarism due to time-consuming on checking textual similarity reports (Ranawella and Alagaratnam, 2017).

Australian tertiary students had purchased MyMaster essay and their academic degrees have been revoked (Thackray and Michael, 2015, May 28). MyMaster provides contract cheating services in Australia (Curtis and Clare, 2017; Thackray and Michael, 2015, May 28). Contract cheating means that students make a promise to pay for others to finish school

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assignments on their names, which violates academic unethical behavior in a modern educational environment (Curtis and Clare, 2017). MyMaster's website is written in Chinese and advertises to international students (Thackray and Michael, 2015, May 28). According to scenario seven, a course lecturer did not require students to submit their essays through any plagiarism detection tools. Due to poor English writing skills, a student purchases an online essay (Appendix C, p.8).

In 2009, essay purchases in contract cheating have become a new phenomenon of cyber-cheating that has annoyed educational institutions regarding Europe, the United Kingdoms and the United States of America (Mahmood, 2009). This phenomenon, the existing fact, which is occurred in the Hong Kong tertiary education, results of this current study has shown that Hong Kong tertiary students have also experienced contract cheating in essay purchases (Ch.4, 4.1.2.1). Essay purchases in contract cheating are students who hire someone (such as friends, family members and ghostwriters) to complete their school assignments and submit as the students' own work (Mahmood, 2009).

Prevention and deterrence measures for purchasing essays in contract cheating can be initiated among tertiary education administrators, these measures including 1) to provide textual similarity checking equipment for each academic staff and encourage academic staff to detect plagiarism, 2) to provide advanced teacher support for maintaining teaching quality, and 3) to assess the effectiveness of prevention and deterrence measures (Mahmood, 2009;

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Walker and Townley, 2012).

The academic staff may recognize the importance of using the software to detect plagiarism in tertiary education, but the practice is less because it is time-consuming for setting up the software (Graham-Matheson & Starr, 2013) and checking the report of to detect plagiarism (Ranawella & Alagaratnam, 2017). In this current study, tertiary students also experienced their school teachers did not use plagiarism detecting software to deal with students' assignments, which leading students to purchase online papers. How to encourage the academic staff using the software to detect plagiarism in tertiary education? This topic can be another research project in the future. It can be applied TPB to explore tertiary teachers' intentions and behaviors of using the software to detect plagiarism. Scenario 7 (Appendix C, p.8) in this current study can be extended to a research project for studying academic staff's intention and behavior regarding deterring plagiarism in contract cheating among tertiary education.

Many universities have been accepted the compulsory use of textual similarity detecting devices for checking originality for all school assignments such as 1) Canterbury Christ Church University, a teacher training college in the United Kingdom (Graham-Matheson and Starr, 2013), which values the improvement of life for oneself, one's community and the earth (Canterbury Christ Church University, 2019), and 2) "The Chinese University of Hong Kong" ("The Chinese University of Hong Kong", 2018), which values intellectual and ethical

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aspects of education (The Chinese University of Hong Kong, 2019). On the other hand, some librarians pay attention to the availability of plagiarism detection software in university libraries, it is suggested to reserve one or two computers in a library for tertiary students to check the originality of their school assignment or academic works at any time (Ranawella and Alagaratnam, 2017). Bruton and Childers (2016) stated that the plagiarism detecting software may help define and address plagiarism in tertiary education. Therefore, tertiary administrators can study how university culture and policy can enhance the use of detection plagiarism software in the future.

The second suggestion for prevention and deterrence measures for purchasing essays in contract cheating can be to provide advanced teacher support for maintaining the quality of teaching. The detecting plagiarism software may solve plagiarism problems, but it is very hard to distinguish a good essay between a high-quality purchase essay. Mahmood (2009) and Walker and Townley (2012) have recommended some teaching strategies to academics including 1) to generate new assignment design each time, 2) to launch appropriate assessment design of students' assignments and 3) to lead academic honesty regulations.

The 3-stage goal-setting program, 'Become a Better Healthcare Professional' can be modified to advance teachers' motivation of innovative instructional design through the personal best goal (Ng and Or., 2017, December). This goal-setting program can be revised for suiting the needs of tertiary teachers and rename as 'Become an Innovative Educator'.

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For the essay purchase issue of the tertiary students, tertiary teachers can start from the first stage: ‘aware of my pace’, this goal setting program to list negative thoughts about the essay purchase issue of school assignments. Firstly, tertiary teachers can start from the beginning stage: ‘aware of my pace’, this goal setting program to list negative thoughts about the school assignment. For example, I am afraid I cannot effectively design a new school assignment for the coming teaching course. For another example, I am afraid I cannot effectively design an appropriate assessment for the coming teaching course. For instance, I am afraid I cannot instruct my tertiary students to follow the academic regulation in my course.

Secondly, the tertiary teacher can list out some things that challenge the negative thought to proclaim his or her ability of preparing new assignments each time, providing appropriate assessment design of students’ assignments and upholding academic honesty regulations (Mahmood, 2009). Attending to students’ needs is useful to modify a personalized assignment topic which may increase student’s learning motivation and avoid the issue of reuse essays (Walker and Townley, 2012). For example, one of my tertiary students is a dental nurse, her course assignment topic can be: ‘Dental Care for the Elderly’. Another student is an environmental engineer, his course assignment topic can be: ‘Elderly Volunteers and Environmental Service’. After writing down the example of ‘proclaiming my ability’, the self-confidence of the tertiary teacher can be increased.

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There are a number of assessments methods for evaluating students' school assignments including oral presentations, class quiz and viva voce (Mahmood, 2009), but the most important measure of assessment methods is related to a teacher's attitude towards student's caring (Gage and Berliner, 1992). A teacher chooses to teach as a career because he or she may keen interests to share knowledge with others. The enthusiasm of a teacher can continue with personalizing teaching goal, the teacher improves with his or her own pace without peer comparisons or social pressure. The second activity of the 'Become an Innovative Educator' program can use to increase the self-confidence of tertiary teachers. For instance, if I get advice from Walker and Townley's 2012 study, such as caring about students' assignment tasks, I usually can design an effective assessment for school assignments. As another example, if I adhere to the academic honesty regulations to evaluate the course assignments, my tertiary students will feel fair and trust in this learning environment.

The third activity of the 'Become an Innovative Educator' program can help tertiary teachers understand their talents of assignment designs, assessment orientations and leadership in academic honesty in their workplaces. A tertiary teacher can be asked to list his or her innovative teaching talents. For example, I can share my innovative teaching experience with my colleagues. For another example, I can arrange an effective assessment method to evaluate my students' school assignments. On the other hand, I can maintain academic honesty regulations in my teaching course and my boss wants me to share this

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experience with academics from another university.

Tertiary administrators should encourage their teachers using similarity detection devices to avoid plagiarism. In addition, tertiary students' English academic writing skills can be trained through technical guidance and useful feedback (Faucher and Caves, 2009). Moreover, it is very hard to detect a high-quality purchased of papers or edited of reuse papers. The preventive and detective measures for such academic misconducts depend on academic experiences of tertiary teacher's assessment methods (Walker and Townley, 2012). For instance, a tertiary teacher can foresee that a tertiary student with poor academic writing ability is not enough to submit an excellent academic writing essay. In this case, some experienced tertiary teachers may ask this tertiary student to provide an explanation of his or her essay submission (Mahmood, 2009). The role model of tertiary teachers is an extremely important way to help tertiary students prevent plagiarism in their usual teaching practices (Faucher and Caves, 2009). Therefore, the academic work of tertiary teachers, such as classroom slides, teaching handouts and course outlines, should be properly cited and original. This is an important way to educate tertiary students to avoid plagiarism and maintain high-quality citation techniques. There are some resources for maintain high-quality citation techniques including 1) documentation guides (such as American Psychological Association, 2010; Trimmer, 2010) and 2) writing styles (such as Szuchman, 2014).

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6.2.4 Avoiding collusion

Avoiding collusion which means that a tertiary student should not work with another tertiary student to prepare and produce school assignments for offering as a student's solo assignment (The Education University of Hong Kong, 2016). Similarly, avoiding collusion including a student should not allow other students to gain an advantage through copying one's coursework (City University of Hong Kong, 2017). A tertiary learner or learners work with another tertiary learner or learners, as a solo or team to obtain a grade that these students are not entitled (Crook and Nixon, 2019). Sutherland-Smith (2013) has pointed out that collaboration and collusion are difficult to define. In order to solve this problem (confusion of collaboration and collusion), three scenarios were designed for investigating academic collusion, including 1) scenario 2: group project contributions, 2) scenario 4: unauthorized collaboration and 3) scenario 8: unauthorized sharing of works. Similar to avoiding plagiarism, tertiary teachers can use these scenarios to ask tertiary students 1) what is collusion? 2) how to avoid collusion? And 3) how to detect collusion? The classroom activities of avoiding plagiarism such as role-plays of scenarios can be found in the previous section in this chapter. Tertiary may follow the flow of avoiding plagiarism to expand classroom activities to avoid academic collusion.

To advancing the strategies of avoiding academic collusion, a 3-stage goal-setting program, 'Enjoying a group project' is recommended to increase tertiary students' motivation

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in school group projects. This goal-setting program is modified from ‘Become a Better Healthcare Professional’, which received an Oral Presentation Award in “the 9th Asian Medical Education Association Symposium”. In this chapter, ‘Become a Better Time Manager’ is recommended in the earlier section. The 3-stage goal-setting program, the process of ‘Enjoying a group project’ is modified from ‘Become a Better Time Manager’. Modification is the extension of an individual approach to a team-based approach. This goal-setting program consists of three stages including 1) aware of my team’s pace, 2) proclaiming my team’s ability, and 3) witnessing my team’s success. ‘Enjoying a group project’ is aimed to motivate tertiary students to engage academic honesty regarding group projects. Scenario 2, 4, 8 (Appendix C, p. 3, 5 and 9) can use as teaching materials for ‘Enjoying a group project’.

In scenario 2, three learners should finish an assignment together. They decided on their contributions. The night before their assignment was due, two of the students, Amy and Cathy uploaded their tasks to Microsoft OneNote (a digital program). Amy and Cathy alerted Bill several times, but he did not participate in the project. Amy and Cathy worked for three hours to complete Bill’s task. Then Bill asked Amy to include his name in their project. Amy had submitted their assignment with three group members’ names (Appendix C, p.3). Academic collusion in the group project is a serious form of academically misconducts. Some tertiary learners allow their peers to not contributing a reasonable share of effort regarding a

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group assignment, and all learner in the same group will receive the same mark of grade (Lim and See, 2001). The possible reasons for the tertiary students not paying a reasonable share of effort in a group assignment may include the tertiary students perceiving the course assignment is not important, teachers did not explain the rules in the class, other students cheated, and they were not caught (Kwong et al., 2010). Regards to the scope of this current study, the details of 'Enjoying a group project' will not present at this thesis.

Look at scenario 2, 4 and 8 (Appendix C, p. 3, 5 and 9), most tertiary students can decide whether these scenarios are collaboration or collusion. Tertiary teachers can use these scenarios to describe the definition of academic collusion. Through an understanding of academic collusion, teachers and students can discuss how to avoid academic collusion and detect it. Unlike plagiarism and academic collusion, falsification will be a very difficult academic misconduct to detect it, therefore, avoiding falsification regarding school assignments would be a top priority for future research (Cepero-Ascaso, García-Ramos and Martín-Ramos, 2016, November).

6.2.5 Avoiding falsification

Academic honesty is associated with avoiding falsification, which means that students should not mislead teachers ("the Hong Kong University of Science and Technology", 2017) by producing fabricating data or providing falsifying information ("The Education University of Hong Kong", 2016). Three scenarios were designed for exploring academic falsification,

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including 1) omitting respondent's opinions without reporting (scenario 3), 2) reference list falsification (scenario 5) and 3) interview data falsification (scenario 9). The second paragraphs of scenario 3 and 5, describe how the tertiary students report their own academic misconducts after something happened (Appendix C, p.4 and 6).

In scenario 3 (Appendix C, p.4), Eric, a tertiary student got an excellent result in a questionnaire assignment, but he was upset after his course lecturer praised him in front of the class. Lastly, Eric expressed the truth to his lecturer that he had not reported one participant's opinions. Everyone has experienced a small mistake; tertiary students are no exception. In some cases, most students are honest but in very difficult circumstances, some students make unethical decisions (Kish-ephart et al., 2010 and Stone et al., 2012). In scenario 5 (Appendix C, p.6), Ken, a student who did not have the motivation to write an essay, so he provided a falsified reference list in his essay. This student later attended an ethical lecture. After attending the lecture, Ken told the course lecturer that he had provided a falsified reference list in his essay. Why do these tertiary students, Eric and Ken report their academic misconducts to their course teachers?

A good rapport, a harmonious relationship between tertiary teachers and students can open communication channels (Faucher and Caves, 2009). After Eric's teacher praised him in class, Eric can report his mistakes. The possible reason is that Eric has a good relationship with his teacher. Eric believes his teacher will help him correct his mistakes. Ethical lectures

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can allow students to develop critical thinking skills (Gomez, 2018). After Ken attending an ethical lecture, Ken can report his mistakes. The possible reason is that Ken has developed his critical thinking skills, and he may realize that providing a falsified reference list is unacceptable in his school.

Honest costs and benefits can influence the value of honesty (Bureau and Mageau, 2014). Since limited research investigates the costs and benefits of academic honesty, it is recommended to use the research methods of Bureau and Mageau's 2014 study for future research. In scenario 9 (Appendix C, p.10), a tertiary student, Queenie pretended to have had interviewed with 20 people and provided forged information in her school assignment, but her academic misconduct was found out by her course lecturer. This student, Queenie failed in the course and she had to retake the course. This time, Queenie had done all the course work honestly. The tertiary student, Queenie begun to pursue higher education, and she may develop new interests such as e-sports international competitions, meet new people and stay in the university, which means she spends less time in the family. Thus, the character of tertiary teachers is very imperative to the value of academic honesty for tertiary students.

Bureau and Mageau (2014) believe that value of honesty can be affected by honest costs and benefits. A future study measurement can be modified according to Bureau and Mageau's 2014 study to further study academic honesty. The proposed change of items can be 1) if I forged the school assignment information, I would feel that I am not respectfully, 2) if I

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express academic truth to teachers, I would be an honest student, 3) if I express academic truth to teachers, we can have a better relationship, 4) if I express academic truth to teachers, I might feel that I am a spy, 5) If I express academic truth to teachers, my teachers would not like me and 6) After I had been caught for academic dishonesty, my teacher was willing to make a great contribution for restoring my development of academic honesty. These modified questionnaire items can be used for further study to assess the relationship between academic honesty values and, cost and benefit.

6.2.6 Translation of the self-administered questionnaire

The present study is a groundwork of an academic honesty project, the study measure is based on existing English literature, and an English version of a self-administered questionnaire is developed. As Chinese in Hong Kong's population accounts for 92% in 2016, 88.9% of Hong Kong's population speaks Cantonese, 4.3% speaks English, 1.9% speaks Putonghua and the rest speaks other languages ("Hong Kong Special Administrative Region Government", 2019*).* A further version of the self-administered research instrument such as a Chinese version is recommended.

Hong Kong tertiary students may be more familiar with the Chinese version self-administered questionnaire as the usual language in the Hong Kong population is Cantonese, some English version of the self-administered questionnaire have been translated into Chinese to suit the language needs of Hong Kong tertiary students. For example, an English

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version of "the Learning and Study Strategies Inventory" has been translated into a Chinese version by a bilingual psycholinguist and research assistance in Hong Kong (Yip, 2013). Another translation method, an English version of the "Spiritual Health and Life-Orientation Measure (SHALOM)" has been translated into a Chinese version through a back-translated method, for instance, the English version of SHALOM is translated into a Chinese version of SHALOM by a bilingual scholar in Hong Kong, who then has translated the Chinese version of SHALOM into English, this English version of SHALOM has been compared to the original English version of SHALOM by the developer of SHALOM (Fisher and Wong, 2013). These translation methods of the self-administered questionnaire are useful and suggested for future studies.

6.2.7 Applying the study instrument to other populations

The psychometric properties test identified five misfit items of scenario two (item 11, 12, 13, 14 and 15) which did not locate in the acceptable range (Table 2). According to these results of five misfit items, the rest of the items of scenario two (item 16, 17, 18, 19, and 20) were also excluded. According to the finding of tertiary students' experiences in avoiding collusion, there are almost 95% of tertiary students are considered collusion in the situation of uneven project contributions. Reasons for tertiary students cannot avoid academic collusions include interpersonal relationship problems in group projects, observing peer cheating, teachers not clearly explaining the requirements of class assignments and trying to

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help friends (Kwong et al., 2010). Further research for exploring these reasons can help find solutions to this collusion issue.

Collusion can be a very big difficulty for tertiary students to avoid. A private university in Hong Kong suggests that school should support tertiary teachers to create an academically misconduct free learning setting through advocating a reasonable and innovative method of academic assessment (Fung, Mui, Yee, and Ching, n.d.). On the other hand, the study instrument can be used for another survey, for example, further research focuses on the comparison between public and private universities or the universities with academic honesty promotion and the universities without academic honesty promotion, which is of great value for enriching moral management in the academic environment.

6.2.8 Applying the data analysis method to future research

Rasch analysis and Structural Equation Modeling (SEM) will continue to increase in popularity due to the advantages over earlier methods in certain circumstances (DeVellis, 2012). Several nations across the Asia-pacific region including Australia, Korea, Japan, New Zealand, Singapore, Papua New Guinea, Taiwan and Hong Kong have changed from using traditional test theory to Rasch analysis for handling data of students' assessments (Mok, 2013). The Rasch analysis technique facilitates the validity and reliability of study instrument including questionnaire format tools (Liu, Lee, Hofstetter and Linn, 2008). Foster, Min and Zickar (2017) have found that Rasch analysis conforms to best practices in a number of ways,

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however, there is still significant room for improvement in other areas, such as testing and report model fits. It is recommended the combined approach of Rasch analysis and SEM for data analysis to test the paths of theoretical models.

This combined approach of Rasch analysis and SEM has been applied to educational and healthcare studies for predicting 1) academic achievement of Hong Kong primary students through "Winsteps computer software (Version 3.72.3) (Linacre, 2011b)" and "Mplus statistical software package (Version 7) (Muthén and Muthén, 1998-2012)" ("Mok, Wong, Su, Tognolini and Stanley, 2014"), 2) "intentions and practices regarding formative assessment" of Hong Kong primary teachers through Winsteps computer software (Version 3.7) (Linacre, 2011a) and Amos 20 statistical software (Arbuckle, 2011) (Yan and Cheng, 2015). and 3) intention and behavior regarding workplace bullying of Taiwan hospital nurses using Winsteps computer software (Version 3.7) and PLS-SEM computer software (Hair, Hult, Ringle, Sarstedt, 2014 as cited in Ma, Wang and Chien, 2017).

These studies used Winsteps for data preparation and converted the person measure from ordinal scores to interval scores. Winsteps is priced at $149, with a data capacity of 9,999,999 persons by 60,000 items, and each item has a rating range of up to 255 categories, including user manuals and online help (Linacre, 2019). In addition, Ministep contains all features of Winsteps but is limited to 25 items and 75 cases (Linacre, 2019). Ministep is suitable for research with 75 or fewer participants, and reduced the research budget sounds

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good (Linacre, 2019). Another option, a new launch package 'Rwinsteps', which facilitates communication between the Rasch modeling software (Winsteps) and R (Albano, 2019). R is a non-commercial software for providing free statistical computing and graphics packages, that is compiled and runs on Windows and MacOS (R packages, 2019).

In scenario 3, a student, Eric did not know how to prepare his data before the analysis and led him to ignore the respondent's opinions without reporting. Ministep or the new launch Rwinsteps package is suitable for Eric's questionnaire project since there were 32 participants (Linacre, 2019). Eric can perform data analysis in accordance with the data preparation method in the current study (Chapter 3, Section 3.3.2.1) and avoid data falsification. On the other hands, many researchers use commercial software for SEM statistical calculations such as Mplus and Amos. This current study has used R package for Structural Equation Model (SEM) in "R (R Core Team, 2017: URL http://www.R-project.org/)" to perform path analysis because R is user-friendly and free for public software. Therefore, Rwinsteps or Ministep and R package for Structural Equation Model (SEM) in R are recommended for future data analysis to reduce costs.

6.2.9 Further study on "the Theory of Planned Behavior" model

The current study builds upon the study of Riemenschneider et al. (2011), our findings reveal tertiary students' intentions and behaviors of preserving academically honesty. The results path analysis suggested that students' intentions are mainly associated with students'

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attitudes toward behavior and perceived behavior control but not with the subjective norms. This finding highlighted that the subjective norm of avoiding academic dishonesty was not directly related to intentions of avoiding academic dishonesty, which was consistent with Chang's (1998) Hong Kong study. Since Chang (1998) proposed that future research might consider linking "subjective norms" with an "attitude towards behavior" and eliminating the link from subjective norms to intentions. Similarly, gender, level of education and place of birth can also be linked to attitude for further study.

Another factor is that religious beliefs can attempt to investigate tertiary students' attitude towards avoiding academic misconducts. Nelson, James, Miles, Morrell, and Sledge (2016) have found religious beliefs (a sub-construct of attitude toward behavior) will be negatively related to tertiary students' cheating behavior. This study (Nelson et al., 2016) has adopted four religious beliefs items from an unpublished master's project (Tolbert, 1990) to assess the relationship between religious beliefs and cheating behavior in American tertiary students. These four items were used in the study by Sutton and Huba (1995) to study the relationship between undergraduate learner insights of academic dishonesty and religious participation (Nelson et al., 2016). The current study has initiated a balanced approach that includes both positive and negative frameworks (Macfarlane et al., 2014) to explore tertiary student's academic honesty regarding school assignments in Hong Kong, the four religious beliefs items have been modified to accommodate future academic honesty studies. The

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modified religious items are 1) religion is an imperative, 2) I go to church, 3) I participate in a religious event such as a bible study group, Sunday school and choir, and 4) religion plays a role in my responsibility of academic honesty. These four items can be added to the current questionnaire to test the relationship between the intentions and behaviors of upholding academic honesty.

An addition factor, moral obligations also apply to investigate tertiary students' academic misconducts in some countries, such as India (Alleyne and Phillips, 2011), Poland, Ukraine, Romania, Turkey, Switzerland, New Zealand ("Chudzicka-Czupała, Grabowski, Mello, Kuntz, Zaharia, Hapon, Lupina-Wegener & Börü", 2016) the U. S. (Riemenschneider et al.). Moral obligations refer to a student's personal feelings and are related to a student's responsibility to commit or avoid academic misconducts (Ajzen 1991; Alleyne and Phillips, 2011). Three questionnaire items have been revised from the research of Harding et al., 2007, these modified items can be used for future studies. These questionnaire items are: 1) committing academic misconducts in school assignments violates my moral principles, and 2) I would feel guilty if I commit academic misconducts in school assignments, and 3) it would not be morally wrong for me to commit academic misconducts in school assignments.

6.2.10 Moral education

Moral education can cultivate honesty norm (McCabe, 1993). Moral training can help tertiary students to build an honest learning environment (García-Villegas et al., 2016). A

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further longitudinal study would assess the effectiveness of moral education. It is recommended that longitudinal approach of academic honesty assessment can provide more information about existing ethical education and provide a better direction for planning future pathways of ethical education. Tertiary students may pass on academically dishonest behaviors to the next generation (Cheuk et al., 2014). This is important and urgent to shape tertiary students' values towards academic honesty through moral education. Creating a moral academically culture that incorporates the effort of tertiary institutions, students and the community (Caldwell, 2010).

School administrators have taken on the important role in moral education such as establishing clear missions from the very beginning stage (Caldwell, 2010). By developing a clear academic honesty policy at tertiary education level, it may be a direct way to convey important moral information to school stakeholders (Zeng and Resnik, 2010). For example, the mission of a public university has been established in 2009 ("City University of Hong Kong", 2009), some of the guiding principles help tertiary teachers and students toward to the school mission through nurturing and developing tertiary students to achieve academic success and benefit the social wellbeing of Hong Kong ("City University of Hong Kong", 2019). Another example of a public teaching training university, the mission is embraced the major value of learning and teaching including, moral responsibility, professionalism, innovation, societal caring and global awareness to provide a multi-disciplinary studying and

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research atmosphere to support students to become ethically outstanding responsible educators or professionals (“The Education University of Hong Kong”, n.d.).

Some of the universities have been established a clear mission with guiding principles, the next stage is to provide orientation and training to teachers (Caldwell, 2010). Tertiary institutions **a**ffirm their tertiary teachers have the roles to inspiring students to advance truth work and avoid academic misconducts would be very useful to promote academic honesty in the schools. To facilitate the information of maintaining academic honesty can reach tertiary teachers and students, tertiary institutions should hold the irreplaceable role to enhance the academic environment of avoiding academic misconducts and upholding academic truth.

Tertiary institutions are also responsible to develop efficient and effective manuals for handling academic misconducts. This manual would help tertiary teachers understand the academic regulations and follow the steps to handle the issues of academic misconducts. According to the research finding by a private university Hong Kong, increasing the awareness of academic honesty will raise tertiary students’ academically honest discipline (Cheuk et al., 2014).

Research has found that there are no differences in disclosure of cheating and participation in ethical learning experiences among Asian and European tertiary students, however, the tertiary students who have read codes of academic conduct are more possible to involve in academic honesty (Henning et al., 2015). It is recommended to review the existing

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curriculum and practice of codes of academic conduct. This review can be performed in a variety of ways, such as through questionnaires and focus group interviews to collect up-to-date information from academic staff and tertiary students.

Collecting the latest information from academic staff can modify the Henning et al. 2015 questionnaire. The suggested questionnaire items for academic staff are: 1) My taught program proposes a learner's conduct code of academic honesty, 2) I have introduced the learner's conduct code of academic honesty to my students, 3) I have explained ethical manners regarding academic honesty during teaching time, and 4) My students have understood the learner's academic regulation regarding academic honesty. On the other hand, collecting the updated information from tertiary students also can revised the questionnaire items from Henning et al., 2015. The suggested items for tertiary students are: 1) My school program has a conduct code regarding academic honesty, 2) I understand the learner's conduct code of academic honesty, 3) I understand the ethical manners during performing academic activities, and 4) My teachers have explained the learner's conduct code of academic honesty in the class. The idea of collecting the latest information from academic staff and tertiary can outline the existing curriculum and practice of codes of academic conduct.

Focus group interviews can be a tool for following up the results of the questionnaires. Trained moderators play an important role in effective focus group interviews because trained

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moderators should have extensive knowledge of academic honesty and qualitative research skills to manage focus group interviews from participant recruitments to data analysis. For participants recruitments, participants are usually similar in terms of educational background and participants do not know each other. Thus, effective focus group interviews can be performed with the target group. For example, academic staff can be welcomed to join in focus group interviews for following up on the results of the academic staff questionnaires. Similarly, tertiary students can be welcomed to join in focus group interviews for following up on the results of the tertiary students' questionnaires. Developing the code of conduct and ensuring its assessable can clarifying any cultural misunderstanding of academic honesty (Henning et al., 2015).

One of the universities in Hong Kong has provided a moral training course, "Knowledge and attitudes towards Responsible Conducts of Research among Research post-graduates" (Jordan and Gray, 2013). However, some of the post-graduates reported that their supervisors did not support them to participate the moral training course such as the post-graduates did not get their supervisors' agreement or signature of the course application forms (Jordan and Gray, 2013). Attitudes toward avoiding academic misconducts and upholding academic truth of teaching staff also plays a significant role of moral education, if the view of maintaining academic honesty from teachers and schools are indifferent, students would commit academic dishonesty because learners may follow the attitudes and behaviors by observing the role

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models from their school teachers and principals (Kam, Hue and Cheung, 2018). Tertiary students believe that the existing soft regulations and loosely monitored rules are accountable for the academic honesty problems for young people (Wong et al., 2014). In line with the results of the Nga and Lum (2013) study, the severity of the consequences raises, it can foster greater incentives to avoid academic misconduct and uphold academic truth through telling students or friends to stop academic plagiarism, falsification and collusion.

The role of tertiary teachers is very imperative for maintaining academic honesty in moral education. According to Li's (2015) case study, academic staff in Hong Kong rarely use the textual similarity software (such as Turnitin) to detect student plagiarism. School administrators are advised to support their academic staff for training and applying textual similarity software as their usual educational tools (Li, 2015).

In particular, some tertiary students may leave their family members to facilitate learning. In order to foster tertiary students' academic honesty, tertiary teachers may follow McCabe and Pavela's (2004) principles. Firstly, tertiary teachers discuss the value of academically honest work in the classroom including sharing the joyful experiences in learning, helping learner to realize possible gains and loss from the internet. Secondly, tertiary teachers can develop fair and creative assessment formats such as refining course nature and scope of student collaboration. Lastly, tertiary teachers can encourage tertiary students to explain their responsibilities for promoting academic honesty. For example,

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tertiary students are explained the importance of supporting to academic honesty standard and responding to academic misconducts during the lectures or tutorials.

The first-person perspective on moral education among tertiary students is very limited. Fortunately, “the Independent Commission Against Corruption (ICAC)”, Hong Kong sets a high priority for promoting moral education to Hong Kong higher education learners (“The Hong Kong Independent Commission Against Corruption”, 2018). ICAC organized a Youth Integrity program in Hong Kong from 2013 to 2014 to promote the contribution of tertiary students in the integrity relay (“The Hong Kong Independent Commission Against Corruption”, 2014). In order to promote academic honesty through moral education, this Youth Integrity program can serve as a reference guide for educational organizations. McCabe and Pavela (2004) have stated that it is imperative to collect tertiary learners’ perspectives and suggestions for maintaining academic honesty (McCabe and Pavela, 2004).

A group of tertiary student researchers from a public university found that Hong Kong young people (these student researchers’ friends) would commit academically dishonest behavior such as plagiarism and making up data in their assignments, essays, reports and journals (Wong, Lai, Hung and Yung, 2014). Another group of tertiary student researchers from a private university found that when the temptation came, people around them would commit academic misbehavior (Cheuk et al, 2014). Au-Yeung, Chan, Chui, and Man (2014) suggested that when facing honesty challenges, there were four factors influent tertiary

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students' decision. These four influent factors are 1) family, 2) peers, 3) social norms and 4) values (such as money and power). With regard to the opinions of tertiary student researchers, some practical suggestions on doing the right things are very useful for helping tertiary students to adhere to academic honesty when facing the temptations or challenges of academic honesty that present in the next section.

The community defines as a number of people living in a place, for example, people in a region or country are considered to be cooperative, particularly regarding the similar aspect of social standards and duties (Oxford Living Dictionaries, n.d.). Tertiary students are the main future professionals in the community such as scholars, lawyers and politicians, so it is very important to help tertiary students develop higher moral standard (Lin and Wen, 2007). Studies have shown that tertiary students' beliefs on the opinions of their families, peers and teachers can be linked to the tendency of tertiary students' inclination to avoid academic misconducts and uphold academic truth (Chudzicka-Czupała, Lupina-Wegener, Borter and Hapon, 2013; Stone et al., 2009).

Parental education can reduce academic dishonesty and help children build appropriate values of honesty by establishing good examples (Cheuk et al., 2014). Parents can educate children about the right attitude towards honesty when they are young. People need love and care, creating a caring and student-centered environment that develops a peaceful atmosphere for promoting academic honesty and prohibiting cheating norm in the academic setting

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(Harding, Carpenter and Finelli, 2012)

The honest atmosphere is another influence of maintaining academic honesty (Cheuk et al., 2014). For example, the mass media can create academic honesty culture to avoid academic misconducts and uphold academic truth by organizing academically honest campaigns and producing related films via several channels such as Facebook, Instagram and YouTube. Furthermore, Harding, Carpenter and Finelli (2012) have suggested encouraging tertiary students to participate in community service, campus judiciary systems and leadership training can improve the moral development of tertiary students because they can expand their knowledge in teamwork skills through these activities. Longitudinal studies can provide a comprehensive research approach to keep tracking of changes over time, but such research approach requires higher costs and more time to complete the whole research (Caruana, Roman, Hernández-Sánchez and Solli, 2015). It is also recommended researchers interested in longitudinal studies should consider cost and time availability before beginning a longitudinal study.

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Appendix A: Ethical approval for the pilot study

香港教育大學
The Education University of Hong Kong

31 August 2017

Ms NG Yuet Ming
Doctor of Education Programme
Graduate School

Dear Ms Ng,

Application for Ethical Review <Ref. no. 2016-2017-0368>

I am pleased to inform you that approval has been given by the Human Research Ethics Committee (HREC) for your research project:

Project title: Exploring University Students Academic Honesty in Assignment

Ethical approval is granted for the project period from 31 August 2017 to 15 August 2019. If a project extension is applied for lasting more than 3 months, HREC should be contacted with information regarding the nature of and the reason for the extension. If any substantial changes have been made to the project, a new HREC application will be required.

Please note that you are responsible for informing the HREC in advance of any proposed substantive changes to the research proposal or procedures which may affect the validity of this ethical approval. You will receive separate notification should a fresh approval be required.

Thank you for your kind attention and we wish you well with your research.

Yours sincerely,

[redacted]

Patsy Chung (Ms)
Secretary
Human Research Ethics Committee

c.c. Professor WANG Wen Chung, Chairperson, Human Research Ethics Committee

香港新界大埔露屏路十號
10 Lo Ping Road, Tai Po, New Territories, Hong Kong
T (852) 2948 8888 F (852) 2948 6000 www.eduhk.hk

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Appendix B: Ethical approval for the main study

香港教育大學
The Education University of Hong Kong

15 March 2018

Ms NG Yuet Ming
Doctor of Education Programme
Graduate School

Dear Ms Ng,

Application for Ethical Review <Ref. no. 2017-2018-0327>
(Old Ref. no. 2016-2017-0368)

I am pleased to inform you that further approval has been given by the Human Research Ethics Committee (HREC) for your research project:

Project title: Exploring University Students Academic Honesty in Assignment

Ethical approval is granted for the project period from 31 August 2017 to 15 August 2019. If a project extension is applied for lasting more than 3 months, HREC should be contacted with information regarding the nature of and the reason for the extension. If any substantial changes have been made to the project, a new HREC application will be required.

Please note that you are responsible for informing the HREC in advance of any proposed substantive changes to the research proposal or procedures which may affect the validity of this ethical approval. You will receive separate notification should a fresh approval be required.

Thank you for your kind attention and we wish you well with your research.

Yours sincerely,

[redacted]

Patsy Chung (Ms)
Secretary
Human Research Ethics Committee

c.c. Dr WONG Mun Amanda, Deputy Chairperson, Human Research Ethics Committee

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Appendix C: Final form of the instrument

Project Title: Exploring University Students' Academic Honesty in Assignments
Project objectives: To assess the intention and behavior of university students in Hong Kong with regards to maintaining academic honesty in assignments

This questionnaire is completely anonymous.

Directions of filling in the questionnaires:
Part 1
Please read each scenario. Then give a ☑ to the **one** response (Never, Rarely, Sometimes, Often or Always) that represents your agreement with the items of the experience in scenarios.

Please continue to complete the questionnaire and indicate the extent to which you agree or disagree with each item. The item scale has 5 options that range from **strongly DISAGREE (1)** to **strongly AGREE (5).** Please carefully give a ☑ to the one response that most clearly represents your level of agreement of the items.

Strongly Disagree	Disagree	Neither Agree nor Disagree	Agree	Strongly Agree
1	2	3	4	5

Part 2
Please give a ☑ to the **one** response (True or False) that represents your agreement with the items.

Part 3
Please answer the questions about your demographic characteristics.

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Part 1

Scenario 1

It was 11 o'clock at night. Susan was on Facebook chatting with her friends. She had not started writing her essay assignment which was due the next day. One of her friends, ***Tim, suggested that Susan submit part of her previous work that she had submitted for another course.***

Another friend on Facebook, ***John pointed out that Tim's suggestion was not honest.***

I have had Tim's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Tim's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had John's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had John's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

1a. Tim's suggestion: ***Tim suggested that Susan submit part of her previous work that she had submitted for another course.***

Items		**1**	**2**	**3**	**4**	**5**	
1. If I were Susan's Facebook friend, I would support Susan to follow Tim's suggestion.	Strongly disagree						Strongly agree
2. If I followed Tim's suggestion, people around me would accept it.	Strongly disagree						Strongly agree
3. Tim's suggestion would be easy for me to follow.	Strongly disagree						Strongly agree
4. If I were in Susan's situation, I would intend to follow Tim's suggestion.	Strongly disagree						Strongly agree
5. If I were in Susan's situation, I would actually follow Tim's suggestion.	Strongly disagree						Strongly agree

1b. John's point of view: ***John pointed out that Tim's suggestion was not honest.***

Items		**1**	**2**	**3**	**4**	**5**	
6. If I were Susan's Facebook friend, I would support John's point of view.	Strongly disagree						Strongly agree
7. If I expressed John's point of view, people around me would accept it.	Strongly disagree						Strongly agree
8. John's point of view would be easy for me to express.	Strongly disagree						Strongly agree
9. If I were in John's situation, I would intend to express the same point of view.	Strongly disagree						Strongly agree
10. If I were in John's situation, I would actually express the same point of view.	Strongly disagree						Strongly agree

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Scenario 2

Amy, Bill and Cathy had to complete a group project together. They decided on their contributions. The night before the project was due, Amy and Cathy uploaded their tasks to Microsoft OneNote (a digital program). Amy and Cathy alerted Bill several times, but he did not participate in the project. Amy and Cathy worked for three hours to complete Bill's task. Then Bill asked Amy to include his name in their project. ***Amy submitted the project with all the group members' names.***

The next day, ***Cathy told the course lecturer that Bill had not participated in the project.***

I have had Amy's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Amy's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Cathy's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Cathy's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

2a. Amy's behavior: *Amy submitted the project with all the group members' names.*

Items		**1**	**2**	**3**	**4**	**5**	
11. If I were in Amy's situation, I would support Amy's behavior.	Strongly disagree						Strongly agree
12. If I performed Amy's behavior, people around me would accept it.	Strongly disagree						Strongly agree
13. Amy's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
14. If I were in Amy's situation, I would intend to perform Amy's behavior.	Strongly disagree						Strongly agree
15. If I were in Amy's situation, I would actually perform Amy's behavior.	Strongly disagree						Strongly agree

2b. Cathy's behavior: *Cathy told the course lecturer that Bill had not participated in the project.*

Items		**1**	**2**	**3**	**4**	**5**	
16. If I were in Cathy's situation, I would support Cathy's behavior.	Strongly disagree						Strongly agree
17. If I performed Cathy's behavior, people around me would accept it.	Strongly disagree						Strongly agree
18. Cathy's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
19. If I were in Cathy's situation, I would intend to perform Cathy's behavior.	Strongly disagree						Strongly agree
20. If I were in Cathy's situation, I would actually perform Cathy's behavior.	Strongly disagree						Strongly agree

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Scenario 3

Eric was a student who worked on a questionnaire project with 32 respondents. He found that one of the respondents was giving opposite opinions to the other 31 respondents on each item of the whole questionnaire. These opinions invalidated his questionnaire items. ***Eric omitted this respondent's opinions, but he did not mention this issue in his report. He recorded only the other 31 respondents in his report.***

Eric got an A grade in this project. He felt guilty because the course lecturer praised him in front of the class. Finally, ***Eric told the course lecturer that he had omitted one respondent's opinions.***

I have had Eric's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Eric's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Eric's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Eric's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

3a. Eric's behavior 1: ***Eric omitted this respondent's opinions but he did not mention this issue in his report. He recorded only the other 31 respondents in his report.***

Items		**1**	**2**	**3**	**4**	**5**	
21. If I were in Eric's situation, I would support Eric's behavior 1.	Strongly disagree						Strongly agree
22. If I performed Eric's behavior 1, people around me would accept it.	Strongly disagree						Strongly agree
23. Eric's behavior 1 would be easy for me to perform.	Strongly disagree						Strongly agree
24. If I were in Eric's situation, I would intend to perform Eric's behavior 1.	Strongly disagree						Strongly agree
25. If I were in Eric's situation, I would actually to perform Eric's behavior 1.	Strongly disagree						Strongly agree

3b. Eric's behavior 2: ***Eric told the course lecturer that he had omitted one respondent's opinions.***

Items		**1**	**2**	**3**	**4**	**5**	
26. If I were in Eric's situation, I would support Eric's behavior 2.	Strongly disagree						Strongly agree
27. If I performed Eric's behavior 2, people around me will accept it.	Strongly disagree						Strongly agree
28. Eric's behavior 2 would be easy for me to perform.	Strongly disagree						Strongly agree
29. If I were in Eric's situation, I would intend to perform Eric's behavior 2.	Strongly disagree						Strongly agree
30. If I were in Eric's situation, I would perform Eric's behavior 2.	Strongly disagree						Strongly agree

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Scenario 4

Gigi and Henry took the same course of statistics. According to the course outline, a ***multiple-choice*** assignment should be completed individually. Both Gigi and Henry were busy with their internship. They decided to share the effort to complete the assignment. ***Gigi did the first part and Henry did the last part of the assignment. They each turned in the first and last parts of the assignment for their individual course work.***

Henry told his friend, Irene about the unauthorized collaboration of the statistic assignment. ***Irene immediately pointed out that Gigi and Henry were wrong and that, they should report what they had done to their course lecturer.***

I have had Gigi and Henry's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Gigi and Henry's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Irene's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Irene's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

4a. Gigi and Henry's behavior: ***Gigi did the first part and Henry did the last part of the assignment. They each turned in the first and last parts of the assignment for their individual course work.***

Items		**1**	**2**	**3**	**4**	**5**	
31. If I were in Gigi and Henry's situation, I would support Gigi and Henry's behavior.	Strongly disagree						Strongly agree
32. If I performed Gigi and Henry's behavior, people around me will accept it.	Strongly disagree						Strongly agree
33. Gigi and Henry's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
34. If I were in Gigi and Henry's situation, I would intend to perform their behavior.	Strongly disagree						Strongly agree
35. If I were in Gigi and Henry's situation, I would actually perform their behavior.	Strongly disagree						Strongly agree

4b. Irene's behavior: ***Irene immediately pointed out that Gigi and Henry were wrong and that, they should report what they had done to their course lecturer.***

Items		**1**	**2**	**3**	**4**	**5**	
36. If I were in Irene's situation, I would support Irene's behavior.	Strongly disagree						Strongly agree
37. If I performed Irene's behavior, people around me would accept it.	Strongly disagree						Strongly agree
38. Irene's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
39. If I were in Irene's situation, I would intend to perform Irene's behavior.	Strongly disagree						Strongly agree
40. If I were in Irene's situation, I would perform Irene's behavior.	Strongly disagree						Strongly agree

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Scenario 5

Ken did not have the motivation to write an essay. After completing the essay, he did not check the references that he had used and ***provided a falsified reference list in his essay.***

Ken later attended an ethical lecture which was conducted by his university. After attending the lecture, *he* ***told the course lecturer that he had provided a falsified reference list in his essay.***

I have had Ken's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Ken's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Ken's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Ken's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

5a. Ken's behavior 1: Ken *provided a falsified reference list in his essay.*

Items		**1**	**2**	**3**	**4**	**5**	
41. If I were in Ken's situation, I would support Ken's behavior 1.	Strongly disagree						Strongly agree
42. If I performed Ken's behavior 1, people around me would accept it.	Strongly disagree						Strongly agree
43. Ken's behavior 1 would be easy for me to perform.	Strongly disagree						Strongly agree
44. If I were in Ken's situation, I would intend to perform Ken's behavior 1.	Strongly disagree						Strongly agree
45. If I were in Ken's situation, I would actually perform Ken's behavior 1.	Strongly disagree						Strongly agree

5b. Ken's behavior 2: Ken *told the course lecturer that he had provided a falsified reference list in his essay.*

Items		**1**	**2**	**3**	**4**	**5**	
46. If I were in Ken's situation, I would support Ken's behavior 2.	Strongly disagree						Strongly agree
47. If I performed Ken's behavior 2, people around me would accept it.	Strongly disagree						Strongly agree
48. Ken's behavior 2 would be easy for me to perform.	Strongly disagree						Strongly agree
49. If I were in Ken's situation, I would intend to perform Ken's behavior 2.	Strongly disagree						Strongly agree
50. If I were in Ken's situation, I would actually perform Ken's behavior 2.	Strongly disagree						Strongly agree

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Scenario 6

Lily was a first-year university student. She made friends with a senior student, Mark. Mark gave one of his first-year essays to Lily for reference. ***Lily sent Mark's essay to an Online Editing Company for word processing and submitted the edited essay as her own work.***

The following month, Lily told Mark that she had had an excellent result on the edited essay. Mark told Lily that she had committed academic dishonesty and that she should report her action to her course lecturer. Two months later, Lily still refused to report her action. ***Mark reported Lily's action to Lily's course lecturer.***

I have had Lily's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Lily's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Mark's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Mark's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

6a. Lily's behavior: ***Lily sent Mark's essay to an Online Editing Company for word processing and submitted the edited essay as her own work.***

Items		**1**	**2**	**3**	**4**	**5**	
51. If I were in Lily's situation, I would support Lily's behavior.	Strongly disagree						Strongly agree
52. If I performed Lily's behavior, people around me would accept it.	Strongly disagree						Strongly agree
53. Lily's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
54. If I were in Lily's situation, I would intend to perform Lily's behavior.	Strongly disagree						Strongly agree
55. If I were in Lily's situation, I would actually perform Lily's behavior.	Strongly disagree						Strongly agree

6b. Mark's behavior: ***Mark reported Lily's cheating action to Lily's course lecturer.***

Items		**1**	**2**	**3**	**4**	**5**	
56. If I were in Mark's situation, I would support Mark's behavior.	Strongly disagree						Strongly agree
57. If I performed Mark's behavior, people around me would accept it.	Strongly disagree						Strongly agree
58. Mark's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
59. If I were in Mark's situation, I would intend to perform Mark's behavior.	Strongly disagree						Strongly agree
60.If I were in Mark's situation, I would actually perform Mark's behavior.	Strongly disagree						Strongly agree

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Scenario 7

Dr. Lee was a course lecturer of social science. He did not require his students to submit their essays through any plagiarism detection tools. Nancy was Dr. Lee's student. Nancy was anxious to write an English essay because her English writing skills were not good. She did a Google search of 'how to purchase an essay online' and ***purchased an essay from one of the online services for her essay work.***

The next week, Nancy heard that a senior student was caught buying an online thesis. The university deferred this senior student's graduation. Nancy was very worried. A few days later, ***Nancy told Dr. Lee that she had purchased an online essay.*** Dr. Lee found that her essay had a 60% similarity index.

I have had Nancy's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Nancy's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Nancy's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

7a. Nancy's behavior 1: Nancy *purchased an essay from one of the online services for her essay work.*

Items		**1**	**2**	**3**	**4**	**5**	
61. If I were in Nancy's situation, I would support Nancy's behavior 1.	Strongly disagree						Strongly agree
62. If I performed Nancy's behavior 1, people around me would accept it.	Strongly disagree						Strongly agree
63. Nancy's behavior 1 would be easy for me to perform.	Strongly disagree						Strongly agree
64. If I were in Nancy's situation, I would intend to perform Nancy's behavior 1.	Strongly disagree						Strongly agree
65. If I were in Nancy's situation, I would perform Nancy's behavior 1.	Strongly disagree						Strongly agree

7b. Nancy's behavior 2: *Nancy told Dr. Lee that she had purchased an online essay.*

Items		**1**	**2**	**3**	**4**	**5**	
66. If I were in Nancy's situation, I support Nancy's behavior 2.	Strongly disagree						Strongly agree
67. If I performed Nancy's behavior 2, people around me would accept it.	Strongly disagree						Strongly agree
68. Nancy's behavior 2 would be easy for me to perform.	Strongly disagree						Strongly agree
69. If I were in Nancy's situation, I would intend to perform Nancy's behavior 2.	Strongly disagree						Strongly agree
70.If I were Nancy's situation, I would actually perform Nancy's behavior 2.	Strongly disagree						Strongly agree

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Scenario 8

Olivia and Pan took a psychology course. The individual assignment was quite complex, requiring each student to study the four theories with only two weeks to complete it. The instruction for this assignment emphasized that every student should work independently without sharing work. ***Olivia and Pan agreed to share their work in this individual assignment.*** They each chose two theories and prepared a summary that was shared through Google Docs. Then each of them used the shared summaries to write their own assignment.

One month later, both Olivia and Pan got very good results. Their classmate, ***Rose knew that Oliva and Pan had shared their work in this individual assignment and reported it to the course lecturer.***

I have had Olivia and Pan's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Olivia and Pan's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Rose's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Rose's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

8a. Olivia and Pan's behavior: ***Olivia and Pan agreed to share their work in this individual assignment.***

Items		**1**	**2**	**3**	**4**	**5**	
71. If I were in Olivia and Pan's situation, I would support Olivia and Pan's behavior.	Strongly disagree						Strongly agree
72. If I performed Olivia and Pan's behavior, people around me would accept it.	Strongly disagree						Strongly agree
73. Olivia and Pan's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
74. If I were in Olivia and Pan's situation, I would intend to perform their behavior.	Strongly disagree						Strongly agree
75. If I were in Olivia and Pan's situation, I would actually perform their behavior.	Strongly disagree						Strongly agree

8b. Rose's behavior: ***Rose knew that Oliva and Pan had shared their work in this individual assignment and reported it to the course lecturer.***

Items		**1**	**2**	**3**	**4**	**5**	
76. If I were in Rose's situation, I would support Rose's behavior.	Strongly disagree						Strongly agree
77. If I performed Rose's behavior, people around me would accept it.	Strongly disagree						Strongly agree
78. Rose's behavior would be easy for me to perform.	Strongly disagree						Strongly agree
79. If I were in Rose's situation, I would intend to perform Rose's behavior.	Strongly disagree						Strongly agree
80.If I were in Rose's situation, I would actually perform Rose's behavior.	Strongly disagree						Strongly agree

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Scenario 9

Queenie participated in an international competition. The prizes of this competition were very attractive. She needed a lot of time to prepare for this competition. At the same time, she had to submit a report on 20 detailed interviews for one of her courses. ***Queenie pretended to have had interviews and provided falsified information.***

Queenie failed in the course because her course lecturer discovered the falsified results. She had to re-take the course. ***This time, Queenie was honest in completing all the course work.***

I have had Queenie's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Queenie's experience. (First paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
I have had Queenie's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always
People around me have had Queenie's experience. (Second paragraph).	☐ Never	☐ Rarely	☐ Sometimes	☐ Often	☐ Always

9a. Queenie's behavior 1: ***Queenie pretended to have had interviews and provided falsified information.***

Items		**1**	**2**	**3**	**4**	**5**	
81. If I were in Queenie's situation, I would support Queenie's behavior 1.	Strongly disagree						Strongly agree
82. If I performed Queenie's behavior 1, people around me would accept it.	Strongly disagree						Strongly agree
83. Queenie's behavior 1 would be easy for me to perform.	Strongly disagree						Strongly agree
84. If I were in Queenie's situation, I would intend to perform Queenie's behavior 1.	Strongly disagree						Strongly agree
85. If I were in Queenie's situation, I would actually perform Queenie's behavior 1.	Strongly disagree						Strongly agree

9b. Queen's behavior 2: ***This time, Queenie was honest in completing all the course work.***

Items		**1**	**2**	**3**	**4**	**5**	
86. If I were in Queenie's situation, I would support Queenie's behavior 2.	Strongly disagree						Strongly agree
87. If performed Queenie's behavior 2, people around me would accept it.	Strongly disagree						Strongly agree
88. Queenie's behavior 2 would be easy for me to perform.	Strongly disagree						Strongly agree
89. If I were in Queenie's situation, I would intend to perform Queenie's behavior 2.	Strongly disagree						Strongly agree
90. If I were in Queenie's situation, I would actually perform Queenie's behavior 2.	Strongly disagree						Strongly agree

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Part 2

Please give a ☑ to the **one** response (True or False) that most clearly represents your agreement of the items.

1	I have never intensely disliked anyone. 我從沒有强烈地厭惡過任何人。	☐ True ☐ False
2	I sometimes feel resentful when I don't get my way. 有時，我會因未能如願而滿腹怨氣。	☐ True ☐ False
3	No matter who I'm talking to, I' m always a good listener. 無論跟誰談話，我都是最佳聆聽者。	☐ True ☐ False
4	There have been occasions when I took advantage of someone. 我有過佔別人便宜的時候。	☐ True ☐ False
5	I' m always willing to admit it when I make a mistake. 我做錯事後總是勇於認錯。	☐ True ☐ False
6	I sometimes try to get even rather than forgive and forget. 有時，我寧可對別人報復，也不願寬恕或忘記了之。	☐ True ☐ False
7	There have been occasions when I felt like smashing things. 有時，我想要砸東西來出氣。	☐ True ☐ False
8	There have been times when I was quite jealous of the good fortune of others. 有時，我頗嫉妒別人的幸運。	☐ True ☐ False
9	I have never felt that I was punished without cause. 我從未感到自己的受罰是無故的。	☐ True ☐ False
10	I have never deliberately said something that hurt someone's feeling. 我從來沒有故意說些傷害別人感受的話。	☐ True ☐ False

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Part 3

Please answer **ALL** items. Your information is very important to our project.

Gender: ☐ male ☐ female

Age: _____

Level of study in your present program:

☐ Certificate ☐ Diploma ☐ Higher Diploma ☐ Associate Degree ☐ Bachelor Degree

☐ Master Degree ☐ MPhil Degree ☐ Doctoral Degree ☐ PhD Degree ☐ Others: _____

The highest educational level obtained: _____

Year of study in your present program: ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ Others: _____

Name of your present institution: _____

Mode of study: ☐ Full-time ☐ Part-time

Self-finance program: ☐ Yes ☐ No

Place of Birth: ☐ HKSAR ☐ China ☐ Others: _____

Religion: ☐ Yes, please state_____ (i.e. Anglican, Buddhist, Catholic, Christian. etc.) ☐ No

Daily usage of electronic devices (Including for study and non-study purposes): _____Hours

~Thank you for your participation~

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