



Bachelor of Education (Honours)
(English Language) (Five-year Full-time)
Honours Project

Pre-service Teachers' Training, Knowledge and Perception
towards Students with Attention Deficit and Hyperactivity
Disorder: A Cross-cultural Comparison between
Hong Kong and Mainland China

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Abstract

This exploratory study inquired into pre-service teachers' views towards students with Attention Deficit and Hyperactivity Disorder (ADHD) in Hong Kong and Mainland China including pre-service teachers' knowledge and misperception of ADHD and their acceptability towards students with ADHD, and also investigates the training about how to support students with ADHD that pre-service teachers in Hong Kong and Mainland China have received at university level. The participants selected for this study were the pre-service teachers who enrolled in undergraduate programs of education in universities and were studying in the final year of universities. There were 50 pre-service teachers from Hong Kong and also 50 pre-service teachers from Mainland China introduced and invited by emails and posters who completed a 10-minute questionnaire for the study. Based on the results of study, this paper compares and contrasts the similarities and differences of pre-service teachers' views towards students with ADHD between Hong Kong and Mainland China, and analyzes the reasons for similarities and differences and discusses the different consequences of supporting students with ADHD in Hong Kong and Mainland China.

Keywords: Attention Deficit Hyperactivity Disorder (ADHD); Knowledge; Perception; Training; Pre-service teachers; Hong Kong; Mainland China

**Pre-service Teachers' Training, Knowledge and Perception towards Students
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1. Introduction

According to American Psychiatric Association (2013), Attention Deficit and Hyperactivity Disorder (ADHD) is a neurodevelopmental disorder characterized by a consistent pattern of inattention and/or hyperactivity-impulsivity and displayed as actions that are not appropriate for the person's age, such as difficulties of controlling behaviors, problems of paying attention and excessive activities. According to Pierrehumbert, Bader, Thevoz, Kinal, & Halfon (2006), ADHD is one of the most frequently diagnosed mental health disorders observed in childhood and the world-wide merged prevalence rate of ADHD is 5.29% (Polanczyk, Lima, Horta, Biederman, & Rohde, 2007). Thus, how to cater for the students with ADHD is an important issue for the teachers in all the countries, including Mainland China and Hong Kong.

With timely treatment, many students with ADHD can achieve their potential as individuals in school (Richters, Arnold, Jensen, et al, 1995). Thus, identifying affected children as early as possible and referring them for treatment is very important. The behaviours associated with ADHD are often first observed in the classroom setting and therefore a teacher is the first person to raise concerns about the child (Weber, Frankenberger, & Heilman, 1992). Based on the survey conducted by Snider, Frankenberger, & Aspenon (2000), nearly 40% of medical referrals regarding ADHD are initiated by the teachers. Therefore, teachers are one of the most important

sources of information in making the diagnosis of ADHD. According to The MTA Cooperative Group (1999), the most effective therapeutic approach for childhood ADHD is multimodal treatment which consists of multiple elements including stimulant medication, educational programmes, parental training, behavioural techniques at school and home. Thus, teachers also play a key role in ADHD treatment planning and implementation. Insufficient knowledge and negative perception towards ADHD and its treatment among teachers result in lack or improper implementation of management recommendations leading to treatment failure. Teachers may take harsh and unjust punitive actions against the affected child who is unable to complete school tasks and has apparent disruptive behaviour in the classroom, which could lead to negative consequences and counterproductive outcomes (Snider, Busch, & Arrowood, 2003).

With the development of inclusive education, there are more and more students with ADHD studying in the mainstream schools. Therefore, how to support these students with ADHD is an important issue for the pre-service teachers. Pre-service teachers (PST) are those who are enrolled in the undergraduate program of education and want to be a teacher in the future. To consider the importance of knowledge and perception towards students with ADHD among schoolteachers, the training to the pre-service teachers is really important in education of undergraduate level (Avramidis, Bayliss, & Burden, 2000). As the pre-service teacher training is the initial method to change teachers' views and perception towards students with ADHD, it is important to investigate the situation in China. As a result of the 'One country, two systems' policy, Mainland China follows socialist system while Hong Kong carries

out capitalism. With the capitalist economic system same as western countries and the international status and higher development of education, Hong Kong attaches more importance to the inclusive education, including the students with ADHD in the mainstream schools. However, the development of special education in Mainland China is not as good as that in Hong Kong (Lian & Deng, 2007). Therefore, investigating the pre-service teachers' views and perception towards students with ADHD is an effective way to compare the differences of teachers how to cater for students with ADHD between Hong Kong and Mainland China.

Some researchers have conducted the survey about in-service, pre-service and student teachers' views towards students with ADHD in different countries (Akram et al., 2009; Crowson, & Brandes, 2013; Ahsan, Sharma, & Deppeler, 2012; Perold, Louw, & Kleynhans, 2010). However, there is no research about the pre-service teachers' views towards ADHD in Hong Kong and Mainland China. Thus, there are two objectives that the study wants to achieve. At first, this study aims to compare the differences between Hong Kong and Mainland China in terms of pre-service teachers' training of university level on how to support students with ADHD. Secondly, this study also aims to compare the differences between Hong Kong and Mainland China in terms of pre-service teachers' views towards students with ADHD, including their acceptability and degree of awareness and understanding about students with ADHD. The findings of this research can show the effectiveness of the training towards Hong Kong and Mainland Chinese pre-service teachers about how to support the students with ADHD during the university, so that we can know whether the training of the pre-service teachers is enough to prepare them to work with ADHD students.

According to Hong Kong and Mainland Chinese pre-service teachers' knowledge and misperception of ADHD, the results of this research also can provide an overview of the development status of inclusive education in Hong Kong and Mainland China.

2. Literature Review

2.1. Pre-service teachers' knowledge of ADHD

Some western researchers have conducted the researches about teachers' knowledge of ADHD. Jerome, Gordon and Hustler (1994) designed a questionnaire with 20-item untitled scale that participants need to choose *True* or *False* towards some statements about ADHD, in order to compare American and Canadian teachers' knowledge of ADHD. Anderson, Watt, Noble, and Shanley (2012) concluded that the studies based on Jerome et al.'s questionnaire showed pre-service teachers' knowledge of ADHD ranging from 75.6% (Bekle, 2004) to 77% of correct answers (Jerome, Washington, Laine, & Segal, 1999). Sciutto, Terjesen and Bender Frank (2000) modified Jerome et al.'s questionnaire by adding '*don't know*' as the third option of participants' response. The items in Sciutto et al.'s questionnaire are divided into three subscales, including symptoms, general information and causes, and treatments. According to Sciutto et al.'s study in America, teachers' knowledge of symptoms of ADHD (M=62.78%) was better than their knowledge of treatment of ADHD (M=42.83%) and general information and causes of ADHD (42.87%). However, the similar research focusing on pre-service teachers' knowledge of ADHD in Hong Kong and Mainland China context is insufficient. To our knowledge, Liang and Gao (2016) conducted a study to compare the differences between Hong Kong pre-service teachers and Hong Kong in-service teachers' knowledge of ADHD, with two different versions of the

questionnaire respectively distributed to pre-service teachers and in-service teachers. According to Liang and Gao (2016)'s findings, Hong Kong pre-service teachers show 67.52% of correct answers based on their knowledge of ADHD. However, only two options of 'True' or 'False' are designed in the questionnaire of Liang and Gao (2016)'s study, which increases the chance of a respondent correctly guessing the answer. In Mainland China, some researchers conducted the surveys about in-service teachers' knowledge of ADHD in Zhangzhou and Shanghai (Liu, 2013; Jin, Du, Zhong, & Rui, 2010). However, there is no research about pre-service teachers in Mainland China. Therefore, this is the first study to compare Mainland Chinese and Hong Kong pre-service teachers' knowledge of ADHD students.

2.2. Pre-service teachers' perception towards students with ADHD

Pre-service teachers' perception towards students with ADHD refers to pre-service teachers' ideology, beliefs and predisposition towards the group of students with ADHD in these pre-service teachers' classes (Cimbricz, 2002). Pre-service teachers' perception has a significant effect on their behaviors about how to support students with ADHD in their teaching process. Therefore, the study about pre-service teachers' perception towards students with ADHD is very meaningful, especially investigating pre-service teachers' acceptability towards students with ADHD. However, Kos et al. (2006) concluded a literature review of the studies about teachers' perception towards students with ADHD and showed there is a little literature providing a theoretical understanding about teachers' perception towards students with ADHD. Some researchers in other countries tried to use different items to measure in-service teachers' perception towards students with ADHD (Anderson,

Watt, Noble, & Shanley, 2012; Bornman, & Donohue, 2013; Curtis, Pisecco, Hammilton, & Moore, 2006; Jerome, Gordon, & Hustler, 1994; Kasten, Coury, & Heron, 1992). However, the studies focusing on pre-service teachers are limited. Several researchers compared in-service teachers and pre-service teachers' perception towards students with ADHD (Bekle, 2004; Jerome, Washington, Laine, & Segal, 1999). In Hong Kong, Liang and Gao (2016) also conducted a study to compare in-service teachers and pre-service teachers' different perception towards students with ADHD. According to their findings, there is no statistically significant difference of perception between in-service teachers and pre-service teachers. In Mainland China, to our knowledge, there is no study concentrating on pre-service teachers' perception towards students with ADHD. Therefore, this study is meaningful to compare Hong Kong and Mainland Chinese pre-service teachers' perception towards students with ADHD.

2.3. Relationship among pre-service teachers' knowledge, perception and training about how to support students with ADHD

Training refers to the education that pre-service teachers have received in university period, about how to support students with ADHD in the context of inclusive education in mainstream schools, including courses, internship and other kinds of resource. Inclusive education is a term that expresses the assurance to give each child the opportunity of receiving education and make sure the children with learning difficulties would attend in the school and classroom at the most extent, which involves providing these children with learning difficulties with appropriate supporting services, in order to achieve the purpose that the children with learning

difficulties can get the same benefit as other students without learning difficulties in the inclusive classroom context (Forlin, 2010; Hallahan, 2012). However, the implementation of inclusive education has different situations in Mainland China and Hong Kong. Although Li (2005) thought that Hong Kong society holds a negative attitude towards students with learning difficulties, Li stated the financial support and legislation for supporting students with learning difficulties are relatively enough in Hong Kong society. However, the situation of supporting students with learning difficulties in Mainland China is not as good as that in Hong Kong. According to Jiao, Liu, Li and Zhao (2016), the concept of inclusive education is not prevalent in Mainland China, which leads to the limit of financial support and legislation to support students with learning difficulties. The prevalence degree of the concept of inclusive education has influence on the universities' degree of emphasis on training about how to support students with learning difficulties, which may lead to pre-service teachers in Hong Kong and Mainland China receive different amounts of training in university period (Leung, & Mak, 2010). Thus, it is important to investigate the training that pre-service teachers have received during university period in Mainland China and Hong Kong. Based on Ohan, Cormier, Hepp, Visser and Strain's study (2008), teachers with higher levels of knowledge about students with ADHD show more favorable beliefs of interventions and better predictions of classroom management problems because of the students with ADHD, but also reveal their lower confidence in managing students with ADHD in their teaching. However, Ohan et al. (2008) did not focus on pre-service teachers and also not examine the relationship among teachers' knowledge, perception and training about how to support students with ADHD that they have received. To our knowledge, there is not

any study focusing on the relationship among pre-service teachers' knowledge, perception and training. Therefore, this study tries to explore the relationship among pre-service teachers' knowledge, perception and training about how to support students with ADHD that they have received.

3. Research questions & Hypotheses

The major objective of this study was to compare and contrast the similarities and differences of pre-service teachers' knowledge and misperception of ADHD and their acceptability towards students with ADHD between Hong Kong and Mainland China according to the participants' responses to the questions in the questionnaire. In addition, in order to explore the reasons for the differences and potential consequences of supporting students with ADHD, this study also investigated the training about how to support students with ADHD that pre-service teachers in Hong Kong and Mainland China have received at university level. Therefore, the following research questions and hypotheses were explicated:

1. What knowledge and misperceptions of ADHD do pre-service teachers in Hong Kong and Mainland China have?

Hypothesis 1: Mainland Chinese pre-service teachers' scores of knowledge of ADHD got in the questionnaire questions will be lower than those scores of pre-service teachers in Hong Kong.

2. What levels of acceptability towards students with ADHD do pre-service teachers in Hong Kong and Mainland China have?

Hypothesis 2: Mainland Chinese pre-service teachers' level of acceptability towards students with ADHD got in the questionnaire

questions will be lower than that level of pre-service teachers in Hong Kong.

3. How much training about how to support students with ADHD have pre-service teachers in Hong Kong and Mainland China received at university level?

Hypothesis 3: Hong Kong pre-service teachers receive more training about supporting ADHD students than Mainland Chinese pre-service teachers.

4. Methodology

4.1. Participants

The study uses purposive sampling method to choose participants for the questionnaire survey. The participants selected for this study are the pre-service teachers who enrolled in undergraduate program of education in universities and are studying in the final year of universities. There are 50 pre-service teachers from Hong Kong and also 50 pre-service teachers from Mainland China who complete the questionnaires for the study because the study chooses the same number of participants from Hong Kong and Mainland China in order to make sure objectivity of the data in this study. Most of the pre-service teachers in Hong Kong are from The Education University of Hong Kong, which is a famous education university in Hong Kong that cultivates most of the teachers in kindergartens, primary schools and secondary schools for Hong Kong society. In Mainland China, the participants are from the universities of different levels, including Capital Normal University in Beijing, Tianjin Normal University in Tianjin, Shanghai Normal University in Shanghai, Hunan Normal University in Changsha, Minnan Normal University in

Zhangzhou and Huanggang Normal College in Huanggang. These universities cover the national emphasis normal university and the provincial emphasis universities in Northern China and Southern China. Therefore, the participants selected from Mainland China are relatively representative.

In this study, all the participants are the final year students in undergraduate program of education in universities because they have completed most of the training about being a teacher in their university period. Therefore, their answers in the questionnaires can show what training about how to support students with ADHD that pre-service teachers in Hong Kong and Mainland China have received at the most extent. In addition, their views towards ADHD are more comprehensive and objective to show the situations of pre-service teacher education towards supporting students with ADHD in Hong Kong and Mainland China.

4.2. Measure

The study uses quantitative method as the research method and conducts the survey by using the questionnaire (Appendix I). Due to Chinese as the first language background of the participants selected in this study, the questionnaire is designed in Chinese version to meet the reading comprehension requirement of the participants, to avoid the participants' misunderstanding about the questions caused by the translation process from other questionnaires of English version to Chinese version. The first part of this questionnaire has some questions about the basic information of the participants in order to know the background of participants. The second part of this questionnaire is the 13 single-choice questions and 2 multiple choices about pre-service teachers' awareness rate towards the students with ADHD. The third part of

this questionnaire is the 15 yes-no questions about pre-service teachers' perception towards the students with ADHD. The questions in the second and third parts of this questionnaire are selected from the 'Questionnaire of teachers' awareness rate towards students with ADHD' published by Shanghai Mental Health Center (2012) and first used by Liwei Liu (2013) in her study about primary in-service teachers' Knowledge and Perception towards Students with ADHD in Zhangzhou, which is also a set of Chinese questionnaire. In the final part of the questionnaire, the participants need to choose what training about how to support students with ADHD that they have received in the university, including lectures, tutorials, self-learning materials, workshops, seminars, and teaching practice. Besides the training listed in the questionnaire, the participants need to write down other training they have received if the training is different from those listed in questionnaire.

4.3. Procedure

All the participants need to complete the consent form before joining the research. After completing the consent form, the participants will complete a 10-minute online questionnaire by using the link of the questionnaire. Before the questionnaire shared with the public, a pilot study is conducted at first. Two participants from Hong Kong and three participants from Mainland China complete the questionnaire and then give their comments on the questionnaire and share their feelings in the process of completing the questionnaire in an interview. Based on their feedback, the questionnaire is modified in some places. Firstly, the participants think that some questions are difficult to choose from *Yes* or *No*. Thus, the third choice, *Don't Know*, is added for each question in the second part of this questionnaire. Secondly, the three

participants from Mainland China feel that some technical terms in the questionnaire are difficult to understand. Therefore, some questions from the 'Questionnaire of teachers' awareness rate towards students with ADHD' published by Shanghai Mental Health Center (2013) are modified in some words to make sure the participants can understand the meaning of the questions. After modifying the questionnaire based on the feedback in pilot study, the online questionnaire link is shared with the participants selected in this study to collect data for comparison analysis between Mainland China and Hong Kong.

4.4. Data Analysis

Data were collected and analyzed using the statistical software SPSS Version 24.0. To ensure anonymity, raw data from the questionnaires were coded and inserted into three main sections for analysis: (a) knowledge total scores, (b) perception total scores, and (c) training total hours. The perception section was divided into four domains for detailed analysis: (a) perception towards ADHD students and teachers, (b) perception towards ADHD students and their parents, (c) perception towards ADHD students and other students in the class, (d) perception towards ADHD students and society. Descriptive statistics were calculated for each section of the questionnaire ($M + SD$), differences between Hong Kong and Mainland Chinese pre-service teachers were tested using independent-sample t-test, and the relationship between training total hour, knowledge total scores and perception total scores was tested using correlation and regression. The alpha error was set at $p < .05$.

5. Results

After collecting the 100 completed questionnaires based on the target number of data, the data collection was stopped. The statistics of the results in questionnaires are conducted and shown in the table form to compare and contrast the similarities and differences between Hong Kong and Mainland China. The basic information of participants is concluded, including the gender, age, subject to teach, and religion belief. The numbers of *Yes*, *No*, and *Don't Know* in the second and third parts of questionnaire are calculated in the table form with both Hong Kong and Mainland China in SPSS software in order to compare and contrast. The training that they have received is also concluded in the table to calculate.

5.1. Differences between Hong Kong and Mainland Chinese pre-service teachers

In the second part of the questionnaire, there are 15 questions to test participants' knowledge of related concepts about ADHD students. For each question, participants will get 1 score if they can choose the correct answer and get 0 score if they choose the wrong answer or choose '*Don't Know*'. All the participants' total scores of knowledge about ADHD students are calculated to test each participant's comprehension degree. An independent-samples t-test was conducted to compare pre-service teachers' knowledge of ADHD students in Hong Kong and Mainland China. There was a significant difference in Hong Kong ($M = 8.42$, $SD = 2.85$) and Mainland China ($M = 9.72$, $SD = 2.53$); $t(98) = -2.411$, $p = 0.018 < .05$. The knowledge total score was inversely proportional to the value labels set in SPSS. Thus, pre-service teacher group has better knowledge score if the number of M is higher. Therefore, these results suggest that Hong Kong pre-service teachers have better understanding

about ADHD students than Mainland Chinese pre-service teachers.

For the third part of the questionnaire, there are also 15 questions to test pre-service teachers' perception towards the relationships between ADHD students and other people, including teachers, their parents, other students in the class and society. For each domain, participants will get 1 positive point if they can treat ADHD students as same as other students and get 0 positive point if they treat ADHD students differently. All the participants' total positive points of each domain are calculated to test each participant's perception about ADHD students. An independent-samples t-test was conducted to compare pre-service teachers' perception about ADHD students of each domain in Hong Kong and Mainland China. In terms of ADHD students and their parents, there was a significant difference in Hong Kong ($M = 2.64$, $SD = 0.48$) and Mainland China ($M = 2.32$, $SD = 0.74$); $t(98) = 2.556$, $p = 0.012 < .05$. For ADHD students and other students, there was a significant difference in Hong Kong ($M = 2.62$, $SD = 0.99$) and Mainland China ($M = 2.00$, $SD = 0.64$); $t(98) = 3.728$, $p = 0.000 < .05$. However, in terms of ADHD students and teachers, there was no significant difference in Hong Kong ($M = 3.98$, $SD = 1.08$) and Mainland China ($M = 3.74$, $SD = 0.92$); $t(98) = 1.196$, $p = 0.234 > .05$. In addition, for ADHD students and society, there was no significant difference in Hong Kong ($M = 1.64$, $SD = 0.88$) and Mainland China ($M = 1.72$, $SD = 0.81$); $t(98) = -0.475$, $p = 0.636 > .05$. The total positive perception points were inversely proportional to the value labels set in SPSS. Therefore, these results suggest that Mainland Chinese pre-service teachers show a higher level of perception towards ADHD students and their parents, ADHD students and other students than Hong

Kong pre-service teachers.

In the last part of the questionnaire, the participants wrote down the total hour of different kinds of training that they have received during the university period, including courses, internship and other kinds of resource. All the participants' total hours of training about how to support ADHD students are calculated to test each participant's training received in their university. An independent-samples t-test was conducted to compare pre-service teachers' training about how to support ADHD students in Hong Kong and Mainland China. There was a significant difference in Hong Kong ($M = 14.36$, $SD = 4.39$) and Mainland China ($M = 34.10$, $SD = 1.56$); $t(98) = -29.954$, $p = 0.000 < .05$. The total training hour was inversely proportional to the value labels set in SPSS. Therefore, these results suggest that Hong Kong pre-service teachers receive more training about how to support ADHD students than Mainland Chinese pre-service teachers.

5.2. Relationship among training, knowledge and perception

A series of Pearson correlations ($\alpha = .05$, two-tailed) were used to identify possible relationships among the total training hours, knowledge total score and positive perception. There was a positive correlation between the total training hours and knowledge total scores, $r = 0.219$, $n = 100$, $p = 0.029 < .05$. However, there was a negative correlation between the total training hours and the perceptions of ADHD students and parents, $r = -0.207$, $n = 100$, $p = 0.038 < .05$. In addition, there was also a negative correlation between the total training hours and the perceptions of ADHD students and other students, $r = -0.314$, $n = 100$, $p = 0.001 < .05$ (Appendix I). The

results of these correlations are presented in Table 1. Therefore, the participants who receive more training show a better understanding about ADHD students but have a lower perception of ADHD students.

6. Discussion

According to the data collected, this study aims to compare Hong Kong and Mainland Chinese pre-service teachers' knowledge of ADHD, perception towards teaching students with ADHD, and the total training that pre-service teachers have received about how to support students with ADHD. In response to the research question pertaining to pre-service teachers' knowledge and misperceptions of ADHD students, Hong Kong pre-service teachers' scores of knowledge of ADHD got in the questionnaire questions were higher than those scores of pre-service teachers in Mainland China, which accords with the hypothesis. Therefore, during the university period, the training about how to support ADHD students is more successful in the education university of Hong Kong so that Hong Kong pre-service teachers show a better understanding about ADHD students. However, the concept of ADHD is not as diffusive as Hong Kong in Mainland China. Therefore, Mainland Chinese pre-service teachers have more misperceptions of ADHD students. In regards to the research question about pre-service teachers' level of acceptability towards students with ADHD, Mainland Chinese pre-service teachers show a higher level of acceptability towards students with ADHD than the pre-service teachers in Hong Kong, which is contrary to the hypothesis. Although Mainland Chinese pre-service teachers have less knowledge about how to support ADHD students, they can treat ADHD students similarly as other students.

In response to the research question based on the training about how to support ADHD students that pre-service teachers have received at university level in Hong Kong and Mainland China, Hong Kong pre-service teachers receive more training, especially the courses related to ADHD students and the internship experience of coming into contact with ADHD students in teaching. The pre-service teachers from The Education University of Hong Kong have a compulsory course about special education and inclusive education, which includes ADHD as a major content. Therefore, Hong Kong pre-service teachers can learn the basic knowledge about ADHD students. In addition, all the pre-service teachers from The Education University of Hong Kong have a compulsory internship in primary schools or secondary schools. Due to the development of inclusive education in Hong Kong, most of the classes have some students with special educational needs. Thus, most of the Hong Kong pre-service teachers can come into contact with ADHD students during their teaching experience. Compared to the training that Hong Kong pre-service teachers received, the training that Mainland Chinese pre-service teachers have received is more limited because Mainland Chinese pre-service teachers do not have compulsory courses related to ADHD students and most of them also do not have compulsory internship requirement during university period. In addition, the self-learning resources that they have uses are also limited. Due to the low degree of dissemination of ADHD and inclusive education concept in Mainland China, most of the pre-service teachers also do not spend much time in self-learning resources or other kinds of resources about how to support ADHD students.

It is interesting to note that Hong Kong pre-service teachers receive more training about how to support ADHD students and also have a better understanding about ADHD students, but show a lower perception towards ADHD students, which suggests that the training that Hong Kong pre-service teachers have received may have negative influence on their perception towards ADHD students. Due to the better development of inclusive education in Hong Kong, some pre-service teachers believe that students with special educational needs should study in special education schools, which is more helpful to the students with special educational needs and other normal students without special educational needs (Lian & Deng, 2007). However, the concept of special education is not popular enough in Mainland China and the figure for special education schools is also limited in Mainland China. Therefore, inclusive education is the only choice in Mainland China (Lian & Deng, 2007), which may be the reason why Mainland Chinese pre-service teachers treat students with special educational needs as same as other normal students without special educational needs because of their lack of special education concept.

In addition, along with the increase of knowledge and experience related to ADHD students, pre-service teachers may use the terms related to ADHD to describe or classify some ADHD students, which is the notion of 'labelling' students with ADHD (McMahon, 2012). Some pre-service teachers add post-diagnostic labelling on ADHD students so that they even connect some ADHD students' normal actions with the symptoms of ADHD (McMahon, 2012). Some pre-service teachers even add pre-diagnostic labelling on ADHD students because of their stereotyping about ADHD students, which leads to their lower perception towards ADHD students' behaviors in

classroom (Smith, 2006). Therefore, the training about how to support ADHD students in Hong Kong is more than that in Mainland China but is not comprehensive and deep enough, which causes Hong Kong pre-service teachers' lower perception towards ADHD students.

For Mainland Chinese pre-service teachers, they receive less training related to supporting ADHD students. Therefore, they gain less knowledge about ADHD students. Their misperceptions of ADHD students lead to their limited suitable supporting and timely help to ADHD students in Mainland China. Although they have higher perception towards ADHD students, their ability of supporting ADHD students is limited, which obstructs the development of inclusive education in Mainland China (Lian & Deng, 2007). In addition, their lack of knowledge is also the reason why they have higher perception towards ADHD students, because they may not know how to treat ADHD students differently with other students.

7. Implication

According to the findings of this study, Mainland Chinese normal universities should provide their pre-service teachers with more theoretical and practical training about how to support ADHD students in their teaching, in order to improve their understanding about ADHD students, which is beneficial to the development of inclusive education in Mainland China (Lian & Deng, 2007). For example, Mainland Chinese normal universities can offer a course about inclusive education, including the knowledge about ADHD students. In addition, some Mainland Chinese normal universities can organize some visit activities in Non-government organizations

related to the people with special educational needs if these universities cannot ensure the internship opportunities for each pre-service teacher.

In terms of Hong Kong education universities, the training about supporting ADHD students for Hong Kong pre-service teachers is better but still not enough, so that Hong Kong pre-service teachers' understanding of ADHD students is not deep and objective enough. In addition, Hong Kong education universities should have a reflection about the effectiveness of their training related to ADHD students. Hong Kong education universities need to help Hong Kong pre-service teachers create a more inclusive and comprehensive perception towards ADHD students, in order to address the 'labeling' effect in Hong Kong inclusive education.

8. Limitation

As a result of the limited number of participants in this study, the results of this study cannot reflect the whole picture of pre-service teachers in Hong Kong and Mainland China, especially Mainland Chinese pre-service teachers. The number of normal universities in Mainland China is large and different universities have different situations, such as different internship requirements and different curriculum settings. Therefore, the whole picture of Mainland Chinese pre-service teachers' knowledge and perception towards ADHD students need a larger number of participants to reflect. In addition, the number of questions in the questionnaire is limited so that the four domains of perception are relatively limited to reflect the overall situation of pre-service teachers' perception towards ADHD students, including ADHD students and teacher, parents, other students and society. A larger figure for the questions in the

questionnaire is needed to show a more general situation of pre-service teachers' knowledge and perception in Mainland China and Hong Kong.

9. Conclusion

Throughout this article, this study based on the questionnaire finds that Hong Kong pre-service teachers have received more theoretical and practical training about supporting ADHD students than Mainland Chinese pre-service teachers so that Hong Kong pre-service teachers show a better understanding about ADHD students. However, although Mainland Chinese pre-service teachers receive less training than Hong Kong pre-service teachers, they have a more comprehensive and inclusive perception towards ADHD students. Therefore, Mainland Chinese pre-service teachers need more training in their universities to learn more professional knowledge about how to support ADHD students.

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Appendix 1. Correlations among the total training hours, knowledge total score and positive perception

		Correlations					
		Knowle dge	Traini ng	Percept ion_Te achers	Percept ion_Par ents	Perception _Other students	Percep tion_S ociety
Kn ow led ge	Pearson Correlati on	1	.219*	-.062	-.150	-.042	-.025
	Sig. (2- tailed)		.029	.540	.136	.678	.804
	N	100	100	100	100	100	100
Tr ain ing	Pearson Correlati on	.219*	1	-.107	-.207*	-.314**	.076
	Sig. (2- tailed)	.029		.291	.038	.001	.450
	N	100	100	100	100	100	100
Per ce pti on _T eac her s	Pearson Correlati on	-.062	-.107	1	.464**	.424**	.186
	Sig. (2- tailed)	.540	.291		.000	.000	.064
	N	100	100	100	100	100	100
Per ce pti on _P are nts	Pearson Correlati on	-.150	-.207*	.464**	1	.304**	.138
	Sig. (2- tailed)	.136	.038	.000		.002	.172
	N	100	100	100	100	100	100
Per ce pti on _O the	Pearson Correlati on	-.042	-. .314**	.424**	.304**	1	.366**
	Sig. (2- tailed)	.678	.001	.000	.002		.000
	N	100	100	100	100	100	100

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stu							
de							
nts							
Per	Pearson	-.025	.076	.186	.138	.366**	1
ce	Correlati						
pti	on						
on	Sig. (2-	.804	.450	.064	.172	.000	
_S	tailed)						
oci	N	100	100	100	100	100	100
ety							
*. Correlation is significant at the 0.05 level (2-tailed).							
**. Correlation is significant at the 0.01 level (2-tailed).							