A Project entitled

Pre-service Teachers' Self-efficacy Belief on Classroom Inclusion of Students with Attention Deficit/ Hyperactivity Disorder (ADHD): The Roles of Students' Gender and Diagnostic Label

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Declaration

I, Lee Ka Wai , declare that this research report represents my own work under the supervision of Dr. Cheung Yuen Man Rebecca, and that it has not been submitted previously for examination to any tertiary institution.

Signed

Lee Ka Wai

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Abstract

This study surveyed pre-service teachers in Hong Kong to investigate their self-efficacy belief in teaching students with attention deficit/ hyperactivity disorder (ADHD) symptoms in an inclusive classroom. One of the four vignettes was randomly presented to the participating pre-service teachers, with gender and ADHD diagnostic label of the vignette characters as the manipulation. After reading the vignette, participants gave responses to questions relating to their self-efficacy belief in teaching the students from the vignette and questions relating to their knowledge of ADHD. Data were collected from 228 pre-service teachers in Hong Kong through online survey. Results illustrated that pre-service teachers' self-efficacy belief in teaching the vignette characters in inclusive classroom was not correlated to the gender and the ADHD diagnostic label of the vignette characters. The ADHD knowledge of pre-service teachers did not predict the self-efficacy belief of pre-service teachers in teaching the vignette character.

Keywords: pre-service teachers, self-efficacy belief, gender bias/ stereotype, diagnostic label, knowledge, Attention Deficit/ Hyperactivity Disorder (ADHD)

Pre-service Teachers' Self-efficacy Belief on Classroom Inclusion of Students with Attention Deficit/ Hyperactivity Disorder (ADHD): The Roles of Students' Gender and Diagnostic Label

Numerous research on pre-service or in-service teachers' self-efficacy or attitude to teach in an inclusive classroom have been conducted. Research on school teachers' self-efficacy about inclusive education has been done in different countries (Sharma, Forlin, Loreman, & Earle, 2006; Forlin, Loreman, & Sharma, 2007; Loreman, Sharma, & Forlin, 2013). Findings indicated that the higher self-efficacy the teachers have, the more positive attitudes and sentiments and fewer concerns they have about inclusive education. Loreman et al. (2013) conducted a cross-cultural study involving four places including Hong Kong, Canada, Australia and Indonesia, to examine pre-service teachers' self-efficacy to teach in an inclusive classroom. The study also reported that Hong Kong pre-service teachers had a comparatively lower self-efficacy to teach in an inclusive setting comparing to the pre-service teachers from the other three countries. Specifically to ADHD, a vignette study conducted in Canada found that the presence of diagnostic label of ADHD negativly influenced teachers' perceptions of and reactions to the ADHD-labelled students (Ohan, Visser, Strain, & Allen, 2011). The study also reported that teachers felt stressed and had less confidence in managing the behaviours of students with ADHD label. Despite these findings, there

is a scarcity of literature examining teachers' self-efficacy beliefs of teaching students with ADHD in inclusive classroom. Also, little has been done locally to explore the relationship of students' gender and diagnostic label of ADHD on teachers' self efficacy. The current study explored the influence of students' gender, diagnostic label of ADHD and pre-service teachers' knowledge of ADHD on pre-service teachers' self-efficacy beliefs of inclusion of students with ADHD symptoms. The current study sought to explore the difference of pre-service teachers' self-efficacy beliefs on students with same ADHD symptoms but with different gender and diagnostic label.

Literature Review

According to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5; American Psychiatric Association, 2013), children diagnosed with ADHD must meet the criteria for inattention, hyperactivity/ impulsivity, or both. Under the inattention and hyperactivity/ impulsivity criteria, children diagnosed have to present six or more symptoms in the criteria for at least six months which inconsistent with the children development level and have negative effect on their social and academic activities (American Psychiatric Association, 2013). Children may predominantly present inattentive symptoms or predominantly present hyperactive-impulsive or present combined inattentive and hyperactive-impulsive

symptoms. In most cultures, prevalence estimate of ADHD is about 5% of children and 2.5% of adults (American Psychiatric Association, 2013). The prevalence of ADHD in Hong Kong is 6.1% in Primary 1 boys (Leung et al., 1996). The prevalence of ADHD defined by Diagnostic and Statistical Manual of Mental Disorders, Forth Edition (DSM-4) is 3.9% in adolescents from Grade 7-9 (Leung et al., 2008).

With roots in social cognitive theory, self-efficacy theory is represented by a model of interactions between personal factors, environment and behaviours. In the model, people's personal factors (i.e. cognitive, affective and biological events) and the external envoronment influence people's behaviour, while people's behavioural and personal factors influence the extranal environment, and people's behaviour and the external environement influence people's personal factors (Bandura, 1977, 1997; Dellinger et al., 2008). The degree of self-efficacy beliefs perceived by an individual can be generalized across a range of similar activities but can also be changed and varied depending on the context and the perceived difficulties of the task (Bandura, 1997; Dellinger et al., 2008). In school context, teacher's self-efficacy beliefs refers to "teacher's individual beliefs in their capabilities to perform specific teaching tasks at a specified level of quality in a specified situation" (Dellinger et al., 2008, p.752).

The Effect of Students' Gender on Teachers' Self-efficacy

Teachers' gender bias or stereotype in school setting especially in teaching and

learning may affect their behaviour towards students of different gender. Previous studies suggested that gender of children might influence adults' (parents and educators) judgements and expectations of appropriate behaviours. In a vignette study, children gender was found to be influential on pre-service nursery teachers' perception on the typicality of disruptive behaviour disorders (DBD) as more typical to boys than girls, but not their perceptions towards the severity of DBD (Maniadaki, Sonuga-Barke, & Kakouros, 2003). Specifically with ADHD, pre-service kindergarten teachers rated the severity of boys' behaviour as significantly more severe than girls' (Maniadaki, Sonuga-Barke, & Kakouros, 2006). In the same research, mothers of preschoolers and the pre-service teachers reported to have a higher sense of self-efficacy beliefs towards girls with ADHD than boys.

Students' gender may influence teacher's confidence in teaching and their implementation of teaching strategies. According to Ohan et al. (2011), pre-service teachers were more confident in dealing with girls with ADHD while in-service teachers were more confident to work with boys with ADHD. It was suggested that the greater exposure to boys with ADHD in regular teaching resulted in in-service teachers feeling more confident. Furthermore, the pre-service teachers were more willing to implement classroom behavioral strategies for girls labelled with ADHD, while in-service teachers preferred to implement the strategies for boys labelled with

ADHD (Ohan et al., 2011).

Labelling Effects and Self-efficacy

A label can have either positive or negative effects. The effect of a label can be positive in that a label can help professionals communicate with one another, provide a foundation for research on the etiology and prevention, and provide a focus for assessment (Achenbach, 1993; Hardman, Drew, & Egan, 2001; Koonce et al., 2004). The expectations that people might develop for a person given a pacticular label (e.g. Attention Deficit Hyperactivity Disorder) is called *labelling bias* (Koonce et al., 2004).

Reasearch investigated the influence of a diagnostic label of on teachers' perceptions of ADHD-labelled children and also teachers' self-efficacy or confidence in teaching ADHD-labelled children. To teach students with ADHD, teachers might perceive that more effort and time are needed and they might be less optimistic about teaching the ADHD labelled students comparing to those were not labelled (Atkinson, Robinson, & Shute, 1997; Kauffman, Lloyd, & McGee, 1989).

A vignette study conducted in Canada surveyed in-service and pre-service elementary school teachers' perceptions of and reactions to children with a combined type of ADHD (Ohan et al., 2011). The vignettes differed on two factors: the gender of the character and the presence or absence of ADHD diagnostic label. The

diagnostic label of ADHD was found to be influential on teachers' perceptions of and reactions to the ADHD labelled students. With the diagnostic label, participants' negative perceptions towards the behavior described in the vignette and the vignette character increased. The participants also felt stressed and had less confidence in managing the behaviours of the labelled children; hence, teachers' effort and persistence to work with the ADHD-labelled children might be limited.

Within the literature, although most studies reported that students' diagnostic label of ADHD had an effect on teachers' self-efficacy of teaching or perceptions of ADHD-labelled children, a videotaped vignette study reported that students' ADHD behaviour instead of student's diagnostic label of ADHD had significant negative impact on teachers' perceptions of ADHD-labelled children (Cornett-Ruiz, & Hendricks, 1993). Cornett-Ruiz, & Hendricks (1993) showed videos filming a male student demonstrating ADHD behaviour to teachers. The videos differed on a single factor, the presence or absence of the diagnostic label of ADHD. The findings indicated that the behaviour of ADHD students, but not the diagnostic label of ADHD, had a significant negative effect on teachers' impressions of student's behaviour and teachers' predictions of student's future success. The teachers also evluated the students' writing assignment, and resulted that neither the diagnostic label of ADHD nor the ADHD behaviour had any effect on the teachers' evaluations. Cornett-Ruiz

and Hendricks (1993) suggested the reasons for the little effect from the diagnostic label of ADHD might be the differences of educational settings that teachers had more direct contact with ADHD children comparing to the samples in the previous research. As the schools that the teachers worked at had ADHD children mainstreamed into regular classroom, the teachers had more direct contact with the labelled children. The teachers were found to be less likely to associate the diagnostic label of ADHD with the stereotypic behaviours of ADHD, resulting that teachers were more likely to react to the behaviours of individual students instead of the diagnostic label.

The Effect of Teachers' Knowledge of ADHD on Teachers' Self-efficacy

Knowledge of ADHD can be categorized in three areas: general information (e.g., prevalence, causes), symptoms, and treatment (Sciutto, Terjesen, & Frank, 2000). Teachers were more likely to have misconceptions about the causes and treatments of ADHD (Jerome, Gordon, & Hustler, 1994; Ohan, Cormier, Hepp, Visser, & Strain, 2008). Teachers' knowledge about ADHD might influence their teaching in classrooms with students with ADHD. At the same time, teachers with misconceptions of ADHD may provide inaccurate and inappropriate advice to the students' parents (Bussing, Schoenberg, & Perwien, 1998; Kos, Richdale, & Jackson, 2004).

Discrepancies of the effect of teachers' ADHD knowledge level on their self-efficacy level were found in previous studies. Teachers' self-efficacy of teaching was positively related to teachers' level of knowledge of ADHD in a study of in-service elementary school teachers in New York (Sciutto et al., 2000). Similar results were found in another research targeting 429 in-service teachers (Alkahtani, 2013). However, in-service elementary school teachers with average and high level of ADHD knowledge in Melbourne, Australia reported less confidence in teaching and managing children with ADHD in classroom than those with a lower level of ADHD knowledge (Ohan et al., 2008). It was suggested that the discrepancy might be resulted from the use of different scales and the way that the variables were measured across the studies. That is, the scales used to measure teachers' knowledge of ADHD were different in the two studies. Also, Ohan et al. (2008) required participants to give responses based on a vignette they were provided while Sciutto et al. (2000) simply required participants to give responses to scales of knowledge of ADHD and self-efficacy.

Research on pre-service teachers' attitude reported that pre-esrvice teachers were initially positive to teach children with ADHD, but became less positive when they have teaching experiences (Anderson, Watt, & Noble, 2012). The results supported Ohan et al. (2008) and suggested that higher greater level of knowledge of ADHD and

more classroom teaching experiences may result in a lower level self-efficacy belief in teaching students with ADHD.

Aim of the Current Study

In Hong Kong context, very limited attention has been paid to the self-efficacy of pre-service teachers specifically to ADHD. To gain a comprehensive understanding of the factors that may predict pre-service teachers' self-efficacy in teaching students with ADHD symptoms in an inclusive classroom, the present study explored the effects of the gender of students with ADHD symptoms, the diagnostic label of ADHD, and the pre-service teachers' knowledge of ADHD on pre-service teachers' self-efficacy belief in Hong Kong. In the present study, it was hypothesized the gender of students with ADHD symptoms and the presenece or absent of diagnostic label of ADHD and pre-serivce teachers' level of ADHD knowledge would predict pre-service teachers' level of self-efficacy belief.

Methods

Participants

Participants were 228 pre-service teachers, aged 18- 37 years old (M = 21.9; SD = 2.89), majoring in education-related programmes in tertiary education settings in Hong Kong. The sample consisted of more females (n = 185; 81.1%) than males (n = 43; 18.9%).

Procedures

Pre-service teachers from tertiary education settings were recruited through emails, intranet, social networking site and social networking software. Pre-service teachers aged 18 or above could voluntarily choose to sign up for participation in the study. Data were collected through an online survey. Consents were sought prior to the study that pre-service teachers were required to provide their full name and student email address. One of four vignettes was randomly presented to the participating pre-service teachers, with gender and ADHD diagnostic label as the manipulating variables. After reading the vignette, participants gave responses to questions relating to their self-efficacy belief in teaching the students from the vignette and their level of ADHD knowledge. The present study was approved by the university's human research ethics committee prior to implementation.

Measures

All the instruments were translated into Chinese for the participants to complete the survey in Chinese. Back translations to English of all translated Chinese measures were made to assure the accuracy of translation and presentation of the questions (Brislin, 1970).

Vignettes. Four vignettes were designed and presented to the participants randomly (see Appendix A for the template of vignettes). Each vignette described a

primary 1 child who presented several inattention and hyperactivity- impulsivity ADHD symptoms that met *DSM-5* symptom criteria (American Psychiatric Association, 2013). As the focus of the present study was students' behaviour in classroom context, 4 out of 9 symptoms from each ADHD cluster were evidenced across vignettes to illustrate the realistic behaviour of the hypothetical students that pre-service teachers may possibly face in classroom contexts when teaching. The vignettes differed from each another on two factors, forming a two (male/ female) by two (labelled with ADHD/ no ADHD label) matrix. Gender-specific names and pronouns were used in the vignettes. Two of the four vignettes contained an ADHD diagnostic label that appeared as the second line of the vignette that stated, "(He/ She) has been diagnosed with ADHD before (he/ she) entered Primary 1." This statement was absented in the other two vignettes.

Self-efficacy belief in teaching. The modified 31-item Teachers' Efficacy Beliefs System- Self (TEBS-Self; Dellinger et al., 2008) contains 6 subscales assessing teachers' self-efficacy belief in communication/ clarification for learning, classroom management/ climate, accommodating individual differences, motivating students' learning, managing learning routines, and involving students in higher order thinking. This measure was used to assess pre-service teachers' self-efficacy belief in teaching the vignette characters (i.e., male/ female students with ADHD synonyms

and with/ without ADHD diagnostic label). Each item was rated on a 4-point scale (1 = *very weak belief in my capabilities*) to (4 = *very strong belief in my capabilities*). The instruction of the scale was modified, changing "Right now in my present teaching situation" to "The child in the vignette is one of the students in your class. In your teaching situation,", was done so due to the present study targeted pre-service teachers who might not have any teaching experiences. In the present study, the internal consistencies of the TEBS-Self was excellent (Cronbach's $\alpha = .93$). The Cronbach's alpha value for the 6 subscales in the present study ranged 0.57 to 0.83.

ADHD knowledge. A modified 19-item self-reported questionnaire (shortened from the original 20-item version) from ADHD Knowledge Scale (Jerome et al., 1994) was used to assess pre-service teachers' general knowledge and concepts of ADHD. The scale assessed knowledge of biological factors in ADHD, education interventions for ADHD students, family influences on ADHD, medical interventions for ADHD, and myths of ADHD. Each item was rated true or false (1 = *true*, 0 = *false*), while 12 items were reverse-scored (i.e., 0 = true, 1 = false). The item, "ADHD occurs more in minority groups than in Caucasian groups" (false), was excluded because Caucasian is not a majority of Hong Kong that the item was less related to the Hong Kong context. Since answers of the questions could not be provided to participants immediately, the same item was also excluded in another research by Ohan et al. (2008) to prevent

participants' misinterpretation of the answer and subsequent behaviour or attitude towards children with different ethnicity. In the present sample, the Cronbach's alpha value for the this scale was 0.63.

Demographic background. Age, gender, and hours of inclusive education training received were assessed.

Analyical Strategies

To assess if gender and diagnostic label of ADHD, and pre-vice teachers' knowledge of ADHD predicted pre-service teachers' self-efficacy, descriptive statistics, zero-order correlations and a herirarchaical multipul regression were used using SPSS version 24 (IBM Corp, 2016).

Results

Table 1 indicates the mean, standard deviation and correlations of variables in the study. Correlations indicated that despite random assignment of this study, participants' knowledge of ADHD was correlated with the gender of the vignette character ($r = .15$, $p < .05$). Pre-service teachers' gender was correlated with their self-efficacy of accommodating individual ($r = .13$, $p < .05$). Findings also indicated that the Self-efficacy belief subscales, including teachers' self-efficacy belief in communication/ clarification for learning, classroom management/ climate, accommodating individual differences, motivating students' learning, managing

learning routines, and involving students in higher order thinking, were moderately to strongly correlated, with *r* ranging from 0.48 to 0.9 (*p*s < .01). Results from the regression analysis (table 2) indicates that the overall model explained 1.9% of the variance in pre-service teachers' self-efficacy in teaching children with ADHD symptoms, $F(6, 194) = .62$, $p > .05$ (see Table 2). Contrary to the hypotheses, pre-service teachers' age, gender, knowledge about ADHD, gender of the vignette character, and the presence of diagnostic label did not significantly predict their own self-efficacy.

Discussion

The present study is the first study attempted to explore the effects of the gender of students with ADHD symptoms, the diagnostic label of ADHD and pre-service teachers' knowledge of ADHD on pre-service teachers' self efficacy belief on classroom inclusion of students with ADHD in Hong Kong. Based on the current findings, no significant effect was indicated.

In the present study, the influence of the gender of the vignette characters on the self-efficacy belief of pre-service teachers in teaching the characters in inclusive classroom was non-significant. The present findings was not consistent with the previoius studies, which suggested that pre-service teachers reported a higher level of self-efficacy belief in towards girls with ADHD than boys (Maniadaki et al., 2006;

Ohan, et al., 2011). The effect of diagnostic label of ADHD of the vignette characters on the self-efficacy belief of pre-service teachers was also non-significant. This finding was not consistent with the earlier research, which suggested the diagnostic label of ADHD raised the negative perceptions and decreased the confidence of pre-service teachers (Atkinson et al., 1997; Kauffman et al., 1989; Ohan et al, 2011). However, the non-significant result of the effect of diagnostic label was parallel to the results of Cornett-Ruiz and Hendricks (1993) suggesting the diagnostic label of ADHD did not have significant effect on teachers' jugdement on children with ADHD behaviour.

A possible explanation for the non-significant findings might be the cultural differences between the participants of the previous studies and the present study. The previous studies examined teachers' self-efficacy in Western countries, while the present study set in an Asian context. Mann et al. (1992) conducted a videotaped vignette study on the differences of perceptions of hyperactive disruptive behaviours of mental health professionals from China, Indonesia, Japan and United states. Chinese and Indonesian clinicians scored significantly higher on the severity of hyperactive-disruptive behaviours than did American and Japanese clinicians. These significant differences of the rating across counties despite the use of uniform criteria might reflect that the standards for appropriate childhood behaviours vary across

cultures. Another research compared Chinese and American pre-service and in-service teachers' perceptions towards students with ADHD, reporting in Chinese participants tended to overly aware children's hyperactive behaviours and rated those behaviours in a more extreme way in the related scales comparing to the American samples (Norvilitis & Fang, 2005). As the samples of the present study were Chinese, they might be more likely to perceive hyperactive behaviours as inappropriate behaviours with a higher level of severity, regardless of the diagnostic label of ADHD. The inappropriate behaviours of the students instead of the gender of students or the diagnostic label of the character would then have more effect on pre-service teachers' self-efficacy beliefs. Hence, the differences between the pre-service self-efficacy beliefs of teaching students with different gender and diagnostic label of ADHD were not significant.

On the other hand, as suggested by Cornett-Ruiz and Hendricks (1993), the experiences of interacting with students with special educational needs might be a reason for the non-significant effect of diagnostic label on teachers' perceptions. Inclusive education in Hong Kong allows children with special educational needs to study in mainstream schools. Teachers and students therefore may have more chances to interact with students with special educational needs. Rüsch, Angermeyer and Corrigan (2005) suggested that direct contact is the most effective way to reduce

stigma towards people with mental illness. Similar situation to the stigma of ADHD, direct contact can reduce teachers and students' stigma towards students with ADHD. As the pre-service teachers who participated in the present study might also had direct contact with ADHD-labelled students during their previous education under the inclusive education system in Hong Kong, they might less likely to stigmatize the students with ADHD label. Hence, the pre-service teachers might be more likely to react to the behaviours presented by individual students rather than the diagnostic label of ADHD. Therefore, the pre-service teachers in the present study might rate the behaviours of the vignette characters with a similar level of severity despite the differences of diagnostic label of the students, resulting to a similar level of self-efficacy belief in teaching the vignette characters.

The non-significant relationship found between pre-service teachers' knowledge of ADHD and their self-efficacy belief did not support the findings of Ohan et al. (2008), who reported that the higher level of ADHD knowledge may lead to lower level of self-efficacy belief of teaching among Australian teachers. Furthermore, the findings of the present study do not support the Sciutto et al. (2000), who reported that teachers' level of ADHD knowledge was positively related to teachers' self-efficacy of teaching children in an inclusive classroom in New York.

The discrepancy between the findings in the present study and the previous

studies might be a result of the file drawer problem, also known as publication bias, that research with non-significant results are less likely to be published. James, Csada and Espie (1996) suggested that researchers are likely to consciously or unconsciously rank significant results in a higher priority than non-significant results. With reference to the file drawer problem, non-significant results related to the present study in previous research may be unpublished.

A second possibility that might lead to the discrepancy between the findings was the use of methodology and scales to measure self-efficacy belief. Among the previous research, vignette methodology was commonly used but the scales used to measure the variables vary. In Sciutto et al. (2000), vignette was not used that participants simply gave responses to the Knowledge of Attention Deficit Disorders Scale (KADDS) and rated their self-efficacy belief in teaching an ADHD child in a 7-point scale. In Ohan et al. (2011), vignette methodology was used with a total of 11 questions rated in a 9-point scale to measure a total of four dependent variables (i.e., evaluations of social/ behavioural problems, willingness to aid in treatment, emotional reactions to child, behaviour towards child). Neither of the above studies measured the level of self-efficacy belief of participants using the TEBS-Self (Dellinger et al., 2008), which was used in the present study. TEBS-Self is a scale with 6 subscales that the level of self-efficacy belief is measured with the sum of the scored questions. The

differences between the items used to measure the self-efficacy belief level might hence resulted in the variations of the way to drawn conclusion of the effects of different variables on self-efficacy belief.

Another possibility that might lead to the discrepancy between the findings was the differences of the target participants of the study. The samples of the present study consised only pre-serivce teachers, while past research conducted in Western countries surveyed in-service teachers or both in-service and pre-service teachers. Past research conducted in Western countries reported that in-service teachers with higher level of knowledge of ADHD might have a lower level self-efficacy belief in teaching the children labelled with ADHD (Anderson, Watt, Noble, & Shanley, 2012; Ohan et al., 2008). The results of the present study seemed to parallel to the findings reported by Ohan et al. (2011), in which pre-service teachers viewed the behaviours of ADHD-labelled children as more serious but reported that they were less bothered or stressed by the behaviours.

Study Limitations and Future Research Directions

There are several limitations to the present study. First, pre-service teachers were asked to read and imagine the vignette characters as a student in their class. As the vignettes were not real situations that the participants had encountered, the responses given by the participants might not fully reflect their self-efficacy belief in teaching a

student, who matched the description of the vignette character, in a real classroom context. However, collecting and exanimating participants' real experiences can be problematic in different ways, for example, inconsistency of the number of symptoms, the severity of symptoms, and the label of ADHD (Ohan et al., 2008). Therefore, the design of vignette in the present study can help to control all the variables, which may lead to inconsistency of findings. On the other hand, the the targeted participants of the current study were all pre-service teachers who might not have any teaching experience or any experience interacting with students with ADHD symptoms. In this case, the vignette was necessary to be presented to the participants as a reference and control.

Second, the samples of the present study were biased towards female, who comprised slightly more than 80% of the participants. This pattern is consistent with the population of in-service teachers and pre-service teachers, which include a majority of female. Due to the small numbers of male participants, the present study may not be generalized to all pre-service teachers with different gender. Future study may recuit more male participants.

Third, the target participants of the present research were pre-service teachers only. Future research may include both pre-service teachers and in-service teachers in the samples to compare the level of self-efficacy belief between the two groups in

Hong Kong.

Another limitation is the vignette designed only included the children with combined subtype of ADHD. Past research suggested the ADHD behaviour and symptoms instead of the diagnostic label of ADHD had effects on teachers' impressions of students' behaviour, predictions of students' future success, and evluations of students' academic performance (Cornett-Ruiz and Hendricks, 1993). Future research may therefore compare findings of children with the three different subtypes. Also, future research may study the effect of ADHD with other co-exsiting disorders, for example, austism and depression, as about half or more of children with ADHD are associated with one or more other disorders (American Psychiatric Association, 2013).

Conclusion

The findings of the present study were not significant showing that the gender of students and the diagnostic label of ADHD, and the pre-service teachers' knowledge of ADHD had no main effect on pre-service teachers' level of self-efficacy belief. The results of the present study also showed inconsistency with the previous research regarding the interactions of pre-service teachers' level of knowledge of ADHD and their level of self-efficacy belief. Future research may include considerations of the gender and teaching experiences of the target participants, and design of the vignettes.

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Table 1

*Zero-Order Correlation Coefficients and Descriptive Statistics for the Study Variable (*N = 228*)*

	1	2	3	4	5	6	6a	6b	6c	6d	6e	6f
1. Gender (0 = Female, 1 = Male)	-											
2. Age	.21**	-										
3. Gender of vignette character (0 = Female, 1 = Male)	.11	-.01	-									
4. ADHD label of vignette character (0 = Without label, 1 = With label)	.03	.12	N.A.	-								
5. Knowledge about ADHD	-.03	-.12	.15*	-.03	-							
6. Pre-service teachers' self-efficacy	.13	-.01	-.04	-.02	.01	-						
6a. Self-efficacy of Communication/ Clarification	.11	-.01	-.08	-.03	.03	.90***	-					
6b. Self-efficacy of management/ climate in classroom	.08	-.01	-.05	-.01	-.03	.90**	.75**	-				
6c. Self-efficacy of accommodating individual differences	.13*	.02	.02	-.08	-.02	.84**	.66**	.67**	-			
6d. Self-efficacy of motivation of students	.08	-.02	-.03	.07	-.00	.76**	.62**	.69**	.55**	-		
6e. Self-efficacy of managing learning routines	.02	-.02	0.01	-.05	-.05	.71**	.57**	.77**	.60**	.48**	-	
6f. Self-efficacy of higher order thinking skills	.09	-.03	-.03	.07	.01	.79**	.69**	.63**	.57**	.62**	.48**	-
M	.19	21.9	.49	.53	.72	2.71	2.83	2.75	2.57	2.77	2.67	2.61
SD	.39	2.89	.50	.50	.11	.32	.35	.37	.39	.41	.42	.41
Alpha	NA	NA	NA	NA	.62	.93	.82	.83	.79	.57	.61	.68

†p = .051. *p < .05. **p < .01. ***p < .001.

Table 2

Results of the Hierarchical Multiple Regression Analysis Predicting Pre-service teachers' self-efficacy (N = 228)

Variables	*Block 1* β	*Block 2* β	*Block 3* β
Control variables			
Gender	.01	.01	.01
Age	-.07	-.08	-.09
Pre-service teachers' knowledge			
Knowledge of ADHD		-.05	-.06
Hours of special educational courses/seminars		.07	.07
Gender and ADHD Label of vignette character			
Gender of vignette character			.02
ADHD Label of vignette character			.16
R^2	.01	.01	.02
R^2 change	.01	.01	.01
D.f.	2/198	4/196	6/194
F change	.78	.56	.55

*$p < .05$. **$p < .01$. ***$p < .001$.

Appendix A

Vignettes template

Ming/ Lily is a Primary one boy/ girl. (He/ She has been diagnosed with ADHD before he/ she entered Primary 1.) He/ She has comparatively more energy to move and more active comparing to children at the same age. Ming/ Lily usually has inattentive behaviour during lessons; for example, talk with his/her classmates, leave his/ her seat, or play with stationary. Ming/ Lily has comparatively poor attention span and he/ she feels bored to finish in-class tasks or homework.