



Investigating Kindergarten Teachers' Knowledge, Attitude, Perceived Behavioural Control, And Behavioural Intention to Include Children with Autism Spectrum Disorder in a Small Town in China: Based on the Theory of Planned Behaviour

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ABSTRACT

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Kindergarten is one of the first educational settings for human life. Kindergarten teachers' behaviours affect not only the school experience of children with ASD themselves, but also the attitudes from their typical developing peers. Based on the theory of planned behaviour (TPB), this study investigated the general levels, inter-correlation, and influential personal characteristics of kindergarten teachers' knowledge, attitude, and perceived behavioural control (PBC) for their behavioural intention of the inclusion of children with ASD. Discussion of the results will be provided for a comparison with relevant studies, possible explanation of the results, guidance for practice, and future study directions. The order of the average scores from low to high is knowledge, attitude, PBC, and behavioural intention. Positive correlations were detected between attitude and PBC and between PBC and behavioural intention. Knowledge was influenced by participants' kindergarten working years, whether having friends or relatives with family members with ASD, and previous relevant training experience. PBC was correlated with previous experience working with children with ASD. Behavioural intention was correlated with whether having friends and relatives who had family members with the condition.

KEYWORDS:

Autism Spectrum Disorder, theory of planned behaviour, kindergarten teacher, attitude, knowledge, perceived behaviour control, behaviour intention

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LITERATURE REVIEW

Education for Children with Autism Spectrum Disorder (ASD)

ASD has become one of the most discussed learning disabilities nowadays, with an increasing identification prevalence through the at least past two decades. It is a neurological and developmental disability, characterized by communication and interaction difficulty, restricted interests,

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and repetitive behaviours (American Psychiatric Association, 2013). The newest population size of ASD in China is ten million, two million of whom are children (China Education Newspaper, 2023). The prevalence varies across regions around the world. Moreover, it is even higher in some countries. For example, the prevalence data in the United States posted by the Centers for Disease Control and Prevention (CDC) from 2002 to 2020 has been risen from 1 in 150 to 1 in 36 (CDC, 2023). Possible reasons include public awareness of the disorder, identification criteria, and statistical methodologies (Fombonne, 2002, Zaroff & Uhm, 2012).

In the field of education, the symptoms of ASD would prevent people from academic learning, emotion control, self-expression, peer relationship initiation and maintenance, collective environment adaptation, and self-care (National Institute of Mental Health, 2023). Moreover, about 50% of people ASD are comorbid with intellectual disabilities, which increases the barriers for them to adapt to general school life (Raisingchildren Net, 2016). In addition, the acceptance for children with ASD has been suggested insufficient from their typical developing (TD) peers, parents of TD peers, and teachers from mainstream school (Feldman et al., 2022; Abu-Hamour & Muhaidat, 2014; Jury, Perrin, Desombre, & Rohmer, 2021). Such lack of ability and acceptance indicates a necessity and practical meaning to improve the educational environment for children with ASD.

Kindergarten is often the first collective educational environment for children, which would function as a foundation for school experience of children with ASD and acceptable behaviours of their TD peers in their further education life (Lopez-Agudo & Marcenaro-Gutierrez, 2023). Developmental psychology suggests that young children's attitudes are more likely to be shaped by teachers while adolescents tend to develop more independent thoughts and less influenced by adults (Berk, 2007). Therefore, increasing kindergarten teachers' acceptance of children with ASD would have the potential to improve school inclusiveness via influencing the TD peers' attitudes at the same time.

Knowledge, attitude, PBC, and behavioural intention

Knowledge plays an important role in shaping people's thought, including teachers' idea about children with ASD. In previous studies, teachers with relevant training, therefore more

knowledge, have presented a more positive attitude and self-efficacy toward these children (e.g., Lian et al., 2008; Barned, Knapp, & Neuharth-Pritchett, 2011; Lu et al., 2020; Au & Lau, 2021). In addition, the concepts of attitude, PBC, and behavioural intention are adopted from the theory of planned behaviour (TPB), which is one of the dominant theories investigating the mechanism for people's engagement in certain behaviours (Ajzen, 1991). It proposes behavioural intention to be the most direct determinants of behaviour engagement, whose predictors involve attitude, subjective norm, and PBC (Ajzen & Madden, 1986). Ajzen (2014) further argues that while the effects of attitude and subjective norm are not direct on behaviour engagement, the influence of PBC would be direct without changing behavioural intention as a mediator.

This study involved knowledge, attitude, and PBC as potential factors influencing behavioural intention. The only factor of TPB not involved in this study is subjective norm, which is the perception of social pressure toward certain behaviour (Teo, 2015; Wang, 2022). It is the evaluation of how significant a behaviour is considered by the context, including important persons (e.g., family members, friends, colleagues, Werner, 2004), institution regulations, policies, and culture (Ajzen, 1991). In this study, subjective norm of kindergarten teachers is determined more by their working context, such as local policies and its implementation via education institutions, school regulations, behaviours of colleagues, and feedback from significant others. Comparatively, the knowledge, attitude, PBC are more internal and determined by individuals themselves, which is the rationale not including subjective norm in this study.

The followings are some detailed explanations of attitude, PBC, and behavioural intention under the context of this study. *Attitude* is the positive or negative response toward certain object. People behave in a favourable or unfavourable manner based on their attitude (Fishbein & Ajzen, 1975). TPB claims a positive relationship between more favourable attitude and the chances of behaviour engagement (Ajzen, 1991). In this study, a positive attitude could include an affection toward when staying together with, acceptance of different behaviour patterns of, and motivation to investigate proper teaching methods for children with ASD.

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PBC is individuals' perceived ease or difficulty of engaging with certain behaviours (Ajzen, 1991). If attitude and subjective norm are internal and external driving force, *PBC* is the perception from both to fulfil a task successfully (Wang, 2022). A lack of *PBC* is likely to produce a lower rate of behaviour engagement (e.g., Levy & Ben-Ari, 2008). In this study, *PBC* is the kindergarten teachers' confidence of their ability to integrate with, provide education to, and deal with challenges brought by children with ASD. It can be influenced by both the teachers' understanding of themselves and support from the environment, such as relevant professional support, extra time, and financial resources. *Behavioural intention* can be understood as people's overall willingness of behaviour engagement (Kisbu-Sakarya & Doenyas, 2021). Based on TPB, it relates directly to the likelihood that kindergarten teachers to teach and devote in various methods to create a more inclusive education environment for children with ASD.

Previous studies

Previous studies have made some investigation in teachers' knowledge, attitude, belief, skills, and self-efficacy, from different countries and in different education settings. For example, Ruble, Usher, and McGrew (2011) investigated the potential sources of self-efficacy in dealing with stress and implementing evidence-based approaches toward students with ASD aging between three to nine in special education settings in the US. Teachers' working experience, evaluative feedback from others, stress level, and burnout were measured. Significant results were found only in the last source. Corona, Christodulu, and Rinaldi (2017) have made some similar exploration amongst school staff in different positions from 10 schools in the US., whose roles contains teacher, psychologist, and administer. The potential sources included knowledge, prior working experience, relevant training experience and significant results were presented only in the last one (Corona et al., 2017).

Boujut et al. (2017) measured the perceived self-efficacy, perceived stress, coping strategies, and burnout emotions of teachers who taught students with ASD, from primary and secondary schools in France, Guyana, and Martinique. Lower self-efficacy predicted a higher possibility in using emotion-focused coping strategies (rather than problem-focused) and a higher perceived stress level, both of which further predicted a

higher burnout (Boujut et al., 2017). In addition to the practice toward children who had already been identified as being autistic, Taresh et al. (2020) conducted a review for pre-school teachers' self-efficacy in recognizing possible symptoms of ASD. Results presented the impacts of knowledge, belief, and identification skills (Taresh et al., 2020).

Relevant studies can also be noticed under the context of China, targeting at similar influential factors. Lu et al. (2020) analysed questionnaires filled by 410 teachers from 12 mainstream primary schools in Guangzhou. Knowledge was suggested to be predicable for both attitude and self-efficacy in teaching children with ASD. Meanwhile, attitude presented positive mediating and moderating effects in the correlation between teachers' knowledge and self-efficacy (Lu et al., 2020). Relevant information can also be detected from some cross-country comparison studies involving participants from China. For example, Ballantyne, Gillespie, and Wilson (2021) have made a comparison of the knowledge and experience of teachers from UK and Shanghai, China. Previous working experience was suggested to be predictable for the knowledge of ASD, for both primary and secondary school teachers.

In addition to quantitative questionnaires specifically measuring knowledge, attitude, *PBC*, and behavioural intention, they can also be reflected in some qualitative studies. Li et al. (2022) conducted in-depth interviews with 19 teachers from five mainstream primary schools about their experience on inclusive education of children with ASD, including the teachers' perception of policies and relevant practice. Teachers presented a high behavioural intention in supporting students with the condition, regardless of the challenges in limited inclusive education resources stipulated in policies, training for implementation skills, and social stigma.

Current study

Regardless of the contribution that previous studies made, there are some obvious gaps in studies analysing the relationship between kindergartens teachers' knowledge, attitude, *PBC*, and behavioural intention under the context of small towns in China. These gaps restricted a comprehensive understanding of a more general context in Chinese kindergartens. First, participants in most studies are teachers from mainstream primary and secondary schools, the number of studies involving kindergarten teachers is few. Second, there

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are very limited studies conducted in China, nevertheless the peculiarity of the education and social contexts of the country. Third, even for the studies which were conducted in China, they were in cities with more advanced socioeconomic development status, such as Guangzhou and Shanghai. Small towns whose development is more backward was not investigated, regardless of the large geographical and population proportion they take.

This study, to fill the aforementioned gaps, aims at investigating the knowledge, attitude, PBC, and behavioural intention of kindergarten teachers to support children with ASD from a small town in China, using TPB as the theoretical framework. Behavioural intention is considered to be the most directly relevant factor of practical support behaviours and the others will be potential contributing factors. The relationship amongst these factors will be analysed and further discussion will be provided.

METHODOLOGY

Participants

Forty-eight teachers were recruited from three kindergartens in a town seating in Shandong province, China. Forty-six of the 48 finished questionnaires were involved in data analysis and two were dropped because of unanswered questions. All participants who have completed the whole research procedures were female, with a mean age of 29.67 (SD = 6.87). The highest education level ranges from middle school to university. The most occurred education level is college (N = 25, 54.3%) and the second most common is middle school (N = 9, 19.6%). Participants have been working in kindergartens for from less than a year to 17 years, with an average year of 4.56 (SD = 3.72) and 78.3% range within five years (N = 36).

In addition to administrative staff (N = 2), there are two kinds of position according to the division of work in the recruited kindergartens. Being a lead teacher requires higher professional skills and relevant experience, whose responsibility included the decision-making of the whole classroom, such as teaching plans, event design, and parental communication (N = 21). Assistance teachers work closely with lead teachers to effectively implement the pre-determined education and care plans (N = 23). Participants differed in personal experience with children with ASD. Twelve of the 46 participants used to have experience having children with ASD

in their classroom and five have friends or relatives whose children have an ASD diagnosis. Twenty-eight participants have taken part in relevant training, ranging from 2 to 32 hours (M = 6.52, SD = 5.93).

Procedure

The research was conducted in the conference rooms of the teachers' own working places. A consent form was signed before the start. All questionnaires were anonymous and participants were allowed to quit anytime they wanted. A compensation of 20 RMB was given to the participants after the questionnaire filling procedure. The questionnaire took around 20 minutes to finish. Ethics approval was gained from the local Disabled Persons' Federation, who rated this study at a low risk. Potential detriments were proposed with feasible solutions. For example, if teachers developed a worse attitude toward children with ASD because of this study, consultations will be introduced. Further information could be gained from the authors.

Assessment tool

The questionnaire consisted of two sections. The first section was a collection of basic demographic information (e.g., age, gender, education, working experience) and personal experience related to ASD (e.g., previous interaction, training experience). Section two assessed participants' knowledge, attitude, PBC, and behavioural intention. To avoid unnecessary disturbance, the questionnaire did not describe the purpose of each part (e.g., the part of knowledge is not labelled as "knowledge"). Useful guidance was provided before the questions, such as the meaning of different rating scores and following their first reaction. Half of the questions were reversely worded to reduce agreement bias and underlines were added to the reverse words as hints. All of the reversely described questions were put together in the later part of each section to avoid unnecessary logical challenge to the participants.

The knowledge part consisted of true-or-false questions and the parts of attitude, PBC, and behavioural intention are 5-point Likert scales, all of which were developed based on previous studies with similar participant characteristics. The questions related to knowledge was adopted from Haimour and Obaidat (2013) and the attitude section was from Olley,

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DeVellis, and DeVellis (1981). The PBC and behavioural intention question lists were combinations of relevant content from various previous studies with duplicated questions removed, as every of them tends to be short and potentially reduces the measurement reliability (PBC: Liñán & Chen, 2009; Cheon, Lee, Crooks, & Song, 2012; Lenski, Richter, & Lüdtke, 2019; Wang, 2022; behavioural intention: Mahat, 2008; Liñán & Chen, 2009; Lenski, Richter, & Ludtke, 2019; Wang, 2022; Saidu & Mamun, 2022; Wijaya, Jiang, Mailizar, & Habibi, 2022).

Data analysis

The analysis procedure was conducted in SPSS 28. After data collection, all hand-written questionnaires were input in the tool. Descriptive analysis was conducted to generate an overview of participant characteristics. To investigate potential relationship between participants’ performance and their personal characteristics, crosstab analysis and two rounds of Chi-Square test were conducted. The first round has defined the score of knowledge, attitude, PBC, and behavioural intention as nominal. The second round has grouped each of the four variables into four-point ordinal scales, based on the standard of 40%, 60%, and 80%, named in the form of “variable-group” (i.e., knowledge-group, attitude-group, PBC-group, behavioural-intention-group).

The distribution patterns of the four variables were examined to determine the proper method to explore the potential correlations of any two variables. Potential correlations between any two of the four variables were examined via one-way ANOVA test. In addition to one certain demographic characteristic, to investigate if there exists combined effect of two characteristics, multivariate analysis of variance was also conducted amongst difference demographics and each of the four measured variables (i.e., knowledge, acceptance, PBC, and behavioural intention). Relevant discussion was developed based on the analysis results to understand the teachers’ relevant thoughts, develop future research directions, and provide practical guidance in teachers’ attitude improvement.

RESULTS

All the four variables are normally distributed and the mean score of each variable transferred into percentage follows an increasing order of knowledge, attitude, PBC, and behavioural intention. More detailed statistics can be found in Table 1. Based on the 40-60-80% grouping method, the most frequent score group of knowledge, attitude, PBC, and behavioural intention is group 40-60% (76.10%), 60-80% (63.00%), 60-80% (89.10%), and 60-80% (50.00%, while group 80-100% with a slightly lower proportion of 47.8%).

Table 1. Levels of knowledge, attitude, PBC, and behavioural intention

	Knowledge	Attitude	PBC	Behavioural intention
Mean	14.09	43.93	53.65	56.65
Total score	30.00	70.00	80.00	70.00
Percentage of Mean	46.97	62.76	67.06	80.93
SD	2.96	4.91	4.38	5.84
Median	14.00	44.00	53.00	56.00
Range	13	23	22	26

All the four variables were normally distributed. Pearson correlation coefficient was adopted and presented a significant positive correlation between attitude and PBC ($r = 0.471, p < 0.001$). This significance still existed under a partial correlation analysis with either knowledge or behavioural intention controlled ($p < 0.001$). In addition, one-way ANOVA analysis

detected a positive correlation effect between PBC and behavioural intention, with the homogeneity of variance significance based on mean higher than 0.05 ($p = 0.188$) and ANOVA significance lower than 0.05 ($p = 0.008$).

Correlation (Chi-square) test presented significant effects between several demographics and variable scores. The

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knowledge score as a scale was statistically related to the years of kindergarten working experience ($p = 0.003$). The average scores of participants working as a kindergarten teacher for less than five, five to ten, and 15 to 20 years were decreasing ($M_1 = 14.80, SD_1 = 2.22; M_2 = 11.57, SD_2 = 4.43; M_3 = 11.00, SD_3 = 2.64$). Under the 40-60-80% grouping method, knowledge-group was also statistically correlated with kindergarten working experience ($p < 0.001$), condition of having friends or relatives with family members with ASD ($p = 0.009$), and previous training experience relevant to ASD ($p = 0.027$).

Table 2 summarized the distribution of participants' knowledge scores based on the three relevant personal characteristics. For those who have been working as a kindergarten teacher for less than five years, 91.67% was scored from 40% to 60% and 8.33% was less than 40%. The group distribution of participants whose working experience ranged from five to 10 years was 71.43% in less than 40%,

14.29% from 40% to 60%, and 14.29% from 60% to 80%. The scores of 66.67% participants who have been working between 15 to 20 years were less than 40% and 33.33% of them were scored between 40% and 60%. Participants' knowledge performance was also correlated with whether they had friends or relatives who had family members with ASD. For those who had such friends or relatives, 80% were in the 40-60% group and 20% in the 60-80%. For those without, 24.39% were scored less than 40% and 75.61% achieved a correct rate between 40% and 60%. The last influential factor of the knowledge distribution was previous training relevant to ASD. For those who had such training history, 10.71% achieved less than 40% and 89.29% were between 40% and 60%. In terms of participants without relevant experience, 41.18% were less than 40%, 55.56% were between 40% and 60%, and 5.56% were between 60% and 80%.

Table 2. Knowledge score (in group) performance distribution

Knowledge score		0-40%	40-60%	60-80%	80-100%
Kindergarten working experience (in years)	< 5 (N = 36)	8.33%	91.67%		
	5-10 (N = 7)	71.43%	14.29%	14.29%	
	10-15 (N = 0)				
	15-20 (N = 3)	66.67%	33.33%		
Have friends or relatives with ASD family members	Yes (N = 5)		80%	20%	
	No (N = 41)	24.39%	75.61%		
Relevant training of ASD	Yes (N = 28)	10.71%	89.29%		
	No (N = 18)	41.18%	55.56%	5.56%	

PBC was related with previous experience working with children with ASD ($p = 0.021$). Participants without such experience presented higher PBC ($M = 53.94, SD = 4.48$) than

those who had ($M = 52.83, SD = 4.15$). Behavioural intention was related with whether have friends or relatives who have family member with ASD ($p = 0.027$). The score was higher in

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those without these friends or relatives ($M = 57.05$, $SD = 5.48$), compared to those who did have ($M = 53.2$, $SD = 7.89$).

DISCUSSION

This study investigated the knowledge, attitude, PBC, and behavioural intention of kindergarten teachers toward children with ASD in China. The design of the measured items was based on the TPB. It was hypothesized that behavioural intention can be influenced by knowledge, attitude, and PBC and the three factors were inter-correlated. This study has provided both consistent and inconsistent evidence of the hypotheses. Regardless of this theory, the kindergarten teachers' performance itself can reflect some understandings and attitudes of this group toward children with ASD. Combined with the personal characteristics of the participants, this study provides practical guidance for the improvement of kindergarten teachers' behaviours toward children with ASD. The following discussion provides directions for future studies based on the existence and non-existence of certain correlations, whose mediating mechanisms are still unclear.

Amongst the four measured items, participants rated the lowest in knowledge, compared to the other three measures, with a considerable difference (46.97% compared to 62.76%, 67.06%, and 80.93%). The relations detected of the four variables involved the positive correlation between attitude and PBC and PBC and behavioural intention. Moreover, there were several personal characteristics correlated with participants' performance. A higher knowledge score was correlated with shorter kindergarten working experience, having friends or relatives who had family members with ASD, and previous training experience relevant to ASD. Moreover, participants without previous training experience were more likely to develop higher PBC. Those without friends or relatives who had family members with ASD presented higher behavioural intention to involve children with ASD in their classes.

Reflection of results

The kindergarten teachers involved in this study presented a similar age and gender characteristic to the general context in China (Baidu Zhidao, 2023; Hongyang Asian Education, 2023), which possessed a representativeness for a broader context. There were two studies detected, which focused on similar

variables in educational settings under the context of China. Liu et al. (2016) involved pre-school teachers in Guangzhou and Foshan and Lu et al. (2020) involved mainstream primary school teachers in Guangzhou. Participants in both studies presented a lower knowledge and higher attitude and self-efficacy toward children with ASD, which was consistent to the results of this current study (36.87%, 71.82%, 74.33%, Liu et al., 2016; 53.9%, 64%, 66%, Lu et al., 2020). It can be indicated that under a Chinese context, although teachers possess a positive attitude and enthusiasm toward children with ASD, they still require more relevant training for a better understanding of the condition.

In addition to China, there were studies focusing on similar variables in other countries and involved teachers from different educational settings as well, such as Malaysia, Turkey, Croatia, Iceland, and Australia. The results seemed to be contradictory of studies involving more than one of the aforementioned variables, where participants presented higher average attitude (62.76%) than knowledge level (46.97%). The scores of special education teachers in Malaysia from high to low were attitude toward the inclusion of children with ASD (69.6%), knowledge of the condition (66.1%), and attitude toward the children themselves (59.6%, Low, Lee, & Ahmad, 2020). The knowledge scores of both mainstream and special primary school teachers in Croatia considerably exceeded their attitude scores (mainstream: 63.46% in knowledge and 51.56% in attitude; special: 67.05% and 46.64%, Stosi, Segota, & Preece, 2022). Except the potential effect of the adoption of different questionnaires, such difference could reflect a difference amongst countries or between pre-school and primary school teachers.

Regarding to the general performance in knowledge and attitude, participants from mainstream educational settings in these studies presented a higher knowledge (63.38%, Turkey, Rakap, Balikci, & Kalkan, 2018; 63.46%, Stosi et al., 2022; 77.7%, Iceland, Bjornsson, Saemundsen, & Njardvik, 2019) and various attitude level (51.56%, Croatia, Stosi et al., 2022; 82.2%, Australia, Garrad, Rayner, & Pedersen, 2019). Compared with teachers from special education, those from mainstream schools developed lower knowledge while higher attitude level (Bjornsson et al., 2019; Stosi et al., 2022). Pre-school teachers were more knowledgeable than primary school

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teachers in some study (Rakap et al., 2018). However, most of these studies focused on primary school teachers, which differed from kindergarten teachers in various perspectives. The number of relevant studies targeting at kindergarten teachers is limited worldwide. Thus, studies investigating kindergarten teachers' knowledge, attitude, PBC, and behavioural intention toward children with ASD from different countries will be helpful for a comprehensive understanding of the situation.

This study provided consistent evidence for the positive correlation between attitude and PBC and PBC and behavioural intention. Compared to the hypotheses in the TPB (Ajzen & Madden, 1986; Ajzen, 1991), knowledge and attitude were not presented to be positive predictor for behavioural intention. In addition, the inter-correlation of knowledge and attitude and of knowledge and PBC were lack. Although there was a statistical correlation between attitude and PBC and predictable effect of PBC to behavioural intention, PBC failed to become a mediator between of attitude to behavioural intention and requires further explanation in future studies.

The kindergarten teachers' attitude toward children with ASD was not correlated with their level of knowledge. A possible explanation could be that compared to knowledge specifically about ASD, teachers' attitude might compromised more of their intuitive empathy and responsibility to vulnerable group. The non-existence of negative correlation, on the other hand, at least indicated a small chance of aversion towards the characteristics or possible challenges of the condition. Moreover, knowledge did not correlate with PBC or present a predictable effect on behavioural intention, which might suggest an insufficiency of theoretical knowledge and necessity of practical skills trainings to increase teachers' feelings of control and willingness to involve children with ASD. Simple knowledge of certain symptoms or behavioural characteristics of ASD might even reduce teachers' confidence to deal with situations via adding known difficulty without effective dealing methods.

However, the aforementioned examples are all hypothetical explanations based on previous studies (e.g., Johnson, Soares, & Gutierrez, 2021). The lack of the following relationship needs to be investigated as a possible direction for future studies relevant to the TPB. Attitude was related with

PBC while not predictable for behavioural intention. Knowledge was not correlated with any variable or predictable for behavioural intention. Future studies could start from qualitative research methods such as interviews and focus group discussion for possible influential factors, followed by quantitative questionnaires to statically analyse their effect.

There were several demographics relevant to participants' scores in different variables, which indicated some personal experience and behavioural characteristics of participants with them. For example, participants who worked as a kindergarten teacher for less years were more knowledgeable regarding to ASD. Possible explanation included the introduction of relevant content in more current campus curriculums for kindergarten teachers and the awareness of the condition by the younger generation influenced by social media. For both participants with and without friends or relatives who had family members with ASD, the knowledge scores of the majority fell in the 40-60% group. In addition to a lack of interest for situations not directly related to themselves, this situation also revealed a lack of understanding of ASD that its reasons are still unknown and could be possible for every family. However, the performance of the rest participants showed a difference that the scores of those with such friends or relatives ranged from 60% to 80% while those without were less than 40%. Both of these participants consisted 20% of the group. Therefore, personal experience with individual with ASD did have the potential to contribute to a better understanding of the condition.

In terms of previous training experience relevant to ASD, most participants who have previously been trained with relevant knowledge obtained a knowledge score between 40% to 60% (89.29%) and the rest were less than 40%. Even more than half participants who did not have such experience fell in the 40-60% group as well, the proportion was smaller than those who had the training experience (55.56%). Moreover, a larger proportion of participants without previous training experience were scored less than 40% (41.18%) than who had (10.71%), which indicated a usefulness and effectiveness of the trainings. However, the highest knowledge scores occurred in participants without previous training, which also suggested an effect of personal experience or subjective initiative.

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Surprising results occurred in the effect of previous working experience with children with ASD on PBC and whether have friends or relatives with ASD family members on behavioural intention to involve children with ASD in their class. Although these two factors seem helpful for participants to achieve a higher score in the variables, the fact was on the contrary. Kindergarten teachers without previous experience working with children with ASD developed higher PBC than those who had such experience. Similarly, the behavioural intention to include children with ASD in class was higher amongst those without any friend or relative who had family members with the condition. As a result, a comparatively negative and challenging experience can be indicated from the teachers' previous history interacting with children with ASD. Relevant training including practical and effective skills should be provided to increase their self-efficacy and willingness to support children with the extra needs.

LIMITATION

A few limitations of this study could be improved in future studies. First, its representativeness was restricted by the gender of participants, all of whom were female. Although such gender distribution was consistent to the general kindergarten context in China (Yongxing Document, 2016), the understanding and thoughts of male teachers were missed. As the number of male teachers in one kindergarten is typically difficult for a satisfying sample size for a quantitative research, future studies might need to recruit participants from more schools or use some qualitative research methods. Moreover, especially when analysing the correlation amongst the variables and effect of certain personal characteristics, some dialogue with and explanation from participants would be helpful to understand the underlying mechanism. Thus, future studies could consider a combination of quantitative and qualitative research methods, such as interviews and focus group discussions.

CONCLUSION

This study investigated the effect of knowledge, attitude, and PBC of kindergarten teachers on their behavioural intention of including children with ASD. The order of the average scores from low to high is knowledge, attitude, PBC, and behavioural intention. Positive correlations were detected

between attitude and PBC and between PBC and behavioural intention. Knowledge was influenced by participants' kindergarten working years, whether having friends or relatives with family members with ASD, and previous relevant training experience. PBC was correlated with previous experience working with children with ASD. Behavioural intention was correlated with whether having friends and relatives who had family members with the condition. Discussion of the results will be provided for a comparison with relevant studies, possible explanation of the results, guidance for practice, and future study directions.

REFERENCES

1. Abu-Hamour, B., & Muhaidat, M. (2014). 'Parents' attitudes towards inclusion of students with autism in Jordan', *International Journal of Inclusive Education*, 18(6), 567–579. DOI: 10.1080/13603116.2013.802026
2. American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders: DSM-5*. (Fifth edition). ed. American Psychiatric A, editor: Arlington
3. Ajzen, I. (1991). 'The theory of planned behavior', *Organizational Behavior and Human Decision Processes*, 50(2), 179–211. DOI: 10.1016/0749-5978(91)90020-T
4. Ajzen, I., & Madden, T. J. (1986). 'Prediction of goal-directed behavior: Attitudes, intentions, and perceived behavioral control', *Journal of Experimental Social Psychology*, 22(5), 453-474. DOI: [10.1016/0022-1031\(86\)90045-4](https://doi.org/10.1016/0022-1031(86)90045-4)
5. Au, T., & Lau, N. (2021). 'Private music teachers' knowledge of and attitudes toward students with autism spectrum disorder', *Journal of Autism and Developmental Disorders*, 51(12), 4551–4559. DOI: 10.1007/s10803-020-04809-5
6. Baidu Zhidao (2023). *The average age of kindergarten teachers*. [online] Available from: <https://zhidao.baidu.com/question/1712808932845844740.html>
7. Barned, N. E., Knapp, N. F., & Neuharth-Pritchett, S. (2011). 'Knowledge and attitudes of early childhood

Xiaohui Sun et al, Investigating Kindergarten Teachers' Knowledge, Attitude, Perceived Behavioural Control, And Behavioural Intention to Include Children with Autism Spectrum Disorder in a Small Town in China: Based on the Theory of Planned Behaviour

- preservice teachers regarding the inclusion of children with autism spectrum disorder', *Journal of Early Childhood Teacher Education*, 32(4), 302-321, DOI: 10.1080/10901027.2011.622235
8. Berk, L. E. (2007). *Development through the lifespan* (4th ed.). Pearson/Allyn and Bacon publisher
 9. Bjornsson, B.G., Saemundsen, E., & Njardvik, U. (2019). 'A survey of Icelandic elementary school teachers' knowledge and views of autism - Implications for educational practices', *Nordic Psychology*, 71(2), 81-92. DOI: [10.1080/19012276.2018.1480408](https://doi.org/10.1080/19012276.2018.1480408)
 10. Centers for Disease Control and Prevention (2023). *Data & statistics on autism spectrum disorder*. [online] Available from: <https://www.cdc.gov/ncbddd/autism/data.html>
 11. China Education Newspaper (2023). *At present, there are over 2 million children with autism in China - how to jointly protect the "children of the stars"*. [online] Available from: <https://baijiahao.baidu.com/s?id=1762120844882590658&wfr=spider&for=pc>
 12. Feldman, M., Hamsho, N., Blacher, J., Carter, A. S., & Eisenhower, A. (2022). 'Predicting peer acceptance and peer rejection for autistic children', *Psychology in the Schools*, 59(11), 2159-2182. DOI: 10.1002/pits.22739
 13. Fishbein, M., & Ajzen, I. (1975). *Intention and Behavior: An Introduction to theory and research*. Reading, MA: AddisonWesley publisher.
 14. Fombonne, E. (2002). 'Epidemiological trends in rates of autism', *Mol Psychiatry*, 7(2), 4-6. DOI: 10.1038/sj.mp.4001162
 15. Garrad, T., Rayner, C., & Pedersen, S. (2019). 'Attitudes of Australian primary school teachers towards the inclusion of students with autism spectrum disorders', *Journal of Research in Special Educational Needs*, 19(1), 58-67. DOI: [10.1111/1471-3802.12424](https://doi.org/10.1111/1471-3802.12424)
 16. Hongyang Asian Education (2023). *Age restriction for registering with kindergarten teacher certificate in China*. [online] Available from: <https://localsite.baidu.com/okam/pages/article/index?articleId=9563665&ucid=n1D4rHDvrjT&categoryLv1=教育培训&ch=54&srcid=10004>
 17. Johnson, A., Soares, L., & Gutierrez de Blume, A. (2021). 'Professional Development for Working with Students with Autism Spectrum Disorders and Teacher Self-Efficacy', *Georgia Educational Researcher*, 18(1). DOI: 10.20429/ger.2021.180101
 18. Jury, M., Perrin, A., Desombre, C., & Rohmer, O. (2021). 'Teachers' attitudes toward the inclusion of students with autism spectrum disorder: Impact of students' difficulties', *Research in Autism Spectrum Disorders*, 83(May 2021), 101746. DOI: 10.1016/j.rasd.2021.101746
 19. Kisbu-Sakarya, Y., & Doenyas, C. (2021). 'Can school teachers' willingness to teach ASD-inclusion classes be increased via special education training? Uncovering mediating mechanisms', *Research in developmental disabilities*, 113(June 2021), 103941. DOI: 10.1016/j.ridd.2021.103941
 20. Law, G. C., Dutt, A., & Neihart, M. (2019). 'Increasing intervention fidelity among special education teachers for autism intervention: A pilot study of utilizing a mobile-app-enabled training program', *Research in Autism Spectrum Disorder*, 67(November 2019), 101411. DOI: 10.1016/j.rasd.2019.101411
 21. Levy, R.B., & Ben-Ari, M. (2008). 'Perceived behavior control and its influence on the adoption of software tools', *SIGCSE Bulletin*, 40(3), 169-173. DOI: 10.1145/1597849.1384318
 22. Lian, W.B., Ying, S.H.K., Tean, S.C.H., Lin, D.C.K., Lian, Y.C. & Yun, H.L. (2008). 'Pre-school teachers' knowledge, attitudes and practices on childhood developmental and behavioural disorders in Singapore', *Journal of Paediatrics and Child Health*, 44(4), 187-194. DOI: 10.1111/j.1440-1754.2007.01231.x
 23. Liu, Li, J., Zheng, Q., Zaroff, C. M., Hall, B. J., Li, X., & Hao, Y. (2016). 'Knowledge, attitudes, and perceptions of autism spectrum disorder in a stratified sampling of preschool teachers in China', *BMC Psychiatry*, 16(143), 142-142. DOI: 10.1186/s12888-016-0845-2
 24. Lopez-Agudo, L. A. & Marcenaro-Gutierrez, O. D. (2023). 'The influence of kindergarten on students' performance: The Spanish case', *The Social Science*

Xiaohui Sun et al, Investigating Kindergarten Teachers' Knowledge, Attitude, Perceived Behavioural Control, And Behavioural Intention to Include Children with Autism Spectrum Disorder in a Small Town in China: Based on the Theory of Planned Behaviour

- Journal (Fort Collins), ahead-of-print*(ahead-of-print), 1–27. DOI: 10.1080/03623319.2023.2194473
25. Low, H. M., Lee, L. W., & Che Ahmad, A. (2020). 'Knowledge and attitudes of special education teachers towards the inclusion of students with autism spectrum disorder', *International Journal of Disability, Development, and Education*, 67(5), 497–514. DOI: 10.1080/1034912X.2019.1626005
26. Lu, M., Zou, Y., Chen, X., Chen, J., He, W., & Pang, F. (2020). 'Knowledge, attitude and professional self-efficacy of Chinese mainstream primary school teachers regarding children with autism spectrum disorder', *Research in Autism Spectrum Disorders*, 72(2020), 101513. DOI: 10.1016/j.rasd.2020.101513
27. Oshima, D. Y. (2007). 'Syntactic direction and obviation as empathy-based phenomena: a typological approach', *De Gruyter Mouton*, 45(4), 727-763. DOI: 10.1515/LING.2007.022
28. Palmen, A., Didden, R., & Korzilius, H. (2010). 'Effectiveness of behavioral skills training on staff performance in a job training setting for high-functioning adolescents with autism spectrum disorders', *Research in Autism Spectrum Disorder*, 4(4), 731-740. DOI: 10.1016/j.rasd.2010.01.012
29. Probst, P., & Leppert, T. (2008) 'Brief Report: Outcomes of a Teacher Training Program for Autism Spectrum Disorders', *Journal of autism and developmental disorders*, 38(9), 1791–1796. DOI: 10.1007/s10803-008-0561-y.
30. Raisingchildren Net (2016). *Conditions that can occur with autism*. [online] Available from: <https://raisingchildren.net.au/autism/learning-about-autism/about-autism/conditions-that-occur-with-asd#:~:text=How%20common%20is%20intellectual%20disability,an%20IQ%20of%2071%2D85>.
31. Rakap, S., Balikci, S., & Kalkan, S. (2018). 'Teachers' knowledge about autism spectrum disorder: The case of Turkey', *Turkish Journal of Education*, 7(4), 169-185. DOI:10.19128/turje.388398
32. Stošić, Lisak Šegota, N., & Preece, D. (2022). 'Primary teachers' knowledge and attitudes about autism, and experience of good practice approaches: Implications for policy and practice in Croatia', *Support for Learning*, 37(4), 573–588. DOI: [10.1111/1467-9604.12429](https://doi.org/10.1111/1467-9604.12429)
33. Teo, T. (2015). 'Comparing pre-service and in-service teachers' acceptance of technology: Assessment of measurement invariance and latent mean differences', *Computers & Education*, 83(April 2015), 22-31. DOI: 10.1016/j.compedu.2014.11.015
34. Treffert, D. A., & Rebedew, D. L. (2015). 'The Savant Syndrome Registry: A Preliminary Report', *Wisconsin Medical Journal*, 114(4), 158–162. PMID: 26436185
35. Wang Y. (2022). 'A comparative study of Chinese and American preservice teachers' intention to teach online based on the Theory of Planned Behavior', *Education and information technologies*, 28(2023), 6391-6405. DOI: 10.1007/s10639-022-11442-5
36. Werner, P. (2004). Reasoned action and planned behavior. In S. J. Peterson, & T. S. Bredow (Eds.). *Middle range theories: Application to nursing research*. Philadelphia, PA: Lippincott Williams & Wilkins publisher
37. Yongxing Document (2016). 'Analysis of the Difficulties Faced by Male Kindergarten Teachers from a Gender Perspective', *Douding Web* [online]. Available from: <https://www.docin.com/p-2875106031.html>
38. Zaroff, C. M. & Uhm, S. Y. (2012). 'Prevalence of autism spectrum disorders and influence of country of measurement and ethnicity', *Social Psychiatry and Psychiatric Epidemiology*, 47(3), 395–398. DOI: 10.1007/s00127-011-0350-3