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Perceived School Support as a Predictor of Singapore Preschool Teachers' Inclusion of Children with Developmental Needs

Abstract

Teachers are more likely to include children with developmental needs (DN) in their classroom when they perceive that important people around them, such as principals, colleagues, and parents of children with and without DN, endorse inclusive education. Adequacy of resources and availability of training opportunities may also affect how teachers perceived being supported.

This study examines Singapore preschool teachers' perception of support received from their working environment to include children with DN and how this predicts their intention to practice inclusive education and self-reported implementation of inclusive practices in the classroom.

The original Perceived School Support for Inclusive Education (PSSIE) scale, developed in Bangladesh, was reviewed for relevance and clarity by a panel of six experts familiar with Singapore preschool inclusion. 211 preschool teachers in Singapore completed the new 11-item revised PSSIE - Singapore Version online. Perceived school support was found to be a single construct that significantly and reliably predicts both intention and self-reported practices (alpha = .929). Stakeholders in Singapore can now use this newly validated instrument to reliably understand the support received by teachers and to re-examine the strategies provided to support preschool teachers in this journey towards quality inclusive education.

Perceived School Support as a Predictor of Singapore Preschool Teachers' Inclusion of Children with Developmental Needs

Including diverse learners in the mainstream classroom is a vision sought-after by many countries today. Children with special needs who are included in general education classrooms fair equally well, or even better than peers with similar diagnosis but who are attending self-contained special education classrooms (Dessemontet et al., 2012; Hehir, 2016; Justice et al., 2014; Oh-Young & Filler, 2015). For preschool children, being in an inclusive environment promote the development of accurate understandings and positive attitudes, leading to growing up with an inclusive mindset. This lays the foundation for the development of values and characters important for the sustainability of human life and development (United Nations, 2015).

Full inclusive education goes beyond mere physical integration and promotes for children with special needs to receive the support they required within regular schools so as to maximise their social and academic achievement (United Nations, 2006). Teachers are key enablers of this process. Yet, literature continues to report teachers' lack of implementation of inclusive classroom practices despite their apparent acceptance of the concept (Chiner & Cardona, 2013; O'Rourke, 2014). Implementation of evidence-based inclusive practices may be perceived as an effortful task by some teachers. Including children with special needs means that teachers must ensure that activities are meaningful to every student in the class, with and without special needs. It not only requires a mindset shift by teachers to embrace neurodiversity in the classrooms, but also entails redesigning the curriculum, modifying content, environment, and pedagogies (UNESCO, 2009). Quality inclusion inevitably necessitates teachers to collaborate with an increased diversity of specialists, professionals, parents and families.

Feeling supported helps teachers to navigate the demands of providing inclusive education. Teachers not only require social and professional support from important others in their working environment, but also tangible support such as training and resources when

implementing inclusive education (Ahmmed, 2013; Avramidis & Norwich, 2002; Chiner & Cardona, 2013; Sharpe, 2013; Werts et al., 1996). Teacher's perception of being supported not only influence their implementation of inclusive classroom practices (Ahmmed, 2013), but it has also been found to have a role in maintaining teacher well-being, often through reducing burnout and improving personal accomplishment (Jones et al., 2019; Langher et al., 2017).

Inclusive Education in Singapore Preschools

In Singapore, the term " developmental needs" (DN) is used to describe a range of developmental conditions varying from "physical issues (e.g., muscular dystrophy), sensory issues (e.g., vision or hearing loss), and cognitive issues (e.g., autism spectrum disorder and intellectual disability), to behavioural and emotional issues (e.g., anxiety, sadness, and opposition behaviour), as well as learning needs without accompanying disabilities (e.g., mild language developmental delays)" (Ministry of Education et al., 2021, p. 11). Children with DN are below six years old and function below their same-age peers in one or more areas of development. They may not have received a diagnosis and it is possible that the developmental gap may narrow as they mature or respond to intervention.

To date, preschool education is not compulsory in Singapore and there is no policy mandating the provision of support for children diagnosed with disabilities (Poon & Yang, 2016). For most children with DN requiring moderate to high support needs, comprehensive early intervention programs, either supported by the government or operated privately, are received in self-contained early intervention centres (Poon & Yang, 2016). Beyond these intervention classes, many of these children try to simultaneously attend regular preschool programs. However, there are no mandates or funded programs for regular classroom teachers to support the participation of these children in their preschool.

The Singapore government ratified the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) in 2013 (Ministry of Social and Family Development, 2013, July 19). Since then, it had begun to support the inclusion of children with mild

developmental needs in preschools. For these children requiring low support needs, the government's Developmental Support Learning Support Programme attends to them. In addition, some preschools have developed their own team of itinerant support professionals to provide in-house support for their children with DN (Poon & Yang, 2016), and these are on the rise as the country progresses towards inclusive early childhood education in recent years (Goh, Mar 22, 2021).

As preschools are independently managed in Singapore, they can choose to limit the number of children with DN and the types of support required in each classroom. They can also choose to either accept or refuse to collaborate with external early intervention support services offered to the children in their preschool, often in the form of either the Developmental Support Learning Support Programme, or private therapies and interventions. In a nutshell, the "autonomous" state in which preschools in Singapore find themselves, presents with it a variety of challenges as the country works towards enhancing early intervention and preschool inclusive practices to meet the needs of children with DN.

In April 2019, the Singapore government set up an Inclusive Preschool Workgroup to study ways of better supporting children with DN within preschools (Ministry of Social and Family Development, April 30, 2021). More recently, drawing from the recommendations of the workgroup, many initiatives were announced to further enhance support for children with DN in preschools (Goh, Mar 5, 2021; Ministry of Social and Family Development, 2021). Firstly, each preschool will have to appoint an inclusion coordinator among their staff to better support children with DN and ensure that parents and class teachers are connected to relevant early intervention resources and services. This initiative involves all preschools and acts as a signal to preschools that they play a role in including children with DN. Secondly, the government announced its intent to provide Developmental Support Learning Support Programme to cover more than 60% of pre-schoolers by 2025, heralding the rising importance of inclusion in Singapore as early intervention support in preschools becomes available nationwide.

Furthermore, a new Inclusive Support Program has been piloted at selected preschools for children with DN, going beyond support for just children with mild needs to including those requiring medium levels of early intervention support. Finally, new professional development programs for in-service teachers working with or preparing to work with children with DN have been initiated and preschools are encouraged to build teaching capacity and capability.

It is timely that a study is in place to examine how Singapore preschool teachers think about the support they have been receiving when including children with DN. With a tool to systematically and reliably study the current perception of teachers about support received, policymakers, school administrators and teacher educators will be more informed and enabled to address teachers' needs and concerns through plans that are more targeted and relevant.

Theory of Planned Behaviour

The theory of planned behaviour (TPB) (Ajzen, 1991) proposed that intention and behaviour are determined by attitude, perceived behavioural control, and subjective norm. This theory has been used widely to explain and predict teachers' adoption of inclusive education (Sharma & Mannan, 2015). Teachers' attitudes (both their thoughts and their feelings) towards the inclusion of children with special needs in regular classrooms, teachers' confidence and self-efficacy in using inclusive classroom practices, and their perceived school support are some important factors that could influence teachers' inclusion of children with special needs in the classroom.

According to TPB, subjective norm is the perception of social pressure to perform or not perform a behaviour. If teachers believe that the principal of the school disapproves of including children with DN in the school, then they will perceive social pressure to act like the principal, largely because they are motivated to comply with the principal. Important people that teachers are motivated to conform with may include the school principal, colleagues, and students' parents. TPB suggested that subjective norms may indirectly influence teachers' use of inclusive classroom practices (through their intentions to implement inclusive education), but not directly

predict this behaviour.

Ajzen (2005) recommended that subjective norm can be measured directly by asking how likely it is that the person who is important to you would approve of you conducting the act, in this case, the implementation of inclusive education. However, in the inclusive education literature, the operationalisation of subjective norm varies widely. While some expressed subjective norm through school principals' and management's expectation of teachers to implement inclusive classroom practices (Hellmich et al., 2019; Kuyini & Desai, 2007; MacFarlane & Woolfson, 2013), other studies measured subjective norm through various forms of self-developed scales (Batsiou et al., 2008; Malak et al., 2017; Yan & Sin, 2013). This inconsistency in defining subjective norm could contribute to the variation in the significance of subjective norm as a predictor of intention and practice of inclusive education.

The Perceived School Support for Inclusive Education (PSSIE) Scale

To fill this gap, Ahmmed (2013) developed the Perceived School Support for Inclusive Education (PSSIE) scale. This tool was developed under the guidance of TPB as a direct measure for subjective norm, following rigorous content and construct validation, with reliability found to be at Cronbach's alpha of 0.86. Nevertheless, it was validated on primary and secondary school teachers from Bangladesh, a context very different from Singapore.

Others have since used the PSSIE in their research of teachers' perceived school support, lending empirical evidence to its psychometric properties. In Ahmmed et al. (2014)'s study of 429 primary school teachers from Bangladesh, perceived school support as measured by the PSSIE scale was a significant predictor of teachers' intention to practise inclusive education. This result provided evidence for the concurrent validity of the PSSIE scale. Unfortunately, another study using the PSSIE did not support this finding. Opoku et al. (2020) found in their study of 465 Ghanaian schoolteachers that there was no significant relationship between perceived school support and intention, highlighting the possibility that the relationship between perceived school support and intention may vary substantially between contexts. On the other

hand, this study has used the eight items from the PSSIE without any adaptation to Ghana's specific local condition and this could have resulted in the context-sensitive subjective norm not being able to be depicted accurately, underscoring the importance of content validating measuring instruments locally.

In alignment with Ahmmed (2013), our study intends to extend the conceptualisation of subjective norm to include the normative beliefs of preschool teachers concerning support rendered by important others in their working environment and also support received through the provision of training and resources by the school, that is, their perceived school support. To develop a tool that is appropriate to measure Singapore teachers' perception of school support, we would be developing the PSSIE – Singapore version by subjecting the original PSSIE items to a process of content and construct validation (Zamanzadeh et al., 2015). The results from this study could also support the concurrent validity of this tool if it affirms the PSSIE composite score as a predictor of intentions and practices of inclusive education.

Background Factors Contributing to Perceived Support, Intentions and Practices

Literature proposed that there are more teacher-related factors, beyond attitude, subjective norm and perceived behavioural control, that could potentially influence the classroom practices which teachers may eventually choose to deliver in their inclusive classroom. Extant research has been conducted to study how gender, age, school type, educational qualification, training in inclusive education, teaching experience and prior experience with persons with disabilities, affect attitudes towards inclusion and self-efficacy in using inclusive classroom practices (Avramidis & Norwich, 2002; De Boer et al., 2011; Selin Tumkaya & Miller, 2020; Supriyanto, 2019). The recent development of the PSSIE scale has enabled the exploration of background factors contributing to teachers' perceived school support as well. Notably, Arslan and Merih (2019) found that for Turkish teachers, previous education in inclusion and the presence of special education teachers in school affect teachers' perception of school support.

TPB claimed that influences of these background factors are usually traced to their impact on the proximal determinants of intentions (that is, attitude, subjective norm and perceived behavioural control) and not directly on intention and behaviour. Literature seems to reflect this assumption and there are significantly fewer studies examining the direct influence of teacher-related background factors on intention and practices to include children with special needs. Ahmmed et al. (2014) in their study of 738 in-service primary school teachers from Bangladesh found that when various demographic factors were added to a hierarchical regression model exploring perceived school support, attitude and self-efficacy as predictor variables of intention to implement inclusive education, age and teaching experience were found to be significant predictors as well. Such studies show that there may be direct influences of background factors on the intention and behaviour of teachers (Ahmmed et al., 2014; Batsiou et al., 2008; Opoku et al., 2020; Yan & Sin, 2013). Nevertheless, findings about background factors varied widely around the world and the amount of variance it contributes to predicting teachers' intentions and enactment of inclusive practices remains inconclusive. It is thus important when researching to affirm teachers' perceived school support as a predictor of their intention and use of inclusive classroom practices, that background factors are investigated or controlled for.

Current Study

It is the purpose of this study to establish the psychometric properties of the PSSIE-Singapore version. As such, this study will seek to address these research questions:

RQ 1: What are the items of the PSSIE – Singapore Version and do they contribute to a single construct measuring perceived school support?

RQ 2: To what extent does preschool teachers' perceived school support predict their intent to implement inclusive education and their self-reported inclusive classroom practices, after controlling for age, teaching experience, highest early childhood (EC) related qualification attained, school setting and presence of children with DN in the classroom?

There are two phases to this study. Phase One involved establishing the content validity of the PSSIE in the Singapore context and developing a locally adapted version. Phase Two involved collecting data to validate the factorial structure of the 11-item PSSIE, and also to assess the extent to which preschool teachers' perceived school support predicts both their intention to use inclusive practices and self-reported inclusive classroom practices, hence examining the criterion-related validity of the new PSSIE – Singapore Version.

Phase One: Establishing the Content validity of the PSSIE in Singapore

Participants

Six experts were identified as representing different professionals familiar with local efforts to enhance inclusion of children with DN. They include a personnel familiar with preschool early intervention policies, an inclusion advocate of a local preschool organisation, a lecturer delivering the inclusive education module to pre-service preschool teachers at a local institution, a senior teacher in an inclusive preschool, a manager of an early intervention program supporting children with developmental needs in preschools, and a principal of an inclusive preschool. Increasing the number of people (with five minimal) on the expert panel reduces the likelihood of chance agreement (Zamanzadeh et al., 2015).

Procedure

Prior to data collection, approval was sought from the Institutional Review Board of Nanyang Technological University Singapore. The identified experts were contacted personally by the author and briefed on the nature of the study. Following their agreement to participate, an online version of the instrument was sent to them. Experts took two weeks to complete and submit the survey.

Instrument

For this study, a content validation form (Yusoff, 2019) was crafted on the VERINT platform to collect the experts' opinions about 14 items related to the perception of school support by teachers. These 14 statements were presented to the expert panel in their original

form as generated by Ahmmed (2013) following an extensive literature review, except for the adaptation of two statements to reflect the use of the term "developmental needs" in the Singapore context (See Table 1).

In the original study, these 14 statements were subsequently subjected to content validation by experts in Bangladesh for appropriateness in their local context. The eventual Bangladesh version of the PSSIE consisted of 8 items after 6 of the 14 statements were eliminated (see Table 1) and reported a reliability estimated at Cronbach's coefficient alpha of 0.86 and a one-factor structure.

The content validation form for experts' opinions consisted of two parts. Part A requires the experts to rate the degree of relevance of each of the 14 statements on a 4-point scale (with 1 = the statement is not relevant to the measured construct to 4 = The statement is highly relevant to the measured construct). The construct was clearly defined as "preschool teachers' perceived school support for inclusion of children with DN in the Singapore context". Part B of this form requires the experts to rate the degree of clarity of each of the statements in eliciting appropriately preschool teachers' perceived school support when including children with DN. This is also collected using a 4-point scale (with 1 = the statement is not phrased clearly to 4 = the statement is phrased very clearly). The panel was asked to provide comments for each of their ratings. Ratings for each item were made compulsory on the online system to reduce missing data.

Content validity index (I-CVI) was then calculated for the relevancy of each item. This index is obtained by first calculating the number of experts who judge the item as relevant (rating of 3 and 4) and then dividing it by the number of content experts, and it describes the proportion of experts that agree that the item is relevant.

Results

Table 1 illustrates the I-CVI of each of the 14 items, as well as the inclusion of these items in the content-validated version both of this study and the study by Ahmmed (2013). Six

items with relevance I-CVI of 1.00, indicating that all experts agreed on their relevance to the construct, were retained. Out of the remaining eight items scoring between 0.50 to 0.83, the following two items were eliminated.

- I receive support from the school management committee to implement inclusive education in the school.
- I receive support from the local community to implement inclusive education in my school.

Both items were removed because the researchers agreed with content experts that most preschool teachers in Singapore do not interact with school management committees, nor are they involved with the local community. Moreover, expert panels queried the clarity of what "local community" and "school management committee" refers to.

Lastly, the item "I receive support to develop skills in various therapeutic interventions, such as music therapy, play therapy, and art therapy", was removed despite a CVI of 0.67 as only two experts agreed that this question is clear whilst the rest commented on changing the type of therapeutic interventions to more generic educational approaches, demonstrating challenges in understanding this question. The use of therapeutic interventions such as music, play and art therapy in Singapore is extremely rare and support teachers received in this area could be considered under support received for professional development. As such, the researchers decided to remove this item.

Meanwhile, Table 1 also presented the modified version of the final 11 items after considering feedback from the expert panel and rephrased for better clarity according to local context. These items were then subjected to the next phase of validation.

Phase Two: An Examination of the PSSIE-SG Validity

Participants and Procedure

Following the establishment of the 11-item PSSIE-Singapore version (PSSIE-SG), the scale and other data collection instruments were constructed into an online survey using the VERINT survey platform. To prevent missing data, participants are required to answer every

question before they can submit the survey. Potential participants could only proceed with the survey after they have confirmed that they met the inclusion criteria of having ever taught a child with additional learning needs in the past three years and currently teaching in a licensed preschool for at least 20 hours a week.

The link to the online survey was emailed to 355 kindergartens whose contact information were listed on the internet. Receivers of the email were encouraged to forward the link to all teaching staff in the school for participation. The survey was closed after 6 weeks. A total of 53 responses were received anonymously via this method of collection.

Data was also collected from snowball sampling. The authors broadcasted the link of the online survey to their contacts through various social media platforms and encouraged their direct contacts to share it with their contacts. From this method, a further 160 responses from preschool teachers working in kindergartens or childcare centres were received anonymously when the survey closed after 6 weeks.

A total of 211 responses were used for the final analysis after two were discarded as the participants disclosed later in text sections of the survey that they were not trained teachers. There were 97.6% (n=206) female and 2.4% (n=5) male participants with a mean 10.13 years (SD = 7.06) of teaching experience. Other demographics of participants were analysed using descriptive statistics and presented in Table 2.

Instruments

The online questionnaires used in Phase Two consisted of four parts. Part 1 of the questionnaire involved collection of participants' demographic data.

Part 2 of the questionnaire comprised the adapted 11-item PSSIE developed from Phase One. This scale was designed to measure teachers' perception of support provided to them by the school environment to practise inclusive education, using a 5-point Likert-type response scale ranging from (1) no support at all to (5) a great deal of support. On this scale, a score of 4 indicates adequate support. The total possible score ranges from 11 to 55.

Part 3 of the questionnaire consisted of the Intention to Teach in Inclusive Classroom Scale (ITICS) by Sharma and Jacobs (2016). This 7-item scale requires participants to rate their intention to implement inclusive classroom practices using a 7-point Likert-type response scale with scores ranging from extremely unlikely (1) to extremely likely (7). A total score ranging from 7 to 49 can be calculated by summing up the score for each of the 7 statements. Recent studies (Opoku et al., 2020; Sahli Lozano et al., 2021; Sharma et al., 2018) have been using ITICS to measure intentions with samples from Australia, Ghana, Italy and Switzerland, and found the total score of the full scale reliable. Utilising the data collected for this study, Cronbach alpha was calculated, and internal consistency ($\alpha = 0.851$) found reasonable.

Part 4 of the questionnaire involved 23 questions asking teachers to self-report on inclusive classroom practices they had implemented to support children with DN. These questions were developed by the second author's research team under another project and consisted of questions such as "Changes are made in teaching to accommodate the needs of children with developmental needs (e.g., using picture cards instead of speaking)" and "Other children are involved in the learning of the student with developmental needs (e.g., buddy reading)". Participants are required to rate how often they implement these practices in their classroom on a 5-point Likert-type scale ranging from never (1) to sometimes (3) to very often (5). Cronbach alpha was also calculated to check the internal consistency of this part of the questionnaire and found to be reliable ($\alpha = 0.922$). Total score is calculated, with possible scores ranging from 23 to 115.

Data Analysis

As the items of the scale have changed quite substantially from the original PSSIE examined by Ahmmed (2013), exploratory factor analysis (EFA) was conducted to examine the underlying factorial structure of the 11-item PSSIE – SG and to consider deleting non-congruent items if necessary. Factors were extracted using principal component analysis and guided by Kaiser's criterion of eigenvalues greater than 1. An oblique (Promax) rotation was used to

ensure minimal loss of valuable information if the factors are correlated. To decide on the number of items and factorial structure, this study was guided by: a) conceptual consistency with literature and other items on the factor, b) minimised disruption to the original qualitative intent of the questionnaire by removing as few items from the original questionnaires as possible, c) retained items with factor loadings of more than 0.40, d) consider but not necessarily removed items with cross-loadings, and e) explored the possibility of a single composite score to facilitate future empirical research (Lee & Nie, 2013).

Finally, to assess the relationship between preschool teachers' perceived school support and their intended use of inclusive practices and self-reported inclusive classroom practices, we conducted multiple linear regression analyses. For the data analyses, statistical packages SPSS 26.0 and AMOS 20.0 were used.

Results

The purpose of this study is to investigate the psychometric properties of the PSSIE in order to establish a reliable and validated PSSIE – Singapore version (PSSIE – SG) for measuring Singapore preschool teachers' perception of school support when including children with developmental needs (DN). The criterion-related validity of this new version of PSSIE would be assessed through its ability to predict teachers' intent to practice inclusive education and also their self-report of inclusive practices implemented.

EFA of the PSSIE – SG

We included all 11 items of the PSSIE in the initial EFA. Our sample size of 211 satisfied a common rule of thumb when determining sample size for factor analysis, that of ensuring a participant-to-item ratio of 10:1. The initial EFA yielded a one-factor structure that accounted for 58.96% of the variance. Kaiser's rule and Scree test suggested similar one-factor structure. This is similar to the factorial structure of the final 8-item PSSIE validated by Ahmmed (2013) in Bangladesh. All factors loaded on the single factor ranging between 0.679 to

0.862 (See Table 3). No items were removed, and no further analysis was conducted. This tool reported an internal consistency of Cronbach alpha = 0.929.

Perception of School Support Received

The result of this study revealed that preschool teachers reported that they received between minimal to hardly adequate amount of support (M=2.34; SD = 1.36) from the school environment in which they work in when including children with DN. Table 3 presented the mean score of each individual item on the PSSIE – SG revealing the amount of support Singapore preschool teachers reported receiving when including children with DN. In terms of important others, teachers reported receiving the most support from principals and fellow teachers whilst receiving the least amount of support from family of children without DN. When resources and training are also considered, teachers reported receiving the least amount of support when attempting to adapt the classrooms' physical layout and in terms of opportunities to observe other teachers in classrooms with children with DN.

Prior to further regression analysis, a correlational matrix was established to assess the relationship between participants' age, education, teaching experience, whether they are teaching in a class with children with disabilities, type of school settings they are teaching in (childcare or kindergarten), their perceived schools support, intention to implement inclusive education and self-reported inclusive classroom practices. These variables were correlated using the Pearson product-moment correlation to check for multicollinearity and other significant relationships and presented in Table 4. It was noted that childcare teachers are significantly younger (r=-.332), less experience (r=-.209) but yet have higher early-childhood related education (r=.150) than teachers in kindergarten settings. Although only years of teaching experience correlates significantly with teachers' use of inclusive classroom practices, all five teachers-related background factors were included in subsequent hierarchical regression analysis. This is to explore the amount of variance they accounted for when predicting intentions and practices, given their varying significance in previous studies.

Perceived School Support and Intentions

Singapore Preschool teachers reported that they are somewhat likely to implement inclusive education (M = 5.23 out of 7; SD = 0.99). Hierarchical linear regression analysis was conducted to ascertain perceived school support as a predictor of intentions. Table 5 presents the models analysed. In the first step of this analysis, perceived school support scores were entered into the model to predict intentions. Results showed that perceived school support ($\beta = 0.281$, $p < .001$) is a significant predictor of preschool teachers' intentions to include children with DN, accounting for 7.9% of variance in intentions, $F(1, 209) = 17.88$, $p < .001$, adjusted $R^2 = .079$.

In step 2, background factors were entered into the model to explore how these could further explained the variance in intentions. Five demographic factors that were commonly investigated in research studying teachers' inclusive practices and that were feasibly collected were entered (see Table 5). Prior to conducting the linear regression, preliminary analyses were conducted to check that the assumptions of normality, linearity, multicollinearity and homoscedasticity were in place (Hankins et al., 2000).

Results showed that the new model accounts significantly for 9.5% of the variance, $F(6, 204) = 3.564$, $p = .002$, adjusted $R^2 = .068$, with the additional variable not contributing to any significant changes (R^2 Change = .016, $p = .605$). Perceived school support ($\beta = .270$, $p < .001$) is still a significant predictor of preschool teachers' intentions to include children with DN, after controlling for age, highest EC related qualification attained, teaching experience, school setting and presence of child with DN in the classroom.

Perceived School Support and Self-reported Inclusive Practices

This study revealed that Singapore preschool teachers reported that they sometimes use inclusive practices in the classroom (M = 2.80 out of 5, SD = 0.64). Similar hierarchical regression analysis process as above was repeated with teachers' self-reported inclusive practice as the dependent variable (see Table 6).

From step 1, results showed that perceived school support (β = .676, $p < .001$) is a significant predictor of preschool teachers' self-reported inclusive practices, accounting for 45.7% of variance in the model, $F(1, 209) = 175.71$, $p < .001$, adjusted $R^2 = .454$.

In step 2, after entering background variables, the new model accounts significantly for 49.1% of the variance, $F(6, 204) = 32.82$, $p < .001$, adjusted $R^2 = .476$, with the additional variable contributing to a significant change (R^2 Change = .034, $p = .020$).

Results shows that perceived school support (β = .681, $p < .001$) is still a significant predictor of preschool teachers' self-reported inclusive practices, after controlling for age, highest EC related qualification attained, teaching experience, school setting and presence of child(ren) with DN in the classroom.

Moreover, teaching experience (β = .191, $p = .005$) and highest EC related education (β = -.106, $p = .040$) were also found to be significant predictors in this model.

Having found that perceived school support is a significant predictor of both intent and preschool teachers' self-reported use of inclusive classroom practices, mediation analysis was performed using Hayes PROCESS macro for SPSS to assess the mediating role of intention in the relationship between perceived school support and teachers' use of inclusive practices. In accordance with TPB, the results revealed a significant indirect effect of perceived school support on use of inclusive practices (*Effect* = .0619, *LLCI* =.0239 and *ULCI* = .1064) as mediated by teachers' intention to implement inclusive education. However, with intention as the mediator, the direct effect of perceived school support on use of inclusive practices was still significant (*Effect* = .4299; *LLCI* =.3597 and *ULCI* = .5001).

Discussion

Measurement of Perceived School Support

To begin, this research set out to uncover the items on the PSSIE by Ahmmed (2013) which may more appropriately reflect the perceived school support of pre-school teachers in Singapore. In answering research question one, 11 items have since been identified as relevant

to this context and clarity of items have been improved by adjusting the language of the items to ensure Singapore preschool teachers' understanding of the items (see Table 1). This 11-item PSSIE – SG was factor analysed and found to be a valid and reliable tool for measuring the single construct of pre-school teachers' perceived school support when including children with developmental needs.

This tool will be an important instrument as Singapore proceed to roll out various initiatives to support teachers along the trajectory towards providing high quality inclusive pre-school education. Earlier research has focused on discovering teachers' concerns in implementing inclusive education and teachers' perceived needs to successfully include children with disabilities (Forlin et al., 2011; Glazzard, 2011; Kuyini et al., 2020; Muccio et al., 2014). Teachers have reported different barriers to inclusion and suggested different ways to be supported in this journey and policy makers and administrators have dutifully paid attention to these. However, Langher et al. (2017) found that the subjective dimension of teachers' perceived support in itself may be the critical factor to teachers' well-being in inclusive settings, suggesting that "despite the limitations and inadequateness of organisational and structural conditions, the perception of being supported can have a significant role in reducing the negative effects of lacking school resources, otherwise the quality of inclusive processes at school can decline" (p. 124). PSSIE-SG will fill the gap for a much-needed instrument to measure perceived school support.

Policy makers, administrators and school leaders are responsible to monitor if the initiatives implemented are low or high leverage points of action (Senge, 1990). The PSSIE – SG will enable such efforts locally. Applying the scales, if teachers continue to report not being supported when they have already been attending many workshops and seminars suggests that providing in-service didactic training may be a low leverage point program. There should be a realisation that rolling out an avalanche of professional development programs is expanding a great deal of effort to try to solve the reported problem of lack of training, but with little result.

On the other hand, high leverage points of action investigate the deep root causes of the problem and aim to implement initiatives that requires less effort for maximal impact. Teachers in inclusive classrooms often lament about insufficient support from specialist staff (Woodcock & Woolfson, 2019). Results from this study showed that Singapore preschool teachers resonate with this (M=2.25, SD=1.22). Recent local efforts have been made, especially through the Developmental Support Learning Support program, to increase the support of specialist teachers, therapists, psychologists and social workers in early childhood settings. The PSSIE-SG, when reapplied to the community in the medium term, may be able to define the leverage of this effort in impacting teachers' perceived support. Such evidence can serve to contribute to the much-heated debate about the real need for specialist support versus the insatiable aspiration for more outsourcing of teacher duties rather than embracing the inclusive classroom as its own entity (Woodcock & Woolfson, 2019).

Measuring preschool teachers' perception of school support received can be a powerful tool to monitor the effectiveness of inclusion support programs and when planning for future initiatives. Further research involving measuring teachers' perceived school support over time could be a way of determining success of implementation especially in view of the predictive relationship between perceived school support and teachers' enactment of inclusive classroom practices.

Perceived School Support as a Determinant of Inclusive Practices

Research Question Two aims to explore the extent to which preschool teachers' perceived school support predicts their intent to implement inclusive education and their self-reported inclusive classroom practices, after controlling for age, teaching experience, highest early childhood (EC) related qualification attained, school setting and presence of children with DN in the classroom.

As expected by TPB, the results of our study affirmed that teachers who perceived more school support reported more intention to include children with DN and more use of inclusive

classroom practices. This result has supported the concurrent validity of the PSSIE-SG and lends support to TPB as a feasible model for predicting the intentions and behaviours of teachers' inclusive classroom practices. Further investigation by our study has suggested that intention is only a partial mediator and perceived school support has both a direct and indirect effect on self-reported use of inclusive practices. This finding is inconsistent with findings of Hellmich et al. (2019) and Yan and Sin (2013), both of whom found subjective norm to affect teachers' inclusive behaviour only indirectly through intentions. Likewise, MacFarlane and Woolfson (2013) reported that subjective norm has only direct effect on Behaviour. Nevertheless, these studies were conducted on primary and secondary teachers instead of preschool teachers and they did not measure subjective norm using the perceived school support. Given the mixed findings of the role intention plays, future studies may consider more specific analysis of the mediating role of intention when predicting teachers' self-reported use of inclusive practices by their attitudes, self-efficacy and perceived school support, especially across cultures and locations.

Singapore preschool teachers reported receiving low school support. The influence of perceived school support on intentions and practices has elevated the urgency of this matter rendering it crucial for policymakers, school administrators and teacher educators to re-examine the support provided to local teachers to implement inclusive education. Studies involving interviews, focus group discussions, classroom observations and thematic analysis could investigate the situations of teachers who perceived school support received as adequate and a great deal, as such research may generate insights into effective support strategies.

Influence of Teacher-related Background Factors

Although it was not the focus of this study to explore the contributions of background variables to subjective norm, intention and behaviour, this study has raised interesting counter-intuitive findings that may warrant further examination: Teachers with more teaching experience reported using significantly more inclusive classroom practices while teachers with higher

teaching education reported using significantly less inclusive practices. Although there has been extant literature studying the influence of teachers' experience and education on the attitudes and concerns of teachers working in inclusive settings, findings have been inconclusive and appear to be context-related (Poon et al., 2016). As for teachers' intention to implement inclusive education and use of inclusive practices, there appeared to be limited studies reporting about the direct association between these constructs and teachers' highest education and years of experience. Our study indicates that teacher-related background factors may be direct influencers of teachers' use of inclusive practices. Future studies utilising mixed methods, with a bigger sample size that is more representative of Singapore's preschool teacher population and in-depth interviews could perhaps draw more useful conclusions on the unique relationship between Singapore preschool teachers' characteristics and their intentions to practice inclusive education and enactment of inclusive classroom practices.

Limitations

As much as our study emphasizes the importance of content validity, the ITICS, used in this study to measure the intentions construct, was not localised and was used as published in Sharma and Jacobs' (2016) study of primary and secondary school teachers from Australia and India. Although preliminary confirmatory factor analysis of the items of this scale using the data collected from this study did not highlight any concern with construct validity within the Singaporean preschool teacher population, feedback from users had been received regarding the use of terminologies not reflective of the preschool context. We suggest that future studies examine the content and construct validity of the ITICS to affirm its ability to reflect the intention of preschool teachers to include children with DN in Singapore.

Another limitation of this study was the reliance on participants' self-report for the behaviour of implementing inclusive practices instead of observing teachers in their classrooms. Perceived school support accounts for 7.9% of the variance in intentions while contributing to 45.7% of the variance in teachers' self-reported inclusive practices. The reason for the large

difference could be due to the self-reporting nature of the 23-item inclusive practices questionnaire, compounded with the overlapping of survey items with the PSSIE-SG. Future research exploring the extent to which perceived school support relates to actual classroom observation of preschool teachers' inclusive practices will serve to further establish the role of teachers' perception of school support received.

Conclusion

Subjective norm has been a component of TPB that has often been left out from research studying the effectiveness of this model in predicting the implementation of inclusive education for children with disabilities. It is believed that the insights gained from this study will propel the use of perceived school support as a construct to further investigate the role of subjective norm and the usefulness of TPB in predicting inclusive classroom practices of teachers.

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Table 1

Content Validity Index and Retention of instrument items for PSSIE – SG

Item Description	No. of experts giving rating of 3 or 4 to relevancy of item (out of 6)	I-CVI	Retention of item by Ahmmed (2013)	Retention of item for this study	Final item after modification
Q1) I receive necessary support from the principal to implement inclusive education at the classroom level	4	0.67	Yes	Yes	Q1) I receive necessary support from the principal to implement inclusive education at the classroom level
Q2) I receive regular in-service training in teaching students with diverse needs / disabilities	6	1.00	Yes	Yes	*Q7) I receive support to attend regular professional development courses, workshops, and seminars in teaching children with diverse needs / disabilities
Q3) I receive support from the school management committee to implement inclusive education in the school	3	0.50	Yes	Remove	-
Q4) I receive support to develop skills in various therapeutic interventions, such as music therapy, play therapy, and art therapy	4	0.67	Remove	Remove	-
Q5) I receive support from family of the child / children with developmental needs to implement inclusive education in my school	3	0.50	Yes	Yes	Q5) I receive support from family of the child / children with developmental needs to implement inclusive education in my school
Q6) I receive support by the curriculum board to introduce flexible curriculum to address all learners	6	1.00	No	Yes	Q4) I receive support from the curriculum team to introduce flexible curriculum to address all learners

Q7) I receive support to get classrooms' physical layouts adapted to inclusive education	6	1.00	No	Yes	Q7) I receive support to get classrooms' physical layouts adapted to inclusive education
Q8) I receive support from families of children without developmental needs to implement inclusive education in my school	4	0.67	Yes	Yes	Q6) I receive support from families of children without developmental needs to implement inclusive education in my school
Q9) I receive necessary resources from the school to teach students with developmental needs when needed	5	0.83	Yes	Yes	Q10) I receive necessary resources from the school to teach students with developmental needs
Q10) I receive support from specialist teachers when needed	6	1.00	Yes	Yes	Q3) I receive support from specialist teachers (including therapists, psychologists etc.) when needed
Q11) I receive support from peer colleagues to implement inclusive education in my school	6	1.00	Yes	yes	Q2) I receive support from peer colleagues to implement inclusive education in my school
Q12) I receive support from the local community to implement inclusive education in my school	4	0.67	No	No	-
Q13) I receive support to observe other teachers who teach students with special needs / disabilities	4	0.67	No	Yes	Q8) I receive support to observe other teachers who teach children with developmental needs
Q14) I receive support for implementing new teaching strategies	6	1.00	No	Yes	Q9) I receive support for implementing new teaching strategies for including children with developmental needs

Table 2

Descriptive Statistics of Variables

Variables (Binary)		*N*	Percentage
Level of highest attained Early Childhood Related Qualification	Certificate	10	4.7
	Diploma	132	62.6
	Bachelor's degree	61	28.9
	Post Graduate degree	8	3.8
Setting where teachers worked in	Childcare	127	60.3
	Kindergartens	84	39.8
Presence of children with DN in classroom	Yes	164	77.7
	No	47	22.3

Table 3

PSSIE - Singapore Version EFA Factor Loadings (n=211), individual item mean and SD

Item	Factor Loading	Mean	*SD*
I receive necessary support from the principal to implement inclusive education at the classroom level	.823	2.86	1.15
I receive support from peer colleagues to implement inclusive education in my school	.787	2.82	1.20
I receive support from specialist teachers (including therapists, psychologists etc.) when needed	.682	2.25	1.22
I receive support from the curriculum team to introduce flexible curriculum to address all learners	.771	2.21	1.17
I receive support from family of the child/children with developmental needs to implement inclusive education in my school	.699	2.55	1.19
I receive support from families of children without developmental needs to implement inclusive education in my school	.720	2.11	1.26
I receive support to attend regular professional development courses, workshops, and seminars in teaching children with diverse needs / disabilities	.679	2.45	1.14
I receive support to observe other teachers who teach students with developmental needs	.768	1.82	1.06
I receive support for implementing new teaching strategies for including children with developmental needs	.828	2.42	1.12
I receive necessary resources from the school to teach students with developmental needs	.862	2.15	1.13
I receive support to get classrooms' physical layouts adapted for inclusive education	.802	2.09	1.11

Note. Extraction method: principal component analysis; Method of rotation: Oblique (Promax rotation). Minimum score of each item is 1 and maximum is 5; On the scale, a score of 4 was described as “adequate”.

Table 4

Correlation Between Demographic Variables, Perceived School Support, Intentions and Inclusive Practices.

	Age	Teacher Education	Teaching Experience	Setting	Children with DN[a]	Support	Intentions
Age	1						
Teacher Education	-.053	1					
Teaching experience	.659**	.046	1				
Setting	-.332**	.150*	-.209**	1			
Children with DN [a]	-.021	.035	-.031	.146*	1		
Support	-.033	.096	.030	-.002	-.077	1	
Intentions	-.118	.095	-.050	.032	-.016	.281**	1
Practices	.048	-.022	.166*	.001	-.026	.676**	.469**

[a] presence of children with developmental needs

*$p < .05$, two-tailed.

**$p < .01$, two-tailed.

Table 5

Hierarchical Regression Analysis of Teachers' Intentions

Predictor	*B*	Standard error of *B*	β	*p* value
Step 1				
Perceived school support	0.314	0.074	0.281	<.001
Step 2				
Perceived school support	0.303	0.075	0.270	<.001
Age	-0.011	0.009	-0.121	.192
Teacher Education	0.101	0.108	0.064	.350
Teaching experience	0.002	0.013	0.016	.857
Setting	-0.029	0.146	-0.014	.845
Children with DN [a]	0.007	0.161	0.003	.965

[a] Presence of children with DN

Table 6

Hierarchical Regression Analysis of Teachers' Self-Reported Inclusive Practices

Predictor	*B*	Standard error of *B*	β	*p* value
Step 1				
Perceived school support	0.492	0.037	0.676	<.001
Step 2				
Perceived school support	0.496	0.037	0.681	<.001
Age	-0.003	0.004	-0.048	.490
Teacher Education	-0.109	0.053	-0.106	.040
Teaching experience	0.017	0.006	0.191	.005
Setting	0.050	0.071	0.038	.483
Children with DN [a]	0.044	0.078	0.029	.571

[a] Presence of children with DN