Pilot evaluation of the Whole Inclusive School Empowerment (WISE) project in kindergartens in Hong Kong: A mixed method approach

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Abstract

This pilot study used a quasi-experimental design to evaluate the Whole Inclusive School Empowerment (WISE) project providing educational psychology services to kindergartens to support students with diverse learning needs. There were eight intervention kindergartens that received WISE educational psychology services and eight control kindergartens without the service. The intervention kindergartens were provided with a 0.125 educational psychologist and 0.7 teacher coordinator. In January and June 2017, teachers in intervention and control kindergartens completed questionnaires assessing student behavior, school readiness and their own teaching efficacy. Focus group sessions involving teachers and school principals were conducted in July, 2017. The results indicated a greater improvement in prosocial behavior and school readiness in intervention kindergartens compared with control kindergartens. Teachers and principals reported that they were better equipped in supporting diverse learning needs. The results provided initial evidence supporting the effectiveness of educational psychology services for kindergartens in improving student outcomes.

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The early years is an important period in a child's development (Shonkoff, 2000) and many have argued for the importance of providing quality early education to children (e.g., Marmot, 2010; Heckman, 2000; Sylva, Melhuish, Sammons, Siraj-Blatchford, & Taggart, 2004). The provision of quality early education to children is largely dependent upon the skills of well-trained pre-school teachers supported by professionals such as educational psychologists. Maliphant (1997) contends that working with pre-school children falls within the ambit of educational psychologists. More recently, Hojnoski and Missall (2006) argue that educational psychology services be expanded from primary and secondary school settings to the early childhood setting. The National Association of School Psychologists (2015) advocates that educational psychology services be provided for young children from birth to eight years of age with and without identified disabilities and risk factors. In Australia, the UK and the USA, there are provisions for educational psychologists to work in pre-school settings (National Association of School Psychologists, 2014; The Australian Psychological Society, 2009; The British Psychological Society, 2013).

In terms of work approach, Hojnoski and Missall (2006) contend that in order to maximize positive educational and social outcomes, services to young children and their families should be oriented toward prevention. Within the pre-school context, the role of educational psychologist should focus on assessment, consultation and intervention. In assessment, a teach-test-teach approach can be effective in informing instruction and intervention. Functional behavior assessment can be effective in reducing behavior problems. Educational psychologists could provide consultations to teachers and parents in supporting them to promote the development and learning of children. Educational psychologists can also use a systems approach in preventing and managing behavior problems. Hagans-Murillo

(2005) also advocates for the use of the response-to-intervention approach in pre-schools and suggests that educational psychologists could play an active role in supporting teachers to adopt and implement this approach.

Despite the recognition of the important role of educational psychologists in pre-schools, there is limited research in the role and effectiveness of educational psychologists in pre-school settings (Douglas-Osborn, 2017). In Japan, Korematsu, Takano, and Izumi (2016) reported a program where pre-school children were screened for developmental problems. Upon diagnosis by the school psychologist or other health professionals, the children were provided with a school support system involving teachers supported by school psychologists and other professionals. There was a decrease in number of school refusals over the follow-up period. In the UK, Hughes and Cline (2015) highlighted the effectiveness of the educational psychologist in providing training to pre-school teachers on a curriculum promoting social and emotional competence. The results indicated that their intervention was associated with fewer problem behaviors, improved attention skills and increased prosocial behavior.

The Hong Kong Situation

In Hong Kong kindergartens registered with the Education Bureau provide services for children from three to six years of age. According to the 2016 bi-census, 92.5% of children aged three to five years attend kindergarten (Census and Statistics Department, 2017). In the 2017/18 school year, the 'Free Quality Kindergarten Education Policy' was implemented. Non-profit kindergartens are provided with a basic subsidy for a half-day service for their students. Approximately 70% to 80% of places in half-day kindergartens will eventually be free-of-charge (The Hong Kong SAR Government, 2016). However, currently while there are government funded educational psychology services in primary and secondary schools, they are not available to kindergartens.

For children with special education needs, the Child Assessment Service (CAS) provides assessment and interim support services for children from birth to 12 years of age with developmental problems. Under the Comprehensive Child Development Service (CCDS), kindergartens can refer children suspected of special needs to Maternal and Child Health Centers (MCHCs). Upon assessment by MCHC health professionals, children in need are referred to and further assessed by the CAS.

In terms of learning support for children with special education needs, children aged two years to under six years can attend Early Education and Training Centers (EETCs) which provide early intervention programs emphasizing the role of the family. The Integrated Program (IP) in mainstream kindergartens provides intensive training and care to mildly disabled children aged three years to six years. The program aims to facilitate the children's integration into the mainstream education (Social Welfare Department, 2017a).

The Pilot Scheme 'On-site Pre-school Rehabilitation Services' (OPRS), launched in November 2015, is an early intervention for children with special needs. The OPRS provides a multi-disciplinary service team (registered social worker, qualified physiotherapist, occupational therapist, speech therapist, clinical/educational psychologist and special childcare worker) from non-governmental organizations (NGOs) to provide on-site early intervention services to children who are on the waiting list for subvented pre-school rehabilitation services (e.g., EETC and IP) in participating kindergartens. The OPRS also provides professional consultation for kindergarten teachers in working with children with special needs and provides support to the parents to enhance their skills in caring for their children (Social Welfare Department, 2017b).

However, educational psychology services are not provided to support children who are waiting for assessment by CAS; children with mild learning problems but not eligible for the aforementioned rehabilitation services; children at risk of learning problems; or, children

in the mainstream classroom. There is an overall and general lack of support for children who exit the aforementioned rehabilitation services.

The Whole Inclusive School Empowerment (WISE) Model

The pilot WISE model was developed to bridge the gap in support services. Under WISE a school support team consisting of an educational psychologist (0.125 fraction) and a teacher coordinator (0.7 fraction) provided regular support to kindergartens that joined the OPRS scheme. The educational psychologist was the same person on the OPRS team with an additional 0.125 fraction. All educational psychologists in the project completed postgraduate training accredited by the Division of Educational Psychology, Hong Kong Psychological Society. The teacher coordinator was an experienced teacher or a teacher with special childcare training recognized by the Social Welfare Department. In the current model, the teacher coordinator could be a teacher in the same kindergarten or an outsider from the service provider organization. The educational psychologists participated in the model formulation process and fully understood the roles of educational psychologists and teacher coordinators of the WISE model. The educational psychologists worked closely with teacher coordinators as a team in the kindergarten to perform the roles and functions set in the WISE project.

The WISE team aimed to service children in the participating kindergartens who were not under the OPRS scheme, their teachers and parents. The WISE model took reference from the population strategy of prevention (Rose, 1992; McLaren, McIntyrne, & Kirkpatrick, 2010) and focused on prevention strategies targeting the whole school population. The WISE model adopted a whole-school approach and the WISE team aimed to provide support to improve the overall quality of teaching and learning for all students. The model was also based on the recommendations of Hojnoski and Missall (2006) and Hagans-Murillo (2005) as well as on the guidelines provided by The Australian Psychological Society (2016). The

services included system level work such as the development of an inclusive school policy, teacher level work such as teacher training and consultation; parent level work including parent consultation and parent training; and, student level work including assessment and intervention.

The Present Study

The present study was a pilot evaluation of the effectiveness of the WISE project and associated model in supporting kindergartens, teachers, parents and students. The research used a mixed method approach. The quantitative part adopted a quasi-experimental design with pre and post data collection. The qualitative part involved collecting and interpreting the views and experiences of kindergarten teachers and principals using focus group discussion. The hypotheses were:

1. There will be more improvement in student learning and behavior outcomes in intervention kindergartens than in control kindergartens.
2. There will be more improvement in teacher efficacy in supporting students with diverse learning needs in intervention kindergartens than in control kindergartens.

Methods

Quantitative Approach

Design and setting.

This study adopted a quasi-experimental design with pre and post assessment. There were eight kindergartens served by five NGOs in the intervention group and eight kindergartens served by these five NGOs in the control group. All kindergartens participated in the OPRS scheme with each kindergarten having an enrolment of between 80 and 120.

Participants.

The participants included students attending the intervention and control kindergartens and teachers who were involved in direct teaching of students in these

kindergartens. For the collection of pre and post intervention measures, with parent consent, teachers were requested to complete measures on child learning and behavior for all students on a means-tested fee remission scheme and on 50% of students not in this scheme. In one intervention and two control kindergartens, all students were included, irrespective of their fee-remission status. There was a non-significant difference between intervention and control kindergartens in terms of whether all students not on fee remission were included, $\chi^2(1) = 0.41$, $p = .522$.

The total student sample included 581 students from the intervention group and 435 students from the control group. The overall response rate was 72.1% but there was a significant difference in response rate between the intervention and control kindergartens, $\chi^2(1) = 52.06$, $p < .001$, with a higher response rate in intervention kindergartens (80.2%) than in control kindergartens (63.6%). The teacher sample included 85 teachers from intervention kindergartens and 81 teachers from control kindergartens. The overall response rate was 97.1% (intervention: 98.8%, control: 95.3%). There was a non-significant difference between the intervention and control kindergartens in terms of teacher response rate, $\chi^2(1) = 1.89$, $p = .169$.

For sample size estimation, to account for the kindergarten (cluster) factor and the design effect, the sample size required for teacher measure of student learning is 1888, (medium effect size, 63.5 students per school), assuming an intracluster correlation of .22 (Malti, Ribeaud, & Eisner, 2011).

Measures.

Teaching efficacy of kindergarten teachers in intervention and control schools was measured using the short form of the Teachers' Sense of Efficacy Scale (TSES; Kennedy & Hui, 2006) with 12 items. TSES was developed by Tschannen-Moran and Woolfolk-Hoy (1998) and was validated by Kennedy and Hui (2006) for use with Hong Kong Chinese

teachers. The scale consists of three factors, efficacy in a) instructional strategies; b) classroom management; and, c) student engagement. For each item, teachers rate their perceived efficacy in teaching kindergarten students with diverse learning needs on a 9-point scale. The overall reliability estimate (Cronbach's Alpha) of the short form TSES for Chinese teachers was .80 (Kennedy & Hui, 2006).

Student learning was measured using a teacher report on school readiness (Ho, Leung, & Lo, 2013). This 6-item measure on learning behavior and pre-school concepts is based on the Gumpel School Readiness Scale (GSRS; Gumpel, 1999). Teachers rate their students on each statement on a 4-point scale (1 = *never*, 2 = *seldom*, 3 = *sometimes*, 4 = *always*). A Chinese version of the GSRS was subsequently developed and validated (Ho et al., 2013) and used for this study.

Student behavior was measured using the teacher version of Strength and Difficulty Questionnaire (SDQ; Goodman & Scott, 1999). This is a brief behavioral screening questionnaire for children and adolescents aged 4 to 16 years. The SDQ consists of five sub-scales, Emotional Symptoms, Conduct Symptoms, Hyperactivity Symptoms, Peer Problems and Prosocial Behavior. Teachers rate each item on a 3-point rating scale from 1 (*not true*) to 3 (*certainly true*), with higher scores showing higher endorsement of the behavior domain. A Total Problem Behavior score is computed by adding together the raw scores from the Emotional Symptoms, Conduct Symptoms, Hyperactivity Symptoms and Peer Problems sub-scales. The Chinese version of the scale was tested and validated for use with children aged from six years to twelve years (Lai et al., 2010).

Related demographic details of the students was collected through a questionnaire completed by parents. The data included the child age; child's length of residence in Hong Kong; gender; fee remission status; parent educational achievement level and employment; welfare benefit status; family income; family type; parents' marital status; parent's age in

years; and, length of residence in Hong Kong.

Procedures.

Through The Hong Kong Council of Social Services, the 16 NGOs involved in the provision of OPRS were invited to a meeting to discuss the viability of the WISE model. Interested NGOs were subsequently invited to further meetings to consider the content of the project and decide on their participation. Eventually five NGOs participated and each invited kindergartens served by their OPRS teams to participate in the project. The NGOs and the kindergartens made decisions on the group status of the kindergartens.

The study was approved by the Departmental Research Committee of The Hong Kong Polytechnic University. Upon confirmation of participation by the kindergartens, teacher and parent consent forms were sent to the kindergartens. With parent and teacher consent, the pre-intervention questionnaires were distributed to parents (demographic information) and teachers (teaching efficacy, student learning and behavior) for their completion in January 2017. In June 2107, teachers completed the post-intervention questionnaire rating their own teaching efficacy and their students' learning and behavior.

Data analysis.

To account for the cluster (kindergarten) nature of the data, the linear mixed model through SPSS was used to analyze the data. The fixed factors were group status (intervention versus control) and time (pre and post-intervention). Kindergarten was treated as a random factor. The dependent variables were student and teacher outcome measures.

Qualitative Approach

Participants and procedures.

Sixteen principals and teachers from seven intervention kindergartens participated in the study. Two focus group sessions were conducted which respectively included seven and

nine participants. Among the participants were seven school principals; seven teacher coordinators; one social worker; and, one class mistress.

Data collection sessions were conducted on July 19 and July 31, 2017. Informed consent for participation in the study from the participants was obtained. The second author was the moderator of the focus group and she led the discussion based on an interview guide. A research assistant also helped to record the important points coming from the focus group discussions. The participants were encouraged to share their observations, experiences, views and opinions of the WISE project. The focus group interviews were approximately 1.5 to 2 hours in length. With the consent of participants, interviews were audio-recorded and transcribed verbatim by the project research assistant.

Data analysis.

A general qualitative orientation was adopted in this study (Shek, Tang, & Han, 2005). The qualitative data was analyzed using thematic analyses and further interpreted using pattern coding. The pattern coding was undertaken, consistent with Miles and Huberman (1994) as "a way of grouping those summaries into a small number of sets, themes, or constructs ... it's an analogue to the cluster-analytic and factor-analytic devices used in statistical analysis" (p. 69).

The Intervention

The educational psychologists paid weekly or fortnightly visits to the kindergartens under the intervention condition. Their services included consultation with school principals on system level work such as development of an inclusive school policy. The educational psychologists also provided 10 hours of teacher training in each intervention kindergarten. The teacher training content was developed by a team of educational psychologists employed as part of the project. The topics included classroom management; differentiated instruction; social-emotional competence; literacy; and, reading and language. In addition, the

educational psychologists and the teacher coordinators provided a consultation service to teachers on student learning and behavior. The educational psychologists provided 209 teacher consultation sessions (mean duration = 1.09 hours) and the teacher coordinators provided 695 consultation sessions (mean duration = 1.01 hours). The consultation activities included follow-up of teacher training (3.16%), classroom learning (18.45%), individual or small group student needs (23.85%), class observation (39.65%) and others (14.88%). In terms of the consultation content, they included classroom management (29.00%), physical development (12.43%), cognitive and language development (24.48%), social emotional development (20.44%), aesthetic development (7.79%) and moral development (5.86%). The educational psychologists and teacher coordinators (with the support of educational psychologists) coached teachers in using differentiated learning in lesson planning, small group learning in classroom and use of materials and toys in learning corners. They also provided a consultation service to parents on individual children's behavior and learning. An eight-session group parent training program on behavior management, parent-child relationship and paired reading was available to parents in each intervention kindergarten. Educational psychologists also conducted individual assessments for students as needed. Teacher coordinators worked together with the educational psychologists in providing student intervention in individual and group formats such as training in reading and writing (e.g., enhancing awareness of radicals, morpheme, character/word and related meaning, applying multisensory strategies in reading and writing) and social emotional training (e.g., understanding emotions, communication, problem solving and conflict resolution).

Three team meetings were held with the team of educational psychologists to discuss ongoing work and issues. The educational psychologists also discussed the content of the meetings with teacher coordinators to keep them fully informed of ongoing work.

Results

Quantitative Results

The sample.

Complete teacher reports at post-intervention were submitted for 1,012 students (intervention: 578; control: 434). There were significant differences between the intervention and control students in terms of mother's length of residence in Hong Kong, father's length of residence in Hong Kong and number of children in the family (Table 1). The intervention group parents lived longer in Hong Kong and had fewer children than the control group parents. One hundred and sixty four teachers (intervention: 84; control: 80) submitted fully completed post-intervention questionnaires. There was a non-significant difference in background characteristics between intervention and control teachers (Table 2).

There were significant differences between the intervention and control groups in terms of child outcomes including pre-intervention school readiness, $t(1012) = 5.39$, $p < .001$, pre-intervention SDQ Total Problem Behavior, $t(1012) = 2.15$, $p = .032$, and pre-intervention SDQ Prosocial Behavior, $t(1012) = 2.90$, $p = .004$. The intervention group students had lower scores on school readiness and SDQ Prosocial Behavior and higher scores on SDQ Total Problem Behavior. There was a non-significant difference between the intervention and control group teachers in terms of pre-intervention teacher efficacy scores, $t(163) = 1.48$, $p = .140$.

Student outcomes.

As the intervention and control groups differed in terms of parents' length of residence in Hong Kong, number of children in the family, pre-intervention school readiness, pre-intervention SDQ Total Problem Behavior, and pre-intervention SDQ Prosocial Behavior, these variables were treated as covariates in respective analyses. The analysis was based on students with complete data on pre and post-intervention teacher reports and the demographic covariate variables (intervention: 482; control: 360).

With regard to school readiness, the interaction effect between group status and time was significant, $F = 14.92$, $p < .001$. The intervention group students were behind the control group students in their school readiness scores at pre-intervention. However, the difference between the two groups in school readiness was largely eliminated at post-intervention. The interaction effect between group status and time was also significant for SDQ Prosocial Behavior, $F = 14.76$, $p < .001$. While the intervention group students had lower scores than the control group students in prosocial behavior at pre-intervention, this difference was, once again, largely eliminated at post-intervention. However, the interaction effect between group status and time was non-significant for SDQ Total Problem Behavior, $F = 0.22$, $p = .641$. The results are in Table 3.

Teacher outcomes.

The analysis on teacher outcomes were undertaken with 84 intervention group teachers and 80 control group teachers with complete pre and post-intervention scores (Table 3). There was a non-significant interaction effect between group status and time for teacher efficacy, $F = 0.12$, $p = .913$. There were non-significant differences between the intervention and control group teachers in terms of change in teacher efficacy.

Qualitative Results

Regarding the benefits of the WISE project on children, the participants expressed that the project helped to identify the children with special education and developmental needs. The WISE arrangement also reduced the waiting time for the completion of formal assessments by educational psychologists:

> We identified those children who had special needs…though we were experienced, we were not certain. The educational psychologist let us know the children had problems. We made earlier referrals and the children could have earlier assessment. We could help the children. (Participant B, Group 1, Paragraph 23)

> After we joined the service, the educational psychologist would come to the kindergarten. We invited her [educational psychologist] to observe the [at risk] children. Even if the educational psychologist did not come, we had teacher coordinator to observe the children … and then communicated with the educational psychologist. (Participant C, Group 1, Paragraph 28)

The project also provided timely intervention to the children with special needs in learning and development:

> [The educational psychologist] came to our school at least twice per month and we could directly communicate with her by phone. She was very professional…The psychologist taught us how to train up the children and use what strategies to help them. In case we encountered difficulties, we could easily approach her [the educational psychologist]. (Participant H, Group 2, Paragraph 40)
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> After observation the educational psychologist gave us some advice, that is, what were the situations of the children, how could we help them, through class, small groups, or individual work…We often used these three strategies to help… In some classes there were more students that needed special attention, we used big group…Then more students could benefit from the intervention. (Participant K, Group 2, Paragraph 55).

The participants suggested that the parents had a better understanding of the needs and abilities of their children. In turn, the parents were becoming more motivated toward having their child formally assessed:

> We explained to the parents and clarified the misconceptions of the parents. Many parents presumed that conducting assessment meant that their children had serious problems… We let them understand the advantages of early assessment for the

> children… The parents now accepted our explanations. Previously, they were frightened when we sought their consent. (Participant A, Group 1, Paragraph 98)

The participants expressed that the teachers received more assistance and support from the educational psychologist and teacher coordinators and were better equipped with knowledge and strategies on handling the students' learning and developmental challenges. The teachers were also more familiar with teaching strategies that could meet the diverse needs of the students. They managed to integrate the teaching strategies in their direct teaching of the whole class:

> Our teachers appreciated a lot. The consultations of educational psychologist, the three teacher workshops and other in-school training expanded the horizon of the teachers…The educational psychologist taught the teachers how to help the children… Though the teachers learned some strategies in the educational institutes, they only had the knowledge as there were no real cases that they could encounter. But now, the educational psychologist would guide the teachers how to help the students. (Participant A, Group 1, Paragraph 96)
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> The teacher coordinator allowed our teachers to observe how she conducted small groups to facilitate the learning of children with special needs. Our teachers learned the methods and strategies on facilitating the children in reading and learning vocabulary…The teachers then practiced the strategies in class. The teacher coordinator would read carefully the lesson plan of the teachers. The educational psychologist also gave advice on the curriculum. As there were diverse needs of children in each class, a flexible curriculum could let the children learn according to their own paces. The teachers grasped the learning paces of their students. (Participant L, Group 2, Paragraph 70)

> The educational psychologist would contact our class mistresses directly and they had meetings together. The educational psychologist would come to the class and teach the class mistress how to communicate with the children (with special needs). She [educational psychologist] also interacted with the children and asked the class mistress to divide the class into different groups and invited the children to interact with others in groups. (Participant A, Group 1, Paragraph 75)

Regarding the school as a whole, the participants considered the WISE project a significant contributor in increasing the man-power to manage the diverse needs of the students as well as a means of networking more professionals to support the kindergartens. The schools were able to modify and improve the curriculum and physical environment according to the learning abilities and developmental needs of the children:

> After observations of the educational psychologist, she asked our teachers to complete a survey…We discovered that there were some students who needed small group learning…She [educational psychologist] participated in our curriculum planning meeting and evaluation meeting and helped us to revise our curriculum, teaching materials and modify our teaching strategies… We were very happy and we learnt some more strategies. The teachers were more relieved and the students learnt better. (Participant G, Group 2, Paragraph 81)

> Previously we developed our curriculum according to the teachers' knowledge and the teaching requirement. However, we found that the students could not grasp the knowledge… The teachers were surprised about the outcomes. We got the support from our co-workers [educational psychologist and teacher coordinator] of the project and this gave new lights to the teachers… The curriculum could be modified! …In the past, the teachers dared not to modify, even when the administrator agreed. The teachers did not have the energy to do the modifications. With the help of the

> educational psychologist and specialists [teacher coordinator], the teachers learnt the methods … the educational psychologist and specialist [teacher coordinator] also observed the lessons and advised the teachers how to refine the curriculum and teaching strategies…After half a year, the teachers learnt to make breakthroughs, and listen to the advice of others. I must say thanks to the team. (Participant F, Group 2, Paragraph 87)

Discussion

Hypothesis 1, there will be more improvement in student learning and behavior outcomes in intervention kindergartens than in control kindergartens, was partially supported. There was an improvement in school readiness and prosocial behavior in intervention kindergarten students relative to control kindergarten students. One could argue that along with group and individual intervention for students provided by the WISE team, the improvement in student outcome might also have been due to teacher training and consultation on classroom management and quality teaching. This argument received some support in the qualitative accounts where teachers reported that the WISE team supported them to develop strategies to meet the learning needs of students.

Hypothesis 2, there will be more improvement in teacher efficacy in supporting students with diverse learning needs in intervention kindergartens than in control kindergartens, was not supported. There was a statistically non-significant improvement in teacher efficacy in the intervention kindergartens relative to those in control kindergartens. The results seem contradictory to the qualitative findings that the teachers learned new strategies to support children through the WISE support team and they managed to integrate the teaching strategies in their direct teaching of the whole class. It is important to remember that teachers in the intervention kindergarten received ready support from educational psychologists and teacher coordinators to facilitate the learning of their students. However,

there is some concern that on losing such 'ready' support, the teachers may not be as adept and confident in their perceived capacity to independently and effectively handle learning diversity. In short, the program was restricted to six months and teachers might need more time and practice to gain full confidence in their own skills.

Limitations

A study of this type is subject to limitations largely borne out of the context in which it is undertaken. First, while preferable it was not possible to subject the study to a randomized controlled trial. There were difficulties in persuading kindergarten administrators to accept random assignment. Consequently, a quasi-experimental design was used to test respective hypotheses. Nonetheless, we attempted to ensure that the kindergartens were similar in terms of school size and socioeconomic status, as measured by the percentage of students on fee remission. Other baseline differences were subjected to a statistical adjustment in the analysis of data. Second, the quantitative outcomes were based on teacher reports and the teachers were not blind to the group status of the students with the subsequent possibility of information bias. Individual assessments of all students likely disrupted the kindergarten routine and may have influenced the kindergartens' willingness to participate in the study. We were very mindful of not expecting too much from our participants in terms of time and effort and therefore did not include parent perceptions of child behavior or classroom observation of teaching strategies. Third, the sample size was insufficient, after taking into consideration the design effect. The study would have been more powerful with the use of a larger sample size. Fourth, the statistical analysis only included participants with complete pre and post data. There were only four students with missing post teacher reports and two teachers without post TSES scores. However, there was missing demographic information from parents which resulted in a smaller sample being included in the final analysis. Fifth, as the needs of individual kindergartens were different, the nature and

frequency of consultation and intervention services varied according to the needs of individual kindergartens. It was therefore difficult to tease apart the core active ingredients in the project. Last but not the least, in the current model the teacher coordinator could be an experienced teacher in the same kindergarten or an outsider from the service provider organization. A teacher within the same kindergarten would have a better understanding of the needs and dynamics of the kindergarten, but at the same time might face difficult situations in making recommendations to fellow teachers or the principal. An outsider might perceive fewer constraints in making recommendations to teachers and principals but would need to make an effort to understand the needs of the kindergarten, to build up a working relationship with teachers and to gain their trust. However, within this pilot study, it was not possible to thoroughly examine the relative effectiveness of these two models. Future studies could consider to evaluate the relative effectiveness of these two models.

Implications for Practice and Research

Though the WISE service model has only been implemented for six months and is still in a pilot phase of development, some results are encouraging. The results suggest that educational psychology service is important in pre-schools to build up children's readiness to school and address the diverse needs of the children. Hojnoski and Missall (2006) comment that children start their learning trajectory early in the study in kindergarten. Their social and learning experiences in pre-schools may affect their academic and social adjustments in their future learning paths. There is evidence to suggest that poor social and learning experience in early childhood is linked to academic underachievement, antisocial behavior and withdrawal from schools in the future (Ladd & Coleman, 1997). Hence, children's readiness for school is a critical element that should be developed in early childhood service. As suggested by Bagnato (2006), the direction of the early childhood program in pre-schools should be focused on promoting, "the fact that 'making schools ready for all children' contributes to

systems integration among schools and early childhood programs, alignment of curricula, setting of realistic expectations, and, ultimately, best promotes enabling children to gain the prerequisite skills to succeed in school" (p. 619). The qualitative findings coming out of the focus groups discussions suggest that the WISE project follows the same line of thought. The principals and teachers suggested that the educational psychologists and teacher coordinators supported the schools by modifying the curricula that suited the diverse needs of the students and enhancing teachers with strategies and skills to teach and support students in the classrooms.

The results of the pilot study showed that there was an increase of school readiness and prosocial behavior in intervention kindergarten students. This suggests that the WISE project stays on a right track in enhancing child development. However, there is still much room for further development of the WISE project. For example, the non-significant change of teachers' self-efficacy provides some cues for further development. Continuous support for teachers in their teaching is not only the role of educational psychologists, but also a responsibility of senior personnel of the school. Though it was advocated that a response to the intervention approach was to be adopted in the WISE model, the infrastructure for the approach was not well-developed. There was an absence of a formal system for different levels of intensity of services and there was no evidence-based intervention package on learning difficulties (Fuchs & Fuchs, 2006) for pre-school children in Hong Kong. The WISE team adopted a problem-solving approach and worked with teachers to support students flexibly, trying out different strategies. There is much room for development and improvement in terms of the use of response-to-intervention approach in kindergartens in Hong Kong, of establishing different tiers of support and developing evidence-based intervention packages. The present study was not an evaluation of the effectiveness of the response-to-intervention approach as the WISE intervention involved other elements.

The WISE project is a pioneer attempt to develop and implement educational psychology services in kindergartens in Hong Kong. The present results provided some initial evidence on the feasibility and effectiveness of the project.

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Table 1

Baseline Demographic Characteristics of Intervention and Control Group Student Participants

	Intervention (n = 581)		Control (n = 435)		Significance
	Number	%	Number	%	
Child sex - boy	319	54.9%	240	55.2%	$\chi^2(1) = 0.01$, $p = .933$
Child born in HK	506	91.0%	376	88.3%	$\chi^2(1) = 1.99$, $p = .159$
On fee remission	425	77.4%	323	77.5%	$\chi^2(1) = 0.00$, $p = .987$
Family - nuclear	288	52.0%	218	51.4%	$\chi^2(2) = 3.58$, $p = .167$
Family - extended	219	39.5%	155	36.6%	
Family - others	47	8.5%	51	12.0%	
Marital status – married/de facto	508	91.5%	391	91.6%	$\chi^2(1) = 0.00$, $p = .983$
Marital status – separated/divorced /widowed/single	47	8.5%	36	8.4%	
Mother education – ≤ 9 years	198	35.8%	170	40.0%	$\chi^2(1) = 1.80$, $p = .179$
Father education – ≤ 9 years	180	33.8%	154	37.5%	$\chi^2(1) = 1.39$, $p = .239$
Mother employed[a]	162	30.2%	108	26.9%	$\chi^2(2) = 1.67$, $p = .433$
Father employed[a]	388	74.5%	300	73.7%	$\chi^2(2) = 0.69$, $p = .710$
Family income - < HK$20,000	323	59.3%	260	62.4%	$\chi^2(1) = 0.94$, $p = .332$

On social welfare benefits	32	5.9%	31	7.6%	$\chi^2(1) = 1.15$, $p = .283$
	Mean	*sd*	Mean	*Sd*	
Child age	4.27	0.89	4.27	0.93	t (1014) = 0.10, $p = .921$
Child length of residence in HK	3.97	1.15	3.85	1.28	t (926) = 1.53, $p = .127$
Mother length of residence in HK	18.07	13.64	14.88	13.08	t (929) = 3.60, $p < .001$
Father length of residence in HK	28.34	14.38	25.82	15.51	t (857) = 2.45, $p = .014$
Number of children in family	1.85	0.74	1.98	0.84	t (987) = 2.67, $p = .008$

[a] Some participants chose the option “others” and it was not possible to determine their employment status

Table 2

Baseline Characteristics of Intervention and Control Group Teacher Participants

	Intervention (n = 85)		Control (n = 81)		Significance
	Number	%	Number	%	
Sex - female	84	98.8%	81	100.0%	$\chi^2(1) = 0.96$, $p = .328$
IP/SEN experience	11	12.9%	6	7.4%	$\chi^2(1) = 1.38$, $p = .240$
Qualifications – degree or above	37	43.5%	37	45.7%	$\chi^2(1) = 0.08$, $p = .781$
Teaching experience – ≤ 1 year	10	11.8%	9	11.1%	$\chi^2(4) = 1.14$, $p = .888$
Teaching experience – 2 to 3 years	20	23.5%	17	21.0%	
Teaching experience – 4 to 10 years	20	23.5%	23	28.4%	
Teaching experience – 11 to 15 years	9	10.6%	11	13.6%	
Teaching experience – ≥ 16 years	26	30.6%	21	25.9%	
Experience in present school – ≤ 1 year	24	28.2%	24	29.6%	$\chi^2(4) = 0.97$, $p = .914$
Experience in present school – 2 to 3 years	20	23.5%	22	27.2%	
Experience in present school – 4 to 10 years	27	31.8%	25	30.9%	
Experience in present school – 11 to 15 years	7	8.2%	6	7.4%	
Experience in present school – ≥ 16 years	7	8.2%	4	4.9%	

Table 3

Pre-intervention and Post-intervention Student and Teacher Outcome Scores

	Intervention students (8 schools) (n = 482)		Control students (8 schools) (n = 360)		α
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	
SDQ total problem behavior	10.62 (6.24)	9.88 (6.20)	9.73 (6.44)	9.22 (6.11)	.86[a] .85[b]
SDQ prosocial behavior	5.62 (2.44)	6.60 (2.49)	6.13 (2.54)	6.35 (2.49)	.86[a] .86[b]
School readiness	11.61 (4.08)	13.49 (3.64)	13.06 (3.71)	13.86 (3.37)	.88[a] .86[b]
	Intervention teachers (8 schools) (n = 84)		Control teachers (8 schools) (n = 80)		
	Pre-intervention	Post-intervention	Pre-intervention	Post-intervention	
Teacher sense of efficacy	73.96 (10.15)	76.15 (9.58)	76.30 (11.15)	78.88 (8.60)	.91[a] .92[b]

[a] Pre-intervention

[b] Post-intervention