

# **Study Protocol**

## **Project Title:**

Effects of Mindfulness Training on the Psychological Well-being of Preschoolers

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# **Effects of Mindfulness Training on the Psychological Well-being of Preschoolers**

## **Study Objective**

The current study wants to accomplish the following aims.

- (1) To evaluate MiSP dots curriculum in improving preschoolers' attention, empathy and prosocial behaviour evaluated by behavioural tasks

Attention, empathy, and prosocial behaviour are primary outcomes expected from the dots curriculum.

- (2) To evaluate MiSP dots curriculum in improving parent- and teacher-reported attention, emotion regulation, conduct and prosocial behaviour

Apart from the children's assessment, we also test whether the training leads to significant changes in attention, emotion regulation, conduct and prosocial behaviour observable by both parents and teachers.

## **Background and Significance**

The Hong Kong Jockey Club Charities Trust has earmarked \$27 million to fund a three-year program entitled "Peace and Awareness: Mindful School Culture Project" (Panda) to promote mindful school culture in Hong Kong. The practice of mindfulness helps students regulate their emotions and be more resilient to challenges. It also helps teachers cope with stress skillfully and schools develop a positive culture that enhances mental health of all the stakeholders in schools.

The interest in mindfulness had greatly increased in the last two decades as indicated by its search volume (Google Trend, n.d.). The effectiveness of mindfulness training on mental health and well-being outcome has been supported by empirical evidence obtained from different populations (Ref.). Meta-analysis revealed that mindfulness training in schools to be effective in late adolescence (age 15-18) and middle childhood (age 6-10) while no significant effect was found in early adolescence (age 11-14) (Carsley, Khoury & Heath, 2017).

Early childhood is critical period of brain development in which neural connections are reshaping, i.e. neural plasticity (Brown & Jernigan, 2012). However, there is only few studies evaluating mindfulness training in this period with randomized control trial (RCT) design (Ref.). The present study will add to the few studies evaluating the effect of mindfulness training on preschoolers' social-emotional development, including attention, emotion regulation, empathy, prosocial behaviour and conduct.

## **Participants**

Target Participants: The participants are recruited from a Hong Kong kindergarten. The kindergarten locates in the Central and Western District of Hong Kong Island and provides childcare service to children aged 2-6. Informed consent is provided by the school principal agreeing the study to be held in the whole grade of K3.

Recruitment and enrolment: A circular is distributed to the parents of the whole K3 to introduce the study details and collect their informed consent. There is no specific inclusion or exclusion criteria for subject enrolment.

## **Research Design and Methods**

The study uses a randomized control trial design with two arms – experimental group and waitlist control group.

Randomization: Each participant is given a random number ranged from 0 to 1 generated by Microsoft Excel *RAND()* function. The participant list is sorted according to the random number and split half into two groups. The group with the larger random number will be experimental group and the group with the smaller random number will be waitlist control group.

Mindfulness Training: The experimental group receives the dots curriculum named dots designed for preschool children aged between 3 and 6 by Mindfulness in School Project (MiSP) in UK. The curriculum consists of 30 sessions split into 3 set of 10 sessions. The dots curriculum is base around three themes – Awareness, Connections, and Emotion – and each dots session teach a distinct mindfulness skill or concept, e.g. anchoring/grounding/being present, awareness of others/world, emotion recognition, and self-regulation.

The students will take the course in their classrooms. The course is taught by a certified teacher who has been trained to teach the dots curriculum by the MiSP. The students in the experimental group will take the course in the first semester of 2021/22 academic year whereas the students in the waitlist control group will take the course in the second semester. The course spans for 15 weeks with 15-minute lessons twice a week.

Child Measures: Data will be collected from all the participants at two time points: Before the course is started (T1); after the course is completed (T2).

*The Conners Kiddie Continuous Performance Test 2nd Edition*<sup>TM</sup> (*K-CPT 2*). K-CPT 2 is an assessment of attention problem in children aged from 4 to 7. The children are presented with a series of pictures and are required to press the key every time they see the pictures except when the picture is a soccer ball. The performance of the students is standardized against the norm and generate nine T-scores: d-prime, omissions, commissions, perseverations, hit reaction time (HRT), hit reaction time standard deviation (HRT SD), variability, HRT block change, HRT inter-stimulus interval change (HRT ISI). For this study, we take the mean T-scores of the eight T-scores (except HRT) as an indicator of the intervention.

*Scenario Test.* Two sets of scenario test are created to measure the changes in children's empathy and prosocial behaviours. Each set contains four scenarios depicting a child (i.e. the protagonist)

in an emotional situation (e.g. celebrating birthday, being chase by a dog). The children are asked to guess the feeling of protagonists after hearing the scenarios to test their empathy. Children are given two points if they can correctly recognize the emotion; one point is given if they can recognize the emotion after follow-up or can recognize the valence of the emotion (i.e. positive or negative); zero point is given if they gives incorrect answer or are unable to respond.

Then the children are asked what action they would take if they were the protagonist or if they see the protagonist in front of them. Two points are given to socially appropriate behaviour (e.g. helping, comforting, seeking help); one point is given if the children are able to answer after follow-up; zero point is given if they gives socially inappropriate response (e.g. shouting, fighting, laughing at the protagonist) or are unable to respond.

Parent- and Teacher-reported Measures: Data will also be collected from the parents and teachers at T1 and T2. Parents are asked to fill in a questionnaire asking about their children in the last one month. The head teachers of the class are asked to rate individual children in both the experimental and waitlist control group.

*Modified version of Strength and Difficulty Questionnaire (SDQ).* We modified the hyperactivity, emotion problem, prosocial behaviour and conduct problem subscales of SDQ (Goodman, 1997) to capture the positive aspects of each dimension. Three new items are generated for each dimension and the subscales are renamed as attention, emotion regulation, prosocial behaviour, and conduct.

### **Statistical Analysis Plan**

Seperated analyses of covariance (ANCOVA) will be conducted to compare the post-intervention score of our measures with baseline score as the covariate (O'Connell et al., 2017). Post-hoc comparison between baseline and post-course score will be conducted for each treatment arm.