The Effects of a PROSPER-based Intervention on Well-Being among Pre-Service Preschool Teachers during the COVID-19 Pandemic: A Randomized Control Trial

**Abstract**

 This study aims to examine the effectiveness of an intervention program based on the PROSPER, a comprehensive framework which emphasizes the importance of *positivity*, *relationships*, *outcome*, *strength*, *purpose*, *engagement*, and *resilience* on pre-service teachers’ well-being in Hong Kong. Participants were pre-service preschool teachers (*N* = 77) who participated in a 1-month randomized control trial with 4 intervention workshops. They were randomly assigned to either intervention (*n* = 40) or wait-list control condition (*n* = 37). A survey with measures that assessed PROSPER well-being components, was administered to participants before and after the intervention. Findings of repeated measures *MANCOVA* revealed no significant time x group interaction effect, Wilks’ Lambda *F*(7, 50) = 1.66, *p* = .14, *η2* = .19. Results of univariate analyses showed that a significant time x group interaction effect existed in *relationship* component (*η2* = .08), indicating that the intervention was effective in facilitating pre-service preschool teachers’ positive relationships with their peers. Findings underscore the potential benefits of designing positive psychological interventions for teachers amid the COVID-19 pandemic.

Keywords: Positive education; positive psychology; randomized control trial; pre-service teachers; PROSPER model; preschool

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**Introduction**

Preschool teachers’ working conditions are always considered demanding and stressful because young children require more sensitive and responsive caregiving than older students (Grant et al., 2019). Teachers have also been expected to support children’s holistic development in the preschool setting (Britto et al., 2017). Previous studies (Jeon et al., 2018; Rentzou, 2012) have shown thatpreschool teachers are susceptible to experience maladaptive psychological outcomes — for example burn-out, stress, anxiety, depression, loss of passion for teaching young children — which are identified as determinants of the high turnover rate among teachers in preschool education (Grant et al., 2019). The high turnover rate has negative impacts on the quality of the education and the care provided by the teachers (Grant et al., 2019; Rentzou, 2012). Further, it has been documented that preschool teachers’ well-being are positively associated with a wide range of beneficial outcomes such as quality of instruction, relationships with students and students’ educational outcomes (Grant et al., 2019).

In order to improve the quality of preschool education, research has investigated strategies to improve the well-being of the preschool teachers (Jeon et al., 2018). Results suggest that special attention should also be paid to pre-service teachers as they are likely to perceive reality gaps between being a pre-service and in-service teacher, including the differences in responsibility, philosophy and resources (Mahmood, 2013). The growing line of evidence regarding the challenges associated with becoming an in-service preschool teacher underscores the significance of promoting programs that aim to foster psychological resources among pre-service preschool teachers (Birchinall et al., 2019; Corcoran & O'Flaherty, 2022; Hue & Lau, 2015; Mahmood, 2013).

 Although there has been investigation supporting the effectiveness of well-being interventions in students and adults (Bolier et al., 2013; Koydemir et al., 2020; Seligman, 2012), the evidence on the effects of positive psychological programs in teachers remains relatively limited (Corcoran & O'Flaherty, 2022). For example, Sottimano et al. (2018) have demonstrated the ability of group-based psychosocial interventions and redefining work environment to reduce maladaptive work outcomes (e.g., stress and burnout) in Italian teachers. Beshai et al. (2016) have shown that a mindfulness-based psychological intervention has decreased stress and boosted well-being among selected teachers in England. In a related investigation, a professional development program focusing on cultivating professional growth in teaching preschoolers has increased the well-being of selected teachers in Ghana (Wolf et al., 2019; Wolf & Peele, 2019). Further, the 8-week gratitude intervention program has resulted in increased life satisfaction and positive emotions in selected teachers in Hong Kong (Chan, 2010, 2013).

However, these studies on well-being interventions for teachers have a number of gaps such as reliance on a unidimensional intervention framework (Chan, 2010, 2013) and non-RCT design. Except for a few studies (Chan, 2010, 2013), previous investigations mostly focused on evaluating the effectiveness of well-being interventions in Western and non-Asian societies such as Italy (Sottimano et al., 2018) and England (Beshai et al., 2016), which further reflects issues regarding the predominance of positive psychological intervention research in Western, educated, industrialized, rich, and democratic (WEIRD) societies (Hendriks et al., 2019).

Against this backdrop, the current study developed and evaluated the effectiveness of a positive psychological intervention based on the PROSPER framework (Noble & McGrath, 2015) to promote well-being in pre-service preschool teachers in Hong Kong, which is a non-WEIRD society. The PROSPER framework is a relatively comprehensive well-being model which comprises inter-related components namely: *positivity, relationships, outcome, strength, purpose, engagement* and *resilience* (Noble & McGrath, 2015). Compared to the PERMA framework (Seligman, 2011) which emphasizes the importance of positive emotions, engagement, relationships, meaning, and accomplishment, the PROSPER framework incorporated *strength* and *resilience* as essential elements of conceptualizing well-being.

*Positivity* refers to the “state of being positive”, which includes positive emotion and positive mindset. In particular, individuals are encouraged to equip themselves with positivity skills (e.g., growth mindset, optimistic thinking, positive reappraisal) and experience positive emotion regularly to thrive and succeed in a healthy way (Noble & McGrath, 2015). *Positivity* is important in preschool education because teachers are likely to experience frustrating situations (e.g., young children cannot express themselves properly or follow teachers’ instructions). Preschool teachers with higher *positivity* would not only have better emotion regulation but also the ability to handle children’s emotions more advantageously (Denham et al., 2012).

Secondly, the *relationships* component pertains to positive collegial relationships, meaningful teachers-parents collaboration, and optimal teacher-child relationships, which have been touted as a well-being indicator in the context of preschool education (Ju et al., 2015). Studies have shown that positive teachers’ relationship with their peers and supervisors have been associated with lower burnout (Ju et al., 2015). Positive relationships with colleagues encompass providing assistance, sharing resources, and developing curriculum together (Shah, 2011). This supports the psychological needs for relatedness (the need to feel connected and cared for by significant others) from the self-determination theory (SDT; Deci & Ryan, 2000). Specifically, SDT conceptualizes relatedness as one of the essential nutrients for optimal psychological growth and well-being (Deci & Ryan, 2008). Fulfilling individuals’ relatedness needs have been linked not only to increased motivation toward particular behaviors and behavioral adherence (Lee et al., 2020b) but also to optimal mental health outcomes (Behzadnia & FatahModares, 2020; Cantarero et al., 2020). The component of *relationships* can be supported by learning pro-social values, actively listening to others’ concern and accepting one’s ability, cooperatively teaching and experiencing positive interaction with others (Gander et al., 2016; Lee et al., 2020a).

The *outcome* component encompasses one’s sense of accomplishment (e.g., goal achievement) and self-efficacy in teaching. It refers to the pride that teachers take when they have accomplished something in their lives that strengthens their self-esteem and confidence (Noble & McGrath, 2015). Studies have indicated that personal accomplishment was negatively related to depression and stress among teachers (Gander et al., 2016). An intervention based on accomplishment was also able to increase participants’ happiness for 3 and 6 months (Gander et al., 2016). We believed including this component would be appropriate in the preschool education setting given the extent of stress and demands that teachers are expected to face from job-related expectations.

*Strength* is the fourth component which can be defined as “*ways of behaving, thinking or feeling that an individual has a natural capacity for, enjoys doing and which allows the individual to achieve optimal functioning while they pursue valued outcomes*” (Noble & McGrath, 2015, p. 10). *Strength* can be supported by simply acknowledging good things that happened, and expressing appreciation to those who are important to us, similar to the value of gratitude (McGrath, 2019). Studies have generated evidence regarding the benefits of gratitude in promoting well-being among Chinese teachers (Chan, 2010).

*Purpose* refers to developing a stable, far-reaching goal to contribute to the world beyond a self that is also meaningful to the self (Damon et al., 2003). Teachers’ purpose can be related to equipping students with skills and the knowledge, nurturing students’ well-being, raising a respectable future generation or contributing to a well-functioning society (Tirri & Kuusisto, 2016). Studies have indicated that the teachers’ purpose in life is positively associated with multiple well-being indicators, including stress management and self-rated health (Li et al., 2016). It would be essential for preschool teachers to discover their purposes in order to remain motivated in providing care and education to children (Tirri & Kuusisto, 2016). Studies suggested that *purpose* can be improved by discovering values and passion, identifying elements of the ideal future, and committing to achieve the goals (Schippers & Ziegler, 2019).

*Engagement* can be defined as “*positive, fulfilling, work-related state of mind that is characterized by vigor, dedication, and absorption*” (Hakanen et al., 2006, p. 498; Schaufeli et al., 2002, p. 74). Teachers who have higher work engagement not only have higher organizational commitment (Hakanen et al., 2006), but also more positive impacts on children’s engagement toward learning (Chu, 2020; de Kruif et al., 2000). Studies proposed that adopting proactive goal setting (Parker et al., 2010), critical and creative thinking to overcome challenges are effective to support one’ *engagement* (Van Wingerden et al., 2017).

*Resilience* involves “*the ability to persist, cope adaptively and bounce back after encountering change, challenges, setback, disappointments, difficult situations or adversity and to bounce back to a reasonable level of well-being*” (Noble & McGrath, 2015, p. 13). Stress-management and coping with frustrating teaching experiences would be important skills for preschool teachers because they encounter these negative situations frequently (Jeon et al., 2018).

The effectiveness of the positive psychological interventions, which targeted similar well-being components to PROSPER framework (e.g. positivity and relationship), have been supported in previous meta-analytic studies (Bolier et al., 2013; Carr et al., 2020). In particular, studies consistently reported that positive psychological interventions were able to facilitate individual’s well-being and lower one’s distress, anxiety and depression (Bolier et al., 2013; Carr et al., 2020). Yet, the PROSPER framework (Noble & McGrath, 2015) has not been formally applied and tested in an intervention setting before. A recent meta-analytic study (Koydemir et al., 2020) reported that positive psychological intervention which targeted subjective and psychological well-being would have a more potent effect toward individuals’ well-being compared to intervention that target one type of well-being. The PROSPER framework, which covers both subjective (e.g., *positivity* and *strength*) and psychological well-being (e.g., *relationship, outcome, purpose, engagement,* and *resilience*), would be appropriate for positive psychological interventions to be based on.

**The Present Study**

 The Hong Kong Kindergarten Administrative Guide (Education Bureau, 2020) has reported that preschool teachers may be required to take care of as many as 11 children with diverse needs in one class (Zhu et al., 2019). University students normally obtain their preschool teaching certificate after 2-4 years of tertiary education and training, which may not be enough to effectively handle the stress from difficult situations such as high teacher–student ratios and supporting children with special needs (Zhu et al., 2019). In addition, during the COVID-19 pandemic, teachers have been facing unprecedented difficulties and challenges that may heighten their levels of stress, and the risks of having depression, and other mental health problems (Cantarero et al., 2020; Hadar et al., 2020). Similarly, given that the pandemic outbreak has resulted in huge changes in the delivery of teacher education programs, preschool preservice teachers were directly affected as they may lack appropriate training for implementing online teaching activities (Aizenberg, 2021; Aizenberg & Zilka, 2022; Kim, 2020). In particular, the teaching practicum was either cancelled or suspended due to the preschool class disruptions. Further, preservice teachers have experienced difficulties in actively engaging and pinpointing suitable timing of pedagogical activities in preschoolers (Lin, 2022). Preservice teachers from diverse socioeconomic backgrounds are also more likely to face challenges in implementing online pedagogical activities during the COVID-19 pandemic outbreak. Given the critical role of practicum or field experience in providing hands-on teaching experience among preservice teachers (Aizenberg & Zilka, 2022; Kim, 2020), it is important to identify psychological resources that might help these teachers-in-training cope with the demands of teaching profession during this pandemic. In certain circumstances, some preservice teachers would be able to attend the teaching practicum online. However, it is reported that the preservice teachers still felt anxious and stressful when adjusting to online teaching. They would also feel uncertain when the class resume to face-to-face formats (Aizenberg, 2021).

To address these issues, this study designed and evaluated the impacts of a positive psychological intervention based on the PROSPER framework (Noble & McGrath, 2015) to foster well-being among pre-service preschool teachers in Hong Kong to get them better equipped for the coming year. We hypothesized that the participants in the intervention group would show improvement in the seven well-being components: *positivity, relationships, outcome, strength, purpose, engagement,* and *resilience* compared to the wait-list control group.

**Method**

**Participants and Procedures**

Ethical approval was obtained from the first author’s institution [approval number = 2019-2020-0407]. An email invitation was sent to 100 pre-service preschool teachers in one public university of Hong Kong and 77 of those (*Mage* = 21.92, *SD* = 3.04, *n*female = 96.10%) agreed to participate in the current research. This public university was chosen because it trains more than 300 preschool teachers in Hong Kong every year. All participants were recruited via a convenience sampling approach. Those who agreed to participate were given an active consent form. Participants were then randomly assigned to either the intervention or the control condition of the intervention, and resulted in 40 participants allocated to the intervention condition and 37 participants to the wait-list control condition. The participants in both groups received two waves of assessment (i.e., pre-intervention and post-intervention test). The intervention group joined 4 intervention workshops within two weeks and those in wait-list control group joined the workshops after they finished the second assessments. All participants were asked to complete a questionnaire that measured the components of the PROSPER framework at baseline and follow-up assessments. The participant flowchart is presented in Figure 1.

**Figure 1. Participant flowchart**

Power analysis involved *F* test for *ANOVA* repeated measure within-between factors with a power of 80% (beta level, .80; alpha level, .05) and small to medium effect size (*Cohen's d* = .35) (Carr et al., 2020; Koydemir et al., 2020), total minimum sample size of 68 participants was needed (Faul et al., 2007). With an estimated attrition rate of 10%, we determined to recruit at least 76 participants in the current study.

**Measures**

*Positivity* was assessed using the 10-itempositive affect subscales items from the Positive and Negative Affect Schedule (PANAS; Watson et al., 1988). Items (e.g., “Proud”, “Excited”) on this scale were rated on a five-point Likert scales (1 = *Not at all* and 5 = *Extremely*). The Chinese version of the scale showed good reliability (Cronbach’s alpha = .82) (Chan, 2013). In this study, the Cronbach’s alpha coefficients of this scale at baseline (α = .91) and post-test (α = .90) were satisfactory. The intra-class correlation (*ICC*) of the scale between two points was .63.

We adopted the 7-item demonstrating mutual support and trust subscale from the Teacher Collegiality Scale to measure teachers’ *relationships* with their peers in 1 (*Strongly disagree*) to 7 (*Strongly agree*) (Shah, 2011). A sample item is “There is a feeling of trust and confidence among staff members”. The scale showed good internal consistency (i.e., α = .85) in studies (Shah & Abualrob, 2012).In the current study, the Cronbach’s alphas of these items at baseline and post-test were .85 and .88, respectively. The scale showed decent test-retest reliability (*ICC* = .67).

We measured the *outcome* component by using the 8-item personal accomplishment subscale from the Maslach Burnout Inventory (Poghosyan et al., 2009). A sample question is “Have accomplished worthwhile things in job”. The Chinese version of the scale has been found to be reliable in the previous study (Watson et al., 2008). The scale’s items were rated using seven-point scales (1 = *Never*; 7 = *Always*). In this study, the internal consistencies of the scale at baseline (α = .85) and post-test (α = .92) were satisfactory. The test-retest reliability of the scale was .47.

*Strength* was assessed using the 3-item gratitude scale from the VIA Inventory of Strengths (McGrath, 2019). A recent meta-analytic study reported that the scale has a good reliability (i.e., Cronbach’s alpha = .80) (Bruna et al., 2019). Items (e.g., “It is uplifting or energizing for me to express my Gratitude strength”) on this scale were rated via a seven-point Likert scale (1 = *Very strongly disagree* and 7 = *Very strongly agree*). In the current study, the Cronbach’s alpha coefficients of the scale at baseline and post-test were .93 and .90, respectively. The scale showed satisfactory test-retest reliability (*ICC* = .47).

We measured the participants’ sense of *purpose* by using the 5-item presence subscale from the Meaning in Life Questionnaire (MLQ; Steger et al., 2006). Chan (2017)’s study reported that the Chinese version of the scale had good internal consistency (i.e., Cronbach’s alpha = .85) and validity. Items (e.g., “I have discovered a satisfying life purpose”) were rated using seven-point Likert scales (1 = *Strongly* disagree; 7 = *Strongly agree*). In this study, the Cronbach’s alpha coefficients of the scale at baseline and post-test were .90 and .91 respectively. The test-retest reliability of the scale was .72.

*Engagement* was assessed using the 5-item dedication subscale from the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006). Fong and Ng (2012)’s study validated the Chinese version of UWES and it had an acceptable reliability (i.e., Cronbach’s alpha = .77). Items were rated using a seven-point Likert scale (1 = *Never* and 7 = *Always*). A sample question is “I am enthusiastic about my job". In this study, the internal consistencies of the scale at baseline (α = .94) and post-test (α = .95) were excellent. The test-retest reliability of the scale was .78.

We measured participants’ *resilience* by using the 4-item managing stress subscale from the Resilience at Work Scale (RAW; Malik & Garg, 2018). The scale has shown good internal consistency (i.e. Cronbach’s alpha = .83) and validity (Malik & Garg, 2018). Participant rated the items (e.g., “I have developed some reliable ways to relax when I am under pressure at work”) on seven-point Likert scales anchored from 1 (*Strongly disagree*) to 7 (*Strongly agree*). In this study, the Cronbach’s alphas of the scale at baseline and post-test were .90 and .91, respectively. The scale showed satisfactory test-retest reliability (*ICC* = .68).

**Intervention Materials**

The intervention group joined a 4-session training workshop (i.e., 2.5 hours for each session) delivered by two educational psychologists who had over 5 years of experiences in conducting teacher training on the topics of socio-emotional competence and positive education. In Hong Kong, educational psychologists’ roles are comparable to those of school psychologists in the United States and Canada, which include designing, implementing, and evaluating educational and psychological interventions to support students with diverse learning and psychological needs as well as teachers, parents, and other school-based mental health professionals. The workshops focused on cultivating all components embedded in the PROSPER framework (Noble & McGrath, 2015). Specifically, our study drew not only from the PROSPER framework (Noble & McGrath, 2015) but also from prior research (Bolier et al., 2013; Koydemir et al., 2020) in designing intervention activities. For example, the lectures encompassed introduction of growth mindset (positivity; Brunzell et al., 2016), reflective listening (relationship; MacIntyre et al., 2016), SMART goal (outcome; Bouskila-Yam & Kluger, 2011), gratitude diary (strength; Southwell & Gould, 2017), identification of participants’ core values (purpose; Noble & McGrath, 2015), overcoming hypothetical scenarios (engagement; Chu, 2020) and breathing technique for stress management (resilience; Edwards, 2015). The detailed intervention materials and examples are described in Table 1.

Table 1.

*PROSPER Framework and Intervention Materials*

| **Components** | **Intervention Materials**  |
| --- | --- |
| Positivity | Lesson 1- Introduction of self-compassionLesson 2- Introduction of positive reappraisalLesson 2- Scenarios (positive reappraisal)Lesson 2- Introduction of broaden-and-build theoryLesson 2 and 4- Growth mindset |
| Relationship | Lesson 4- Introduction of theories (conceptualisation of social influence)1Lesson 4- Introduction of the psychological needs of relatedness (actively listening to one’s concern)Lesson 4- Activities (1.creating positive experience with peers, 2. illustrating healthy responses to conflict and 3. creating actively listening opportunities ) |
| Outcome | Lesson 1 and 3- Identification of SMART goalsLesson 3- Introduction of mental subtractionLesson 3- Introduction of strategic mindset |
| Strength | Lesson 1- Explain the importance of being grateful Lesson 1- Introduction of gratitude diary  |
| Purpose | Lesson 2- Identification of personal core value  |
| Engagement | Lesson 1 and 3- Identification of SMART goalsLesson 2- Introduction of core value diaryLesson 2- Scenarios Lesson 2 and 4- Growth mindset |
| Resilience | Lesson 2- Scenarios (stress management)Lesson 2 and 4- Introduction of relaxation breathing techniques |

 *Note*. 1 (Chan et al., 2019)

We implemented several strategies to ensure the intervention fidelity. Specifically, the intervention materials were reviewed and standardised by the project team. One team member who is familiar with the program was present in the workshops and observed the delivery of the intervention. The team member also did a roll call for participants to make certain that the participants attended the workshops. We asked participants to fill out an evaluation form after completing the intervention. The evaluation report revealed that 89% of the participants in the intervention group were satisfied with the training workshops.

**Data Analysis**

For the preliminary analyses, correlational analyses were conducted to examine the relations between the seven PROSPER well-being components. Independent *t*-tests were used to detect if there are any significant differences in the measured components between intervention and control group in baseline. Statistical assumptions such as normality (e.g., via calculating skewness and kurtosis statistics), and Levene’s test for homogeneity of variance were satisfied before testing whether the intervention had impacts on our outcomes of interests. Missing values analysis using Little’s test supported the hypothesis that data were missing completely at random , χ2 = 20.85, *df* = 15, *p* = .14 (Little & Rubin, 2019). Given that the missing data pattern and the low attrition rate of 6.49% (i.e., we have adequate sample size according to our power analysis), we used the listwise deletion method to handle missing data. To test the intervention effects, we conducted repeated-measure multivariate analysis of covariance(MANCOVA)to compare the difference between intervention and control group over time. In MANCOVA, all PROSPER components at post-intervention were included as dependent variables, while the pre-intervention scores along with gender, age, and education level were entered as covariates. Univariate analysis of covariance (ANCOVA) was used to assess the intervention effects on each well-being outcome. Partial eta-squared (*η2*) was used to determine the effects size, with *η2* smaller than .06 and .14 representing small and medium effect size respectively (Cohen, 2013). We also applied Bonferroni correction post hoc tests to identify specific differences between groups across the intervention period.

 The sample size of the current study was first calculated based on the repeated measure ANOVA. In our preliminary analyses, the seven PROSPER components were closely correlated to each other. Hence, MANCOVA seems to be more appropriate in controlling for the potential Type I error inflation. With the sample size of 72, we were able to detect a large effect size with a power of > .80 and a medium effect size with a power of > .55 (α = 0.05), for the MANCOVA analysis. All analyses were conducted using the Statistical Package for the Social Sciences v26.

**Results**

**Preliminary Analysis**

Descriptive statistics of the study components are presented in the Table 2. All seven PROSPER well-being components were positivity correlated with each other at baseline (*r* = .28 to .62, *p* = .00 to .01) and post-test (*r* = .47 to .73, *p* < .01), consistent with the PROSPER framework and our expectation. The results suggested that the PROSPER well-being components are closely related, supporting the coherence of the framework.

Table 2.

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Components | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| Baseline |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1. Positivity | 1 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 2. Relationship | .52\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |  |
| 3. Outcome | .51\*\* | .51\*\* | 1 |  |  |  |  |  |  |  |  |  |  |  |
| 4. Strength | .44\*\* | .47\*\* | .41\*\* | 1 |  |  |  |  |  |  |  |  |  |  |
| 5. Purpose | .43\*\* | .28\* | .47\*\* | .38\*\* | 1 |  |  |  |  |  |  |  |  |  |
| 6. Engagement | .61\*\* | .54\*\* | .59\*\* | .48\*\* | .53\*\* | 1 |  |  |  |  |  |  |  |  |
| 7. Resilience | .57\*\* | .39\*\* | .57\*\* | .46\*\* | .62\*\* | .61\*\* | 1 |  |  |  |  |  |  |  |
| Post-test |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 8. Positivity | .64\*\* | .34\*\* | .43\*\* | .40\*\* | .55\*\* | .56\*\* | .58\*\* | 1 |  |  |  |  |  |  |
| 9. Relationship | .44\*\* | .66\*\* | .44\*\* | .48\*\* | .34\*\* | .61\*\* | .47\*\* | .58\*\* | 1 |  |  |  |  |  |
| 10. Outcome | .36\*\* | .45\*\* | .48\*\* | .20 | .37\*\* | .62\*\* | .41\*\* | .47\*\* | .60\*\* | 1 |  |  |  |  |
| 11. Strength | .38\*\* | .38\*\* | .55\*\* | .47\*\* | .55\*\* | .65\*\* | .57\*\* | .53\*\* | .60\*\* | .68\*\* | 1 |  |  |  |
| 12. Purpose | .39\*\* | .29\* | .38\*\* | .26\* | .72\*\* | .57\*\* | .57\*\* | .63\*\* | .45\*\* | .49\*\* | .64\*\* | 1 |  |  |
| 13. Engagement | .37\*\* | .44\*\* | .53\*\* | .42\*\* | .52\*\* | .79\*\* | .55\*\* | .55\*\* | .65\*\* | .63\*\* | .70\*\* | .69\*\* | 1 |  |
| 14. Resilience | .38\*\* | .43\*\* | .46\*\* | .41\*\* | .53\*\* | .63\*\* | .68\*\* | .58\*\* | .60\*\* | .55\*\* | .73\*\* | .70\*\* | .73\*\* | 1 |
| Mean | 3.04 | 4.59 | 2.84 | 5.14 | 4.43 | 4.76 | 4.50 | 2.94 | 4.67 | 2.82 | 4.94 | 4.47 | 4.78 | 4.57 |
| SD | 0.62 | 0.90 | 0.40 | 1.10 | 1.21 | 1.01 | 1.09 | .68 | .89 | .52 | 1.14 | 1.26 | 1.19 | 1.16 |
| Cronbach’s alpha | .91 | .85 | .85 | .93 | .90 | .94 | .90 | .90 | .88 | .92 | .90 | .91 | .95 | .91 |

 *Zero-order correlations, means, and standard deviation of the components.*

*Note*. \* *p* < .05, \*\* *p* < .01

Table 3 revealed that there was no significant difference in the measured components between the intervention group and control group in the baseline (*p* = .05 to .97).

Table 3.

*Baseline Characteristics*

|  |  |  |  |
| --- | --- | --- | --- |
|  | Intervention Group | Control Group | Difference |
|  | (*N* = 40) | (*N* = 37) | *t* | *p* |
| Gender |  |  | -.65 | .52 |
| Male  | 1 (2.50%) | 2 (5.41%) |  |  |
| Female | 39 (97.50%) | 35 (94.60%) |  |  |
| Age |  |  | -.04 | .97 |
| <20 | 26 (65.00%) | 23 (62.16%) |  |  |
| 21-25 | 8 (20.00%) | 8 (21.62%) |  |  |
| 26-29 | 3 (7.50%) | 5 (13.51%) |  |  |
| >30 | 3 (7.50%) | 1 (2.70%) |  |  |
| Highest Educational level |  |  | -1.65 | .10 |
| Associate Degree | 19 (47.50%) | 26 (70.27%) |  |  |
| Bachelor Degree | 6 (15.00%) | 2 (5.41%) |  |  |
| Master Degree | 1 (2.50%) | - |  |  |
| Others | 8 (20.00%) | 4 (10.81%) |  |  |
| Missing | 6(15.00%) | 8 (13.51%) |  |  |
| Positivity | 2.90 (.55) | 3.18 (.67) | 2.02 | .05 |
| Relationship | 4.57 (.96) | 4.59 (.84) | .11 | .91 |
| Outcome | 2.88 (.41) | 2.78 (.38) | -1.06 | .29 |
| Strength | 5.05 (1.03) | 5.23 (1.17) | .70 | .49 |
| Purpose | 4.60 (1.19) | 4.24 (1.21) | -1.28 | .20 |
| Engagement | 4.77 (.96) | 4.74 (1.08) | -.09 | .93 |
| Resilience | 4.43 (1.06) | 4.58 (1.13) | .58 | .57 |

**Intervention Effects**

The results of MANOVA indicated there were no significant multivariate main effects for time (Wilks’ Lambda *F*(7, 50) = 2.02, *p* = .07, *η2* = .22) and group (Wilks’ Lambda *F*(7, 50) = 1.60, *p* = .16, *η2* = .18).Nosignificant group x time interaction effects were found, Wilks’ Lambda *F*(7, 50) = 1.66, *p* = .14, *η2* = .19. Results obtained from the repeated measures ANCOVA for the PROSPER components in the total sample are shown in Table 4. No significant time x group interaction effect was found in all the PROSPER components (*F* (7, 50) = .08 to 3.96, *p* = .05 to .78, *η2* = .01 to .07), except the *relationship* component. The results revealed that there was a significant medium interaction effect between time and group on participants’ relationship with their peers (*F* (7, 50) = 4.90, *p* = .03, *η2* = .08). Post hoc tests using the Bonferroni correction revealed that the relationships component was improved in the intervention group (Baseline: 4.54 ± 1.00; Post-test: 4.77 ± .86) and declined in the control group (Baseline: 4.73 ± .85; Post-test: 4.57 ± .82) during the intervention period.

Table 4.

*Repeated measures analysis of variance adjusted for sex, age and highest educational level*

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  | Intervention Group |  | Control Group |  | Time X Group Interaction |
| Components |  | Baseline | Post-test |  | Baseline | Post-test |  | *F* [7,50] | *p* | *η2* |
|  |  |  |  |  |  |  |  |  |  |  |
| Positivity |  | 2.89 (0.59) | 2.93 (0.58) |  | 3.12 (0.74) | 2.98 (0.70) |  | 3.96 | .05 | .07 |
| Relationship |  | 4.54 (1.00) | 4.77 (0.86) |  | 4.73 (0.85) | 4.57 (0.82) |  | 4.90 | .03 | .08 |
| Outcome |  | 2.92 (0.42) | 2.86 (0.52) |  | 2.77 (0.41) | 2.84 (0.45) |  | 1.89 | .18 | .03 |
| Strength |  | 5.15 (1.00) | 5.05 (1.05) |  | 5.15 (1.19) | 4.83 (1.20) |  | 0.38 | .54 | .01 |
| Purpose |  | 4.63 (1.29) | 4.70 (1.28) |  | 4.08 (1.27) | 4.13 (1.23) |  | 0.08 | .78 | .01 |
| Engagement |  | 4.80 (0.97) | 4.96 (1.20) |  | 4.72 (1.19) | 4.56 (1.20) |  | 3.37 | .07 | .06 |
| Resilience |  | 4.51 (1.22) | 4.68 (1.17) |  | 4.51 (1.22) | 4.53 (1.07) |  | 0.67 | .42 | .01 |

*Note*. η2 < .06 = small effect size, η2 < .14 = medium effect size

**Discussion**

 Given the relatively limited evidence on well-being interventions for teachers especially in non-WEIRD societies, this study investigated the effectiveness of a positive psychological intervention based on the PROSPER framework (Noble & McGrath, 2015) in promoting pre-service teachers’ well-being. Results revealed that participants in the intervention group showed improvement in relationships with their peers compared to those in the control group. However, no significant differences were found on *positivity, outcome, strength, purpose, engagement,* and *resilience* across both conditions. Generally, this research provides a preliminary evidence regarding the mental health benefit of this well-being intervention in Hong Kong pre-service preschool teachers.

 Consistent with prior research which tested the effectiveness of a PERMA-based positive psychological intervention (Gander et al., 2016), our research showed that the 4-week PROSPER-based intervention significantly improved the *relationships* component of this well-being framework, which encompasses capacity to form and maintain healthy interpersonal ties with colleagues and other school-based stakeholders. This result suggests that simple positive psychological activities involving promotion of healthy interpersonal relationships (e.g., recalling situations in which individuals had positive interactions with colleagues), can serve as a potential route to catalyze well-being. It is not surprising that this intervention component resulted in positive relationship with others as the self-determination theory (Deci & Ryan, 2000) has posited that creating opportunities to fulfil individuals’ basic needs for relatedness can promote psychological well-being. For example, research (Behzadnia & FatahModares, 2020) has demonstrated the mental health benefits associated with activities that boost satisfaction of relatedness needs during the COVID-19 pandemic. Further, these results resembled the findings of prior studies which demonstrated the psychological benefits of implementing strength-based interventions in non-Western societies (Auyeung & Mo, 2019; Chan, 2010; Datu et al., 2021). Clearly, this study contributes to existing positive psychology literature through demonstrating preliminary evidence on the effectiveness of PROSPER-based well-being intervention in boosting positive relationships among pre-service preschool teachers.

 Importantly, the intervention effects on the *relationships* component of PROSPER could reflect the generalizability of socially oriented well-being activities in Hong Kong (Chang et al., 2011; Hagger et al., 2014). People from Hong Kong tend to endorse collectivist norms and socio-centric culture where interpersonal relationships are vital in individuals’ daily life (Chang et al., 2011; Lee et al., 2020a). Studies have suggested that individuals with strong collectivistic values tend to pay more attention to cultivating harmonious relationships, a culturally valued goal, relative to individuals from national groups where individualist values preponderate (Hagger et al., 2014; Tov & Diener, 2013). Studies have demonstrated that facilitating harmonious interpersonal relationships among individuals from the collectivist groups can improve their life satisfaction and positive emotions (Tov & Diener, 2013). Thus, it is speculated that relationship-oriented interventions are efficient in promoting Hong Kong preschool teachers’ well-being (Park & Huebner, 2005; Tov & Diener, 2013).

However, there were no significant intervention effects on other components of the PROSPER framework. There are a few reasons that might account for these non-significant intervention effects. First, the study’s relatively small sample size could be one of the possible factors that explains why there were no significant changes on several well-being outcomes. Second, a review of the effect sizes in this investigation indicates that this intervention yielded small effects on most of the well-being outcomes, which corroborate prior evidence on the average effect sizes between positive psychological interventions and well-being outcomes (Bolier et al., 2013). Third, it is possible that the frequency and duration of intervention sessions may not be enough to elicit positive changes in each component of the PROSPER well-being framework. As positive psychological literature (Fritz & Lyubomirsky, 2018; Lyubomirsky & Layous, 2013) has emphasized the critical role of ‘intervention dosage’ in the success of implementing well-being interventions, it is essential to determine the optimal duration and frequency of positive psychological intervention, which can yield sustainable increases in well-being outcomes.

Yet, the PROSPER-based intervention can still be a feasible option in promoting individuals’ well-being during the COVID-19 pandemic, which has tremendous impacts on people’s daily life and mental health (O'Connor et al., 2020; Zacher & Rudolph, 2020). Studies have identified multiple strategies to lower people’s loneliness, distress and even suicidal thoughts (O'Connor et al., 2020). Some of the strategies are aligned with the PROSPER framework (Rashid & McGrath, 2020). For example, a longitudinal study investigating individuals’ well-being during the pandemic (Zacher & Rudolph, 2020) revealed that emotion-focused (i.e., *positivity*), socially supported strategies (i.e., *relationships*) and stress-appraisals (i.e., *resilience*) were associated with higher well-being. A recent paper (Sun et al., 2020) collected well-being data from 51 countries and discovered that the gratitude (i.e., *strength*) was positively associated with well-being. These studies might provide evidence and highlight the importance of PROSPER-based intervention in facilitating individuals’ well-being during the pandemic.

Our study has conceptual and methodological limitations. First, the current intervention duration was relatively short, only lasting for 1 month. Long-term intervention effects were not examined. Although the previous meta-analytical study suggested that the intervention effects could be retained for a few months, future research may consider including follow-up assessment to examine the long term-intervention effects (Koydemir et al., 2020; Sin & Lyubomirsky, 2009). Second, the sample size of the current study was relatively small. Although our sample size was supported by statistical power analysis, a larger sample size may enhance the statistical power to detect intervention effects, especially on some of the components of PROSPER framework (e.g., *strength* and *resilience*) that have not been examined in prior intervention studies. Additionally, a larger scale intervention (e.g., more sessions and longer intervention period) may further examine the feasibility and actual effectiveness of running a PROSPER-based education program in the community. Such intervention is highly warranted. Third, the intensity of the intervention materials was questionable. The intervention covers all 7 PROSPER components in 4 sessions, 10 hours. The participants may get overwhelmed by all the new information and theories. Further, in order to enhance the intervention effects on preschool teachers’ well-being, future studies may consider including mindfulness elements into the positive psychological intervention. Fourth, as this study relied on self-report measures of well-being outcomes, results may be prone to social desirability biases and common method variance (Chan et al., 2020). In future investigations, it is necessary to explore alternative approaches (e.g., peer-report measure and biophysiological measures of emotions) in assessing psychological health.

**Conclusion**

 Studies have shown that positive psychological interventions can promote well-being outcomes among children and adolescents, especially in Western cultural contexts (e.g., United States and United Kingdom). However, there is limited research on how pre-service preschool teachers are likely to benefit from positive psychological interventions and the applicability of well-being interventions in non-WEIRD societies. This research builds on empirically supported happiness-increasing exercise in designing and evaluating a PROSPER-based intervention program for pre-service preschool teachers. Although the intervention effects were rather modest, this study provides preliminary evidence regarding the effectiveness of PROSPER-based intervention on pre-service teachers’ well-being in Hong Kong. It is hoped that this research will stimulate on-going initiatives about optimizing psychological health among pre-service and in-service teachers in non-Western contexts.

**Disclosure of Interest**

No potential competing interest was reported by the authors.

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