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Prospering in the midst of the COVID-19 pandemic: The effects of PROSPER-based intervention on psychological outcomes among preschool teachers[☆]

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ABSTRACT

The growing concerns regarding the risks of transmitting the COVID-19 virus have intensified the job-related stressors commonly encountered by teachers in various cultural contexts. Evidence shows how the COVID-19 crisis has negatively impacted teachers' mental health outcomes such as stress, depression, and quality of life, which highlights the significance of designing psychological programs to boost teachers' well-being. This study examined the effects of a well-being intervention based on the Positivity, Relationship, Outcomes, Strength, Purpose, Engagement, and Resilience (PROSPER) framework on well-being outcomes among 76 in-service teachers ($M_{age} = 26.05$ years, $SD = 4.71$, range = 20–45; female = 93.4%) in Hong Kong. Participants completed survey measures associated with the seven PROSPER outcomes at baseline and 2-month follow-up. Multivariate regression analysis indicated that there were statistically significant multivariate effects for intervention conditions, Wilks' Lambda $F(7, 58) = 4.50$, $p = .01$. Results demonstrated that teachers who were assigned to the intervention condition ($n = 36$) had significantly higher scores than those in the control condition ($n = 40$) on *positivity* ($b = 0.41$, 95% CI [0.16, 0.65], $p = .01$), *strength* ($b = 0.62$, 95% CI [0.23, 1.01], $p = .01$), *purpose* ($b = 0.61$, 95% CI [0.18, 1.04], $p = .01$), and *resilience* ($b = 0.57$, 95% CI [0.07, 1.07], $p = .04$). Our findings provide evidence on the mental health benefits of the PROSPER-based psychological intervention program for preschool teachers.

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1. Introduction

The COVID-19 pandemic has continued to raise additional challenges in the lives of professionals who directly serve children and youth in different cultural contexts. Given the complex nature of responsibilities inherently linked to the teaching profession, such as continuous updating of curricular materials, establishing smooth teacher-parent collaboration, and performing other administrative duties, there is no doubt that teachers are at greater risk of facing mental health issues (Jennett et al., 2003; Skaalvik & Skaalvik, 2010). Due to the severe impacts of this pandemic outbreak on teaching and learning activities, teachers have been facing difficulties associated with engaging and monitoring students' learning progress via virtual classrooms. Consequently, many teachers have self-reported increased levels of maladaptive psychological states during the pandemic crisis (Fan et al., 2021; Lizana et al., 2021; Ozamiz-Etxebarria et al., 2021). Indeed, research regarding the pandemic-related mental health hazards coincides with prior literature (Sanetti et al., 2020) indicating the need to design interventions that mitigate teachers' stress levels.

Although there is evidence showcasing how positive psychological interventions can facilitate well-being outcomes among teachers (Chan, 2010, 2013a; Dreer, 2020; McCullough, 2015; Taghvaenia & Alamdari, 2020; Zadok-Gurman et al., 2021), several gaps remain unfilled in previous investigations. First, except for the research of Zadok-Gurman et al. (2021), these studies mostly paid attention to the efficacy of well-being interventions before the surge in the COVID-19 infection. Second, investigations commonly adopted interventions with single (Birchinal et al., 2019; Klingbeil & Renshaw, 2018) or few components to cultivate different psychological strengths or states (Ansley et al., 2021; Dreer, 2020; Taghvaenia & Alamdari, 2020; Zadok-Gurman et al., 2021). Third, past studies have primarily concentrated on how these positive psychological interventions impact the well-being of teachers in Western societies, such as the United States (Ansley et al., 2021; McCullough, 2015) and Germany (Dreer, 2020). The relatively sparse literature on comprehensive well-being interventions for teachers, particularly in collectivist settings such as Hong Kong, is a critical gap that needs to be addressed to reduce teachers' risks of experiencing maladaptive states (e.g., burnout, anxiety) in the midst of the COVID-19 pandemic. Against this backdrop, this study investigated the effects of a PROSPER-based intervention program on positive psychological outcomes among in-service teachers in Hong Kong during the pandemic crisis.

1.1. Well-being interventions for teachers

Prior studies have generated insights on how diverse types of psychological interventions affect the well-being and key mental health outcomes among pre- and in-service teachers (Sanetti et al., 2020). As suggested by a meta-analytic review (i.e., Klingbeil & Renshaw, 2018), one of the most popular approaches involves the use of mindfulness-based interventions to promote teachers' positive psychological functioning, yielding small to moderate effects. Specifically, interventions that boost teachers' multiple mindfulness skills, such as mindful breathing (Benn et al., 2012; Hepburn et al., 2021; Sanetti et al., 2020) and mindful eating (Song et al., 2020), teach the importance of mindfulness for managing emotions (Crain et al., 2017). Present-moment awareness exercises (Taylor et al., 2021) and mindful yoga (Ancona & Mendelson, 2014) also have been found to be effective in promoting mental health among teachers in various contexts.

Furthermore, evidence exists supporting the mental health benefits of cognitive interventions on teachers' psychological well-being. Implementing a 12-week rational-emotive stress intervention program that incorporated common techniques in rational-emotive behavior therapy (REBT; Ellis, 1995), such as teaching the fundamental tenets of REBT, cognitive restructuring (a technique that identifies and corrects dysfunctional beliefs about oneself), and role-playing, among others, was reported to reduce burnout among teachers in Nigeria (Ugwoke et al., 2018). Conducting a 12-week cognitive behavioral intervention that incorporated effective creation of a problem list, cognitive disputing (a technique that aims to correct maladaptive beliefs about oneself), yoga, weekly discussions, homework, and meditation resulted in decreased burnout among teachers of children with autism spectrum disorders (Dike et al., 2021). More recently, a 4-week online stress intervention program that incorporated specific mental health skills, such as basic self-care, cognitive restructuring, de-escalation, mindfulness, work-related routines, and interpersonal ties resulted in enhanced sense of accomplishment, coping mechanisms, and teaching self-efficacy among teachers in the United States (Ansley et al., 2021). Despite the mental health payoffs linked to cognitive-behavioral interventions among teachers, these psychological interventions are relatively challenging to administer as they typically require professionally trained psychotherapists, clinical psychologists, or counsellors who can provide support in creating intervention manuals, ensuring treatment fidelity, and implementing intervention sessions.

Other studies have explored how professional development programs and related activities for teachers can boost optimal psychological outcomes. Furthermore, implementing the Learning to Read in a Healing Classroom Intervention, which is a year-long teacher professional development component consisting of a comprehensive education program that is intended to promote pedagogies in math, reading, and social-emotional learning as well as well-being outcomes, increased work motivation among teachers in Congo (Wolf et al., 2015). An arts-based intervention that incorporated activities that activate appreciation and reflection about the emotions linked to artistic media, such as photo elicitation, collage, and metaphor writing, was reported to improve perceived resilience and well-being among teachers in Australia (McKay & Barton, 2018). Yet, as these interventions were designed and implemented based on the unique contextual characteristics of teachers in such settings, the findings might have limited implications for addressing mental health needs of teachers in other cultural contexts.

Limited research has examined the effectiveness of positive psychological interventions in improving teachers' well-being outcomes. For example, facilitating an 8-week gratitude-enhancing intervention that involved counting three good things that happened to them in a week resulted in improved life satisfaction (Chan, 2013a) and positive emotions (Chan, 2010) among teachers in Hong

Kong, Taghvaenia and Alamdari (2020) demonstrated that the provision of a 10-week positive psychotherapy intervention (i.e., integrated activities to boost selected positive virtues including contentment, gratitude, forgiveness, positive emotions, and positive relationships) improved happiness, psychological well-being, and hope among retired teachers in Iran. Dreer (2020) implemented a 2-week positive psychological intervention with activities that were aimed to boost gratitude, kindness, meaning, optimism, and teacher strengths and reported enhanced engagement and job satisfaction among teachers in Germany (Dreer, 2020). Given the predominance of studies in countries that are categorized as Western, educated, industrialized, rich, and democratic (WEIRD) settings and the sparse body of empirical evidence in Asian contexts (Hendriks et al., 2019), more research is needed to offer evidence on the mental health benefits of positive psychological interventions among in-service teachers in non-WEIRD cultural contexts.

Other investigations have shown how the integration of traditional cognitive-behavioral interventions and positive psychological activities might boost teachers' mental health functioning. For example, facilitating an intensive 2-day training program that encompassed didactic sessions on stress and coping, breathing techniques, mindfulness, cognitive disputing, managing conflict, and introduction to positive psychology was reported to result in improved work-related well-being among primary and secondary school teachers in Hong Kong (Siu et al., 2014). Additionally, implementing a 5-week ACHIEVER Resilience Curriculum (Cook et al., 2017) that integrated techniques drawn from cognitive-behavioral therapy (CBT; e.g., cognitive restructuring, emotion regulation; Beck, 2011), acceptance and commitment therapy (ACT; e.g., values-awareness, clarification exercises; Hayes et al., 2006), and positive psychology (e.g., practicing gratitude, engaging in acts of kindness) improved teaching self-efficacy among teachers in the United States. These interventions, however, are relatively challenging to administer as incorporating components on CBT and ACT entail rigorous planning and close collaboration with clinical psychologists.

Clearly, there are gaps that remain unaddressed in prior literature on the applicability of positive psychological interventions among teachers in collectivist societies. First, despite the evidence regarding the mental health payoffs linked to implementing multicomponent positive psychological interventions with teachers, these studies were carried out in more individualistic countries, such as Iran (Taghvaenia & Alamdari, 2020) and Germany (Dreer, 2020). Given that previous studies have shown that the effects of specific happiness-increasing activities, such as recalling acts of kindness (Shin et al., 2021) and gratitude (Shin et al., 2020), differ in individualist and collectivist societies, it is questionable to generalize the psychological benefits of these interventions in various contexts. For example, whereas recalling kind acts towards family and friends improved positive affect in Hong Kong, this activity did not influence the outcome in the US (Shin et al., 2021). This issue relates to a broader concern on the preponderance of studies about positive psychological interventions in WEIRD societies (Hendriks et al., 2019), which may not be applicable to people in non-WEIRD and collectivist societies who are more likely to prioritize socially oriented strategies to achieve happiness (Lyubomirsky & Layous, 2013). Second, even if there has been evidence showcasing how gratitude interventions can boost well-being among teachers in Hong Kong (Chan, 2010, 2013b), these studies adopted a single-component intervention that may offer limited prospects for cultivating protective psychological resources and self-growth. Third, the scarcity of research on well-being interventions that may boost teachers' well-being continues to persist in relatively challenging times, such as the COVID-19 pandemic. Although more recent literature (Park et al., 2021; Waters et al., 2022) has underscored the importance of designing interventions based on the principles of positive psychology, to date we know of only one study (Zadok-Gurman et al., 2021), conducted in Israel, that evaluated the mental health impacts of an inquiry-based stress reduction program among teachers. Specifically, Zadok-Gurman et al. reported that a 10-week stress-reduction training improved life satisfaction, positive emotions, and psychological flourishing among teachers. Indeed, there is a need to explore empirically supported happiness-increasing interventions that can promote mental health among in-service teachers in diverse cultural contexts (Zadok-Gurman et al., 2021).

1.2. PROSPER framework

The PROSPER (i.e., Positivity, Relationships, Outcomes, Strengths, Purpose, Engagement, and Resilience) framework is a comprehensive model that taps into intrapersonal and interpersonal aspects of optimal psychological functioning (Noble & McGrath, 2015). This framework builds on existing multidimensional models of well-being such as the PERMA (Positive Emotions, Engagement, Relationships, Meaning, and Accomplishment) perspective (Seligman, 2012, 2018). *Positivity*, defined as optimistic beliefs and positive emotions, encompasses desirable emotional states such as joy, excitement, happiness, and peace. *Relationships* cover the extent to which individuals experience smooth interpersonal ties with family members, friends, colleagues, and other members of a specific community. *Outcomes*, which is equivalent to the Accomplishment dimension in the PERMA framework (Seligman, 2012), pertains to the degree to which a sense of mastery or achievement has been reached in a particular domain of performance. *Purpose*, which corresponds to the Meaning dimension of the PERMA framework, encompasses an individual's desire to contribute to initiatives that go beyond themselves. *Engagement* refers to an experience characterized by deep immersion or absorption in a specific activity.

Furthermore, the PROSPER framework resembles some of the key dimensions of the psychological well-being (PWB) model (Ryff, 1995; Ryff & Keyes, 1995; Ryff & Singer, 1998). The PWB (Ryff & Keyes, 1995) posits that well-being is a state of optimal psychological functioning characterized by autonomy (showing self-determined behaviors), environmental mastery (demonstrating perceived competence in coping with environmental demands), personal growth (showing constant desire to improve oneself), positive relationships (having a good and smooth relationships with others), purpose in life (having a sense of direction in life), and self-acceptance (espousing positive beliefs about oneself and recognizing the good as well as bad aspects of self). Environmental mastery may be relatively similar to the outcomes dimension in that both concentrate on attainment of skills necessary to cope with

situational or environmental demands. Positive relations with others may be comparable with the relationships dimension of the PROSPER model as both dimensions revolve around achievement of smooth interpersonal relationships.

Despite its conceptual similarities with the core dimensions of the PERMA model (Seligman, 2012) and PWB model (Ryff, 1995; Ryff & Singer, 1996), the PROSPER framework (Noble & McGrath, 2015) advances our understanding of the science of happiness through incorporating two new dimensions of well-being, namely strengths and resilience. *Strengths* encompass the capacity to skillfully spot and apply strengths and psychological resources, which has been considered as an essential feature of well-being frameworks (Seligman, 2012). *Resilience* refers to the ability to bounce back after going through adversities in life. It has been integrated in the PROSPER model given that past literature (Huppert & So, 2013) has underscored the importance of this construct in conceptualizing psychological well-being. Through integrating the extant literature on a multidimensional model of well-being such as PERMA (Seligman, 2012, 2018) with equally important constructs in positive psychology such as strengths and resilience, the PROSPER framework has offered a more comprehensive and complex perspective on optimal psychological functioning. In other words, the present research operationalized well-being as a psychological state characterized by high levels of positive experiences (i.e., positivity), harmonious relationships (i.e., relationships), perceived mastery or accomplishment of tasks (i.e., outcomes), strengths used in different domains (i.e., strengths), desire to contribute to common welfare (i.e., purpose), intrinsic drive to perform specific activities (i.e., engagement), and capacity to cope effectively with adverse life events (i.e., resilience).

Although this framework can provide a more nuanced conceptualization of well-being, the existing literature (Noble & McGrath, 2015; Sanyata et al., 2019) has primarily focused on the theoretical aspects of the PROSPER model and their relevance to the positive education implementation in school settings. Given its comprehensiveness, the PROSPER framework may be particularly relevant during the COVID-19 pandemic; for example, a recent investigation (Lee et al., 2022) has demonstrated that a 4-session PROSPER-based psychological intervention program enhanced positive relationships with peers among pre-service teachers in Hong Kong during the COVID-19 pandemic. There is also research showing how its dimensions, such as positive emotions (Coifman et al., 2021), relationships (Hutchinson et al., 2021), perceived competence (Behzadnia & FatahModares, 2020), resilience (Pink et al., 2021), strengths (Datu, Yuen, et al., 2022; Datu, Valdez, et al., 2022), engagement (Ployhart et al., 2021), and meaning in life (Newman et al., 2021) operate as either protective psychological resources or key psychological outcomes during the pandemic. Furthermore, the present research organized well-being outcomes into two broad categories, namely intrapersonal and interpersonal dimensions, given that previous literature (Ryff, 1995) has offered a more nuanced approach in understanding the role of PWB's dimensions in different cultural contexts. For example, prior studies have suggested the presence of cultural differences in emotional expressions (Markus & Kitayama, 1991) and meaning of happiness (Diener & Suh, 2000) between individuals in Western and independent cultures espousing a personal construal of happiness and individuals in collectivist settings espousing an interpersonal construal of well-being (Uchida & Ogihara, 2012). Because Hong Kong has been considered a relatively collectivist setting based on its low score in individualism (Hofstede Insights, 2022), it is possible that the PROSPER-based intervention might yield stronger impacts on interpersonal aspects of well-being.

1.3. The present study

This research examines the effectiveness of an intervention based on the tenets of the PROSPER framework (Noble & McGrath,

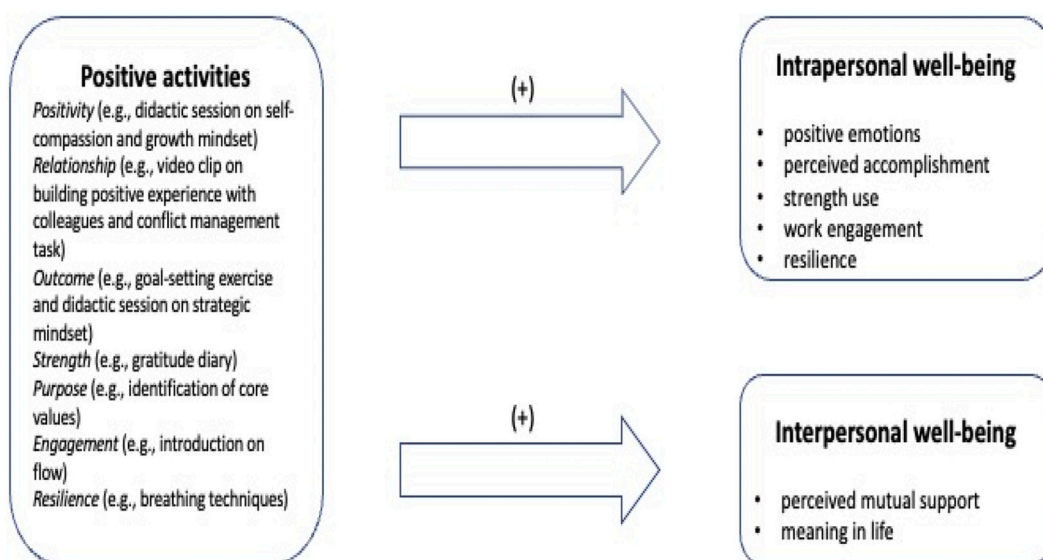


Fig. 1. Conceptual framework demonstrating the links of intervention components to well-being outcomes based on the positive activity model (Lyubomirsky & Layous, 2013).

2015) among in-service teachers in Hong Kong. Specifically, this study examined the effects of this positive psychological intervention on positive emotions, relationships, perceived personal accomplishment, hope, purpose, engagement, and resilience.

Guided by the positive activity model (Lyubomirsky & Layous, 2013) that explores the role of positive activities in boosting happiness and optimal outcomes due to their capacity to foster fulfilment of basic psychological needs in different domains (i.e., autonomy, relatedness, and competence), as well as positive affect, thoughts, and motivational states, it is plausible to hypothesize that the PROSPER-based positive psychological intervention may result in higher levels of positive emotions, relationships, perceived personal accomplishment, hope, purpose, engagement, and resilience. Our prediction regarding the capacity of PROSPER-based intervention activities to promote well-being is built upon prior research findings on specific happiness-increasing strategies, such as a gratitude journal (Cook et al., 2017), breathing exercises (Hepburn et al., 2021), growth mindset exercises (i.e., fostering a belief that cognitive abilities can improve over time through practice; Brunzell et al., 2016; Claro et al., 2016), a reflective listening activity (MacIntyre et al., 2016), and SMART goal-setting (Bouskila-Yam & Kluger, 2011). As this framework also emphasizes the importance of contextual factors in designing psychological interventions, studies on the role of positive psychological resources and interventions among pre- and in-service teachers (Chan, 2009, 2013a) have been used in creating the multi-component PROSPER-based intervention.

Existing literature in the area of prevention and intervention program development (Flay et al., 2005; Gottfredson et al., 2015) has indicated that intervention trials can be classified into three types, including (a) *efficacy trials* that encompass investigations of prevention or intervention schemes implemented under ideal conditions, (b) *effectiveness trials* that consist of studies carried out in naturalistic or real-world contexts, and (c) *dissemination studies* that involve investigations implementing interventions that

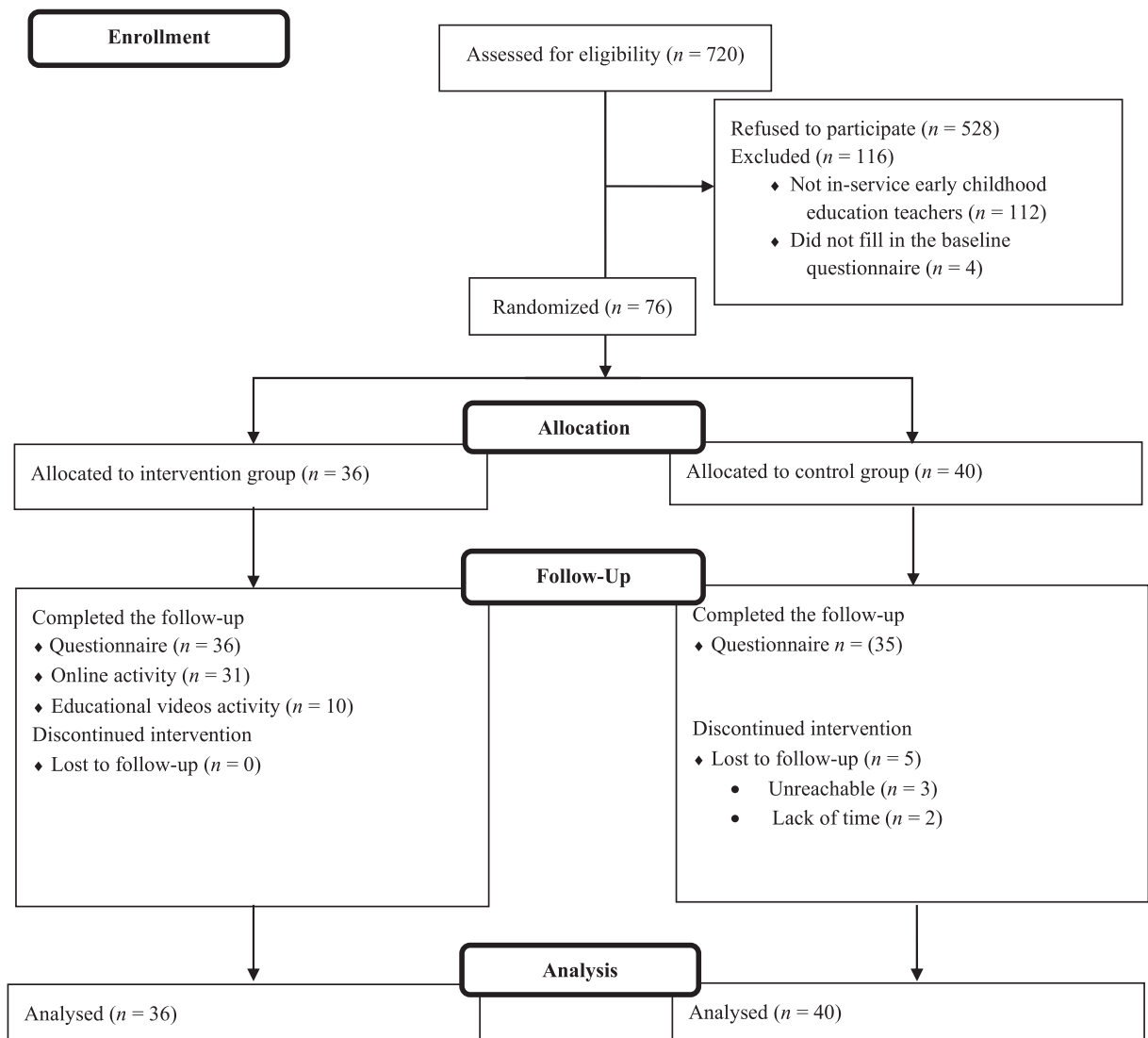


Fig. 2. CONSORT flow diagram.

successfully overcame issues associated with efficacy and effectiveness at a broader scale. A preliminary efficacy trial on the PROSPER-based intervention indicated that it yielded positive changes in the positive interpersonal ties among pre-service teachers in Hong Kong (Lee et al., 2022). However, as the generalizability of this intervention might not be guaranteed in other related populations, the present study examined the applicability of the PROSPER-based intervention to other teaching populations by exploring the impacts of this intervention program on psychological outcomes among in-service teachers in Hong Kong. Importantly, this intervention is practically relevant and meaningful to prevent maladaptive psychological states among teachers who are vulnerable to experience intense levels of stress due to the drastic shifts in teaching arrangements during the COVID-19 pandemic crisis. Fig. 1 illustrates the link of the PROSPER intervention to well-being outcomes based on the positive activity model. This study aimed to address the following two research questions and hypotheses:

1. Does the PROSPER-based positive psychological intervention significantly improve intrapersonal dimensions of well-being (i.e., positive emotions, perceived sense of accomplishment, strength use, work engagement, and resilience) among in-service preschool teachers?

Hy-
pothesis 1

Based on the previous positive psychology intervention studies (Chan, 2013a; Cook et al., 2017; Witvliet et al., 2019), it was expected that the PROSPER-based positive psychological intervention would significantly improve intrapersonal dimensions (i.e., positive emotions, perceived sense of accomplishment, strength use, work engagement, and resilience) of well-being among in-service preschool teachers.

2. Does the PROSPER-based positive psychological intervention significantly improve interpersonal dimensions of well-being (i.e., positive relationships and meaning in life) among in-service preschool teachers?

Hy-
pothesis 2

Guided by previous studies (Chan, 2010; Lee et al., 2022), it was anticipated that the PROSPER-based positive psychological intervention would significantly improve interpersonal dimensions (i.e., positive relationships and meaning in life) of well-being among in-service preschool teachers.

2. Method

2.1. Participants

Ethical approval was obtained from The Education University of Hong Kong [approval number = 2019-2020-0407]. Invitations were sent to 720 in-service teachers who were affiliated with a public university in Hong Kong. In-service teachers were eligible for inclusion in the study if they were early childhood education (ECE) teachers managing K1–K3 children (ages 2 years 8 months, to age 6 years). Due to ECE teachers' work schedules during the COVID-19-pandemic, we expected a low participation rate in this intervention study. We sent out invitations to a large pool of potential participants and excluded those who failed to fill in the baseline questionnaire before the intervention workshops. An a priori power analysis for the repeated measure ANOVA within-between factors, with a power of 80% ($\beta = 0.80$; $\alpha = 0.05$) and small to medium effect size (i.e., partial eta-squared = 0.03; Carr et al., 2020; Koydemir et al., 2020), revealed that a minimum sample size of 68 participants was needed (Faul et al., 2007). With an estimated attrition rate of 10%, a total of 75 participants were necessary to obtain the minimum sample size for the present study. Finally, 76 in-service teachers ($M_{age} = 26.05$ years, $SD = 4.71$, range = 20–45; female = 93.4%) agreed to participate in the study. On average, participants had 3.00 years ($SD = 2.88$) of teaching experience. Participants' flow diagram is presented in Fig. 2.

2.2. Procedure

The current study adopted a 2-month randomized control trial that included two waves of data collection that occurred in February 2021 and May 2021. All participants were invited to complete a survey package after providing their consent. Participants were randomly assigned to an intervention group ($n = 36$) and a wait-list control group ($n = 40$) using a computer ballot by an independent research assistant. The intervention group received four intervention workshops that lasted for 2.5 h each over the course of a month. The intervention workshops were conducted online because of the COVID-19 pandemic. After the first two workshops, participants from the intervention group were asked to complete an online activity that took approximately 30 min to complete and was aimed at consolidating participants' positive psychology knowledge before the last two workshops. Upon completing four intervention workshops, the intervention group received four educational videos, along with individual self-reflection activities (i.e., 5 min for each activity) via an online platform over 2 weeks to further promote well-being and key psychological outcomes based on the PROSPER framework (Noble & McGrath, 2015). Then, all participants were invited to complete the post-intervention questionnaire. To reduce the possibility of overwhelming our participants who were busy given the unpredictable workload during the COVID-19 pandemic, they were given the flexibility to engage in online activities (e.g., watching educational videoclips). Conversely, the wait list-control group only received the four online intervention workshops after they completed the second wave of data collection. Neither the workshop facilitator nor the participants were notified of the treatment allocation to reduce any bias (e.g., demand characteristics) that could have impacted the results of this intervention study.

2.3. Measures

We used seven scales to assess participants' well-being based on the PROSPER framework. The Chinese versions of these measures were used in the current study as Chinese was the primary language for all participants.

2.3.1. Positivity

The 10-item positive affect subscale from the Positive and Negative Affect Schedule (PANAS) was adopted to assess positivity (Watson et al., 1988). Participants were asked to indicate the extent to which they experienced a certain positive feeling (e.g., "Proud", "Excited") over the past week utilizing a 5-point scale ranging from 1 (*Not at all*) to 5 (*Extremely*). This subscale was chosen because participants' positive emotion/experience is aligned with the definition of *positivity* in the PROSPER framework (Burić & Moe, 2020). The Chinese version of the scale showed good reliability ($\alpha = 0.82$; Chan, 2013b). The PANAS has been adapted to measure individuals' affect in the Chinese community (Huang et al., 2003; Thompson, 2007). The cross-cultural validity of the scale was established between Chinese and western populations (Lee, Hartanto, et al., 2020). In the present study, the Cronbach's alpha coefficients of this scale at baseline and post-test were 0.85 and 0.89, respectively. The scale showed fair test-retest reliability (ICC = 0.53; Cicchetti, 1994).

2.3.2. Relationships

We used the 7-item mutual support and trust subscale from the Teacher Collegiality Scale (Shah, 2011) to measure teachers' relationships with their peers on a 7-point Likert scale (1 = *Strongly disagree* and 7 = *Strongly agree*). Content, construct, and convergent validity of the scale were established in an Asian population (Shah, 2011). A sample question is "Professional interactions among teachers are cooperative and supportive". We did not adopt the other subscales from the Teacher Collegiality Scale because they did not fit into PROSPER's relationship dimension and the intervention framework. We focused on facilitating teachers' interpersonal skills such as active listening and providing healthy response to conflicts. The mutual support and trust subscale is consistent with the harmonious relationships identified in the PROSPER framework (Noble & McGrath, 2015). Thus, we did not provide manipulation on specific practices suggested by the Teacher Collegiality Scale, such as observing one another teaching, developing curriculum together, joint planning, and assessment. The Chinese version of the scale showed good internal consistency (i.e., $\alpha = 0.85$) in a previous study (Lee et al., 2022). In the present study, the Cronbach's alpha coefficients at baseline ($\alpha = 0.87$) and post-test ($\alpha = 0.86$) were acceptable (Tavakol & Dennick, 2011). The ICC of the scale between the two time points was 0.55.

2.3.3. Outcome

The 8-item personal accomplishment subscale from the Maslach Burnout Inventory (MBI) was used to measure the outcome dimension (Poghosyan et al., 2009). Participants rated the items (e.g., "Can easily understand students' feelings") on a 7-point Likert scale from 1 (*Never*) to 7 (*Always*). Personal accomplishment is coherent with the outcome dimension (i.e., perceived mastery or accomplishment of tasks) as defined by the PROSPER framework (Noble & McGrath, 2015). Conversely, the other two subscales from MBI, emotional exhaustion and depersonalization, do not align with the outcome dimension; hence, they were not adopted (Corbin et al., 2019). The Chinese version of the scale was reported to have acceptable reliability (Watson et al., 2008). Construct and criterion-related validity of the personal accomplishment was supported among a sample of Chinese participants (Schwarzer et al., 2000). In the present study, the Cronbach's alpha coefficients of the scale at baseline and post-test were 0.88 and 0.90, respectively. The test-retest reliability of the scale was 0.44.

2.3.4. Strength

We used the 3-item hope subscale from the Global Assessment of Character Strengths (GASC; McGrath, 2019) to assess participants' strength on a 7-point Likert scale anchored from 1 (*Very strongly disagree*) to 7 (*Very strongly agree*). A sample question is "Hope is an essential part of who I am in this world". We selected hope because it is a representative of character strengths and substantially related to well-being (Park et al., 2004; Valle et al., 2006). The Chinese version of the scale has demonstrated good internal consistency (i.e., $\alpha = 0.87$; Lee et al., 2022). The VIA Inventory of Strengths, the antecedent of the GASC, has been validated in Asian populations (McGrath, 2015). In the present study, the Cronbach's alpha coefficients of the scale at baseline and post-test were 0.85 and 0.86, respectively. The scale showed satisfactory test-retest reliability (ICC = 0.47; Cicchetti, 1994).

2.4. Purpose

Purpose was measured using the 5-item presence subscale from the Meaning in Life Questionnaire (MLQ; Steger et al., 2006). Items (e.g., "My life has a clear sense of purpose") were rated using a 7-point Likert scale from 1 (*Strongly disagree*) to 7 (*Strongly agree*). The presence subscale was related to participants' sense of purpose and meaning (Yeager & Bundick, 2009), which is consistent with PROSPER's purpose dimension. The psychometric properties of the Chinese version of MLQ were examined in Chan (2017), who reported that the scale demonstrated good internal consistency (i.e., $\alpha = 0.85$; Chan, 2017). The construct, convergent, and divergent validity of MLQ have also been established (Chan, 2017). In the present study, the Cronbach's alpha coefficients of this scale at baseline ($\alpha = 0.89$) and post-test ($\alpha = 0.85$) were acceptable (Tavakol & Dennick, 2011). The test-retest reliability of the scale was 0.56.

2.4.1. Engagement

We used the 5-item dedication subscale from the Utrecht Work Engagement Scale (UWES; Schaufeli et al., 2006) to assess participants' engagement. Participants rated the items (e.g., "I am enthusiastic about my job") on a 7-point Likert scale anchored from 1

(Never) to 7 (Always). The dedication subscale was selected because it is an accurate interpretation of engagement (i.e., intrinsic drive to perform specific activities) proposed by PROSPER (Philipp & Schüpbach, 2010). The Chinese version of the UWES was validated (i.e., factorial, convergent, and construct validity) and was reported to have acceptable reliability (i.e., $\alpha = 0.77$; Fong & Ng, 2012). In the present study, the Cronbach's alpha coefficients of the scale at baseline and post-test were 0.93 and 0.95, respectively. The scale showed fair test-retest reliability (ICC = 0.44; Cicchetti, 1994).

2.4.2. Resilience

The 4-item managing stress subscale from the Resilience at Work Scale (RAW; Malik & Garg, 2018) was used to measure participants' resilience. Items (e.g., "I have developed some reliable ways to relax when I am under pressure at work") were rated using a 7-point Likert scale ranging from 1 (Strongly disagree) to 7 (Strongly agree). Within PROSPER, the resilience dimension refers to developing skills to respond adaptively to difficult circumstances, and the managing stress subscale was consistent with this definition (Noble & McGrath, 2015). The RAW displayed good internal consistency (i.e., $\alpha = 0.83$) in a previous study (Malik & Garg, 2018). Malik and Garg's results supported the factorial, convergent, discriminant, and nomological validity of the RAW scale in Asian populations. In the present study, the Cronbach's alpha coefficients of this scale at baseline ($\alpha = 0.90$) and post-test ($\alpha = 0.90$) were acceptable (Tavakol & Dennick, 2011). The test-retest reliability of the scale was 0.32.

2.5. Intervention design

The intervention was comprised of three components, including (a) four online intervention workshops, (b) an online activity, and (c) four educational videos. The intervention workshops aimed to cultivate all dimensions of PROSPER well-being (Noble & McGrath, 2015). The current intervention materials were developed based on the PROSPER framework (Noble & McGrath, 2015), previous positive psychology interventions (Bolier et al., 2013; Koydemir et al., 2020; Sin & Lyubomirsky, 2009), and a pilot study conducted by our research team (Lee et al., 2022). The pilot study was conducted by a team of experts, including four academic staff members in early childhood education (e.g., professor, associate professor) and an educational psychologist who had extensive experience (i.e., > 10 years) in teaching positive psychology/education, mental health courses in universities, and preschools. Furthermore, the first author, who has expertise in the application of positive psychology in school contexts, provided input on the development of intervention materials. 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, teachers, and parents. The pilot study yielded preliminary evidence supporting positive impacts of a PROSPER-based intervention on pre-service teachers' well-being.

The four online intervention workshops were delivered by the same educational psychologist from the pilot study and team. The online intervention workshops covered all seven PROSPER components, such as the introduction of growth mindset (positivity,

Table 1
PROSPER framework and intervention materials.

Dimensions	Online intervention workshops	Online activities	Videos (online self-reflection)
Positivity	Lesson 1- Introduction of self-compassion Lesson 2- Introduction of positive reappraisal Lesson 2- Introduction of Scenarios (positive reappraisal) Lesson 2- Introduction of broaden-and-build theory Lesson 2 and 4- Growth mindset	MCQ - Self-compassion MCQ - Growth mindset SQ - Positive psychology theory	Video 1 - Self-compassion Video 2 and 4 - Positive reappraisal Video 3 and 4 - Growth mindset
Relationship	Lesson 4- Introduction of theories (conceptualization of social influence) ¹ Lesson 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)	MCQ - Responses to conflict SQ - Positive psychology theory SQ - Responses to conflict	Video 2 - Positive relationships with colleagues, students and their parents (relatedness) Video 3 - Creating positive experience with peers Video 4 - Active listening
Outcome	Lesson 1 and 3- Identification of SMART goals Lesson 3- Introduction of mental subtraction Lesson 3- Introduction of strategic mindset	MCQ - Components of goals SQ - Positive psychology theory	Video 1 - Identification of SMART goals
Strength	Lesson 1- Introduction of character strengths (hope) Lesson 1- Discussion of the importance of being grateful	Gratitude diary	Video 1 - Introduction of gratitude diary and hope
Purpose	Lesson 2- Identification of personal core value	SQ - Positive psychology theory	Video 1 - Identification of personal core
Engagement	Lesson 1 and 3- Identification of SMART goals Lesson 2- Introduction of flow state Lesson 2- Introduction of scenarios Lesson 2 and 4- Growth mindset	SQ - Positive psychology theory	Video 1 - Flow state Video 3 - Engagement at work
Resilience	Lesson 2- Scenarios (stress management) Lesson 2 and 4- Introduction of relaxation breathing techniques	SQ - Stress management	Video 2 - Stress management Video 4 - Relaxation breathing techniques

MCQ = multiple choice question; SQ = short question.

¹ (Chan et al., 2018).

implying everyone can grow through application and experience; Brunzell et al., 2016), reflective listening (*relationship*, paying respectful attention to the content and feeling expressed in another persons' communication; MacIntyre et al., 2016), SMART goal (*outcome*, setting up specific, measureable, achievable, relevant and time-based goal; Bouskila-Yam & Kluger, 2011), identification of participants' core values (*purpose*, ensuring personal core values to achieve life goals; Noble & McGrath, 2015), flow experience at work (*engagement*, entering a state of deep absorption in an activity that is intrinsically enjoyable; Olcár et al., 2019), and breathing techniques for stress management (*resilience*, activating the parasympathetic nervous system for relaxation; Edwards, 2015). For the *strength* dimension, prior research (Chan, 2009) has demonstrated that hope serves as one of the strongest predictors of well-being outcomes among teachers in Hong Kong; consequently, the present intervention focused on cultivating hope through the employment of empirically supported activities (Feldman & Dreher, 2012), including the introduction of hope (i.e., achieving goals by having hope agency and pathways) and a gratitude diary (Feldman & Dreher, 2012). Studies have shown that a gratitude diary is an effective way to promote hope (Witvliet et al., 2019) via increasing mindful attentiveness (McCullough, 2002).

The online activity worked as a revision to consolidate the information delivered in the intervention workshops. It consisted of multiple-choice questions, short questions, and a gratitude diary. The questions in the online activity were reviewed by the educational psychologist to ensure they were aligned with the PROSPER dimensions and intervention framework. A sample question includes “How do you practice self-compassion in your daily life? Please list 1-2 examples to illustrate.”

Four educational videos presented four hypothetical scenarios that preschool teachers may encounter in their workplace contexts. After watching these videos, participants were asked to spend 3 min reflecting on three questions if they were in a similar scenario; these questions inquired as to how they would feel, how they would handle their feelings, and what would they do to solve the problems. Suggested answers and positive psychological strategies were extracted from the kindergarten curriculum guidelines (Curriculum Development Council, 2017), PROSPER framework (Noble & McGrath, 2015), and positive psychology literature (Waters, 2011) were then provided. In particular, the kindergarten curriculum guidelines (Curriculum Development Council, 2017) served as a practical foundation. Furthermore, theoretically sound strategies from the PROSPER framework (Noble & McGrath, 2015) and positive psychology literature (Waters, 2011) were incorporated in the learning materials. For example, one of the scenarios was about two children fighting for toys; participants then were asked about how they would respond and handle the situation. Suggested answers included separating the children first (practical solutions), actively listening to children (*relationship*), performing positive reappraisal (*positivity*; e.g., you have better understanding on the children now), and carrying out relaxation techniques (*resilience*). The intervention materials are described and summarized in Table 1.

To improve intervention fidelity, the research team and three external experts from various backgrounds (i.e., early childhood education, positive psychology, and educational psychology) reviewed the intervention materials (i.e., workshops, online activity, and educational videos) to ensure the intervention covered all dimensions of the PROSPER framework. Second, a team member who was familiar with the program served as an observer in the workshops and observed the delivery of the intervention. Third, two independent researchers, who were affiliated in the same research center as the research team, were invited to fill out a 43-item (i.e., 13-, 15-, 9-, and 6-items for Lesson 1, 2, 3, and 4, respectively) fidelity checklist for the four online intervention workshops using a 5-point Likert scale (1 = *Strongly disagree*, 5 = *Strongly agree*). A summary of the project was presented to the researchers before they attended the online intervention workshops. The fidelity checklist items corresponded to the contents of the four online intervention workshops (see Table 1). Example items from the fidelity checklist include “The goal of self-compassion exercises is clear, and the activities are coherent with its definition” (Lesson 1), “The workshop facilitator introduces the relaxation breathing techniques clearly” (Lesson 2), “The workshop facilitator can illustrate the elements of sense of accomplishment clearly” (Lesson 3), and “The workshop facilitator explains the healthy responses to conflict clearly” (Lesson 4). The mean scores of the fidelity checklists for Lesson 1, 2, 3, and 4 were 4.65 ($SD = 0.48$), 4.13 ($SD = 0.85$), 4.33 ($SD = 0.47$), and 4.08 ($SD = 0.64$) out of 5, respectively. The two researchers scored 36 of the 43 items the same way, resulting in a percentage agreement of 83.72%.

2.6. Data analyses

Concerning missing data, five participants from the control group failed to participate in the succeeding sessions, yielding an attrition rate of 6.58%. According to the results of Little's missing completely at random (MCAR) test (i.e., $\chi^2 = 102.97$, $df = 100$, $p = .40$), our data failed to reject the null hypothesis of MCAR (Little & Rubin, 2019). The results provided some evidence that no clear pattern existed in the missing data. Multiple imputation was used to manage missing data as previous research has considered it as a methodologically acceptable approach (Finch, 2016). Specifically, five imputed data sets were combined to generate a final imputed dataset. To examine normality of each construct, skewness and kurtosis of study variables were calculated. Zero-order correlations, independent sample *t*-tests, paired *t*-tests, and reliability analyses were performed. The mean scores of each measure were used in the analyses. Cronbach's alphas were used to assess reliabilities of the study measures. Conventionally, alpha values of 0.70–0.95 are considered as acceptable (Tavakol & Dennick, 2011). For the test-retest reliability, intra-class correlation coefficients (ICC) between 0.40 and 0.59, 0.60–0.74, and above 0.75 were regarded as fair, good, and excellent, respectively (Cicchetti, 1994). To address the hypotheses in our study, we checked whether relevant statistical assumptions were met (e.g., multivariate normality, absence of outlier, homogeneity of variance) and conducted multivariate regression. In multivariate regression, all PROSPER dimensions at post-intervention were included as dependent variables, whereas the pre-intervention scores were entered as predictors adjusting for intervention conditions, gender, age, and teaching experience. Univariate tests were conducted within the multivariate model to examine the effects of the intervention conditions on each PROSPER dimension.

In our original proposal, sample size was first calculated based on the repeated measure ANOVA. However, multivariate regression appeared to be more appropriate for this study in the later stages because the analysis would account for the residual covariance

Table 2
Zero-order correlations, means, and standard deviations of the study variables (N= 76).

Dimensions	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Pre-test														
1. Positivity	1													
2. Relationship	0.13	1												
3. Outcome	0.52**	0.28**	1											
4. Strength	0.50**	0.26**	0.55**	1										
5. Purpose	0.62**	0.20	0.50**	0.62**	1									
6. Engagement	0.40**	0.46**	0.50**	0.46**	0.37**	1								
7. Resilience	0.59**	0.22	0.44**	0.41**	0.53**	0.42**	1							
Post-test														
8. Positivity	0.53**	0.18	0.27*	0.30*	0.34**	0.35**	0.46**	1						
9. Relationship	0.20	0.55**	0.19	0.25	0.27*	0.29*	0.33**	0.34**	1					
10. Outcome	0.35**	0.23*	0.44**	0.33**	0.34**	0.32**	0.46**	0.44**	0.44**	1				
11. Strength	0.51**	0.13	0.30*	0.47**	0.49**	0.33**	0.47**	0.68**	0.37**	0.49**	1			
12. Purpose	0.54**	0.18	0.27*	0.42**	0.57**	0.36**	0.51**	0.55**	0.38**	0.59**	0.65**	1		
13. Engagement	0.36*	0.31**	0.28*	0.41**	0.41**	0.44**	0.37**	0.56**	0.49**	0.53**	0.72**	0.62**	1	
14. Resilience	0.26	0.05	0.13	0.28*	0.21	0.16	0.32*	0.48**	0.18	0.42**	0.45**	0.34**	0.47**	1
Mean	3.07	4.81	3.07	5.10	4.54	4.86	4.64	3.24	4.81	3.02	5.00	4.55	4.86	4.88
SD	0.60	0.93	0.46	1.05	1.30	1.03	1.15	0.64	0.97	0.44	1.04	1.21	1.18	1.15
Cronbach's alpha	0.85	0.87	0.88	0.85	0.89	0.93	0.90	0.89	0.86	0.90	0.86	0.85	0.95	0.90
Skewness	-0.08	-0.42	0.22	-0.25	-0.44	-0.23	-0.33	0.06	-0.09	0.29	-0.36	-0.17	-0.67	-0.11
Kurtosis	-0.33	-0.30	-0.24	0.26	0.10	0.09	-0.36	0.61	-0.50	0.16	0.49	-0.32	0.87	-0.48

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

between the seven outcome measures with three covariates in two time points (Huang, 2020). With a sample size of 76 participants, we were able to detect a large effect size with power of >0.94 and a medium effect size with power of >0.70 ($\alpha = 0.05$) for the multivariate regression analysis. All analyses were conducted using the Statistical Package for the Social Sciences v26.

3. Results

3.1. Preliminary analysis

Descriptive statistics, including mean, standard deviation, reliability, normality statistics, and correlational coefficients, are presented in Table 2. There were no reported adverse events or side effects by participants during the study period. The independent *t*-test revealed an absence of significant differences on all well-being outcomes (i.e., positivity, relationship, outcome, strength, purpose, engagement, and resilience) and demographic characteristics (i.e., age, gender, and teaching experience) across the intervention and control groups during baseline measurement, $t(74) = -1.27-0.47, p = .40-0.97$ (Table 3). Participants from the intervention group showed significant improvements in positivity, purpose, and resilience after the intervention. There were no significant differences between pre-test and post-test on all well-being outcomes among control group participants. During the post-test measurement, the intervention group had significantly higher scores in positivity as compared to the control group (see Table 4).

3.2. Intervention effect

The results of Levene's tests of equality of variance indicated that there were equal variances between intervention and control groups, $p = 0.06$ to 0.93 . The correlations between study variables were smaller than 0.80 , thus it is less likely that multicollinearity might affect the findings of this study. The results of multivariate regression indicated there were statistically significant multivariate effects for intervention conditions (Wilks' Lambda $F(7, 58) = 4.50, p = .01$). This analysis showed that there was a significant multivariate effect of the intervention on the PROSPER outcome variables as compared to the control group. Results of univariate analyses suggested that the intervention had significant effects on positivity ($b = 0.41, 95\% \text{ CI } [0.16, 0.65], p = .01$), strength ($b = 0.62, 95\% \text{ CI } [0.23, 1.01], p = .01$), purpose ($b = 0.61, 95\% \text{ CI } [0.18, 1.04], p = .01$), and resilience ($b = 0.57, 95\% \text{ CI } [0.07, 1.07], p = .04$). The results demonstrated that participants assigned to the intervention group experienced significant improvements on these four components over time as compared to the participants in the control group. Conversely, no significant effects were found in the relationship ($b = 0.04, 95\% \text{ CI } [-0.33, 0.43], p = .71$), outcome ($b = 0.15, 95\% \text{ CI } [-0.03, 0.33], p = .12$), and engagement ($b = 0.18, 95\% \text{ CI } [-0.09, 0.68], p = .52$) dimensions of well-being. Table 5 displays the results of the univariate analyses.

4. Discussion

As there has been little investigation on the impacts of well-being interventions for teachers, this study examined the effects of a PROSPER-based positive psychological intervention among in-service preschool teachers in Hong Kong. Results suggested that the PROSPER-based positive psychological intervention significantly improved some intrapersonal (i.e., positivity, strength, and resilience) and interpersonal (i.e., purpose) dimensions of well-being, partially supporting Hypothesis 1 and Hypothesis 2, respectively. We now describe the theoretical and practical impacts of this investigation.

4.1. Does the PROSPER-based positive psychological intervention significantly improve intrapersonal dimensions of well-being among in-service preschool teachers?

This study demonstrated that the PROSPER-based intervention resulted in higher levels of intrapersonal well-being outcomes, such as resilience, positivity, and strength, among teachers. The beneficial impact of this intervention on positivity aligns with studies

Table 3
Baseline characteristics.

	Intervention group	Control group	Difference	
	(<i>n</i> = 36)	(<i>n</i> = 40)	<i>t</i>	<i>p</i>
Gender			-1.27	0.21
Male	1 (2.78%)	4 (10.00%)		
Female	35 (97.22%)	36 (90.00%)		
Age	26.08 (4.40)	26.03 (5.03)	0.05	0.96
Teaching experience (years)	2.78 (1.92)	3.20 (3.55)	-0.63	0.53
Positivity	3.07 (0.64)	3.07 (0.57)	0.03	0.97
Relationship	4.86 (0.92)	4.78 (0.95)	0.38	0.70
Outcome	3.06 (0.47)	3.07 (0.45)	-0.27	0.79
Strength	5.06 (1.11)	5.13 (1.01)	-0.32	0.75
Purpose	4.41 (1.44)	4.66 (1.16)	-0.85	0.40
Engagement	4.92 (1.03)	4.81 (1.05)	0.47	0.64
Resilience	4.54 (1.27)	4.73 (1.05)	-0.69	0.49

Table 4
Comparison of outcomes between intervention and control group participants.

Dimensions	Intervention group (n = 36)		Control group (n = 40)		Independent t-test
	Pre-test	Post-test	Pre-test	Post-test	<i>p</i> ₂
Positivity	3.07 (0.64) <i>p</i> ₁ < 0.001	3.43 (0.62)	3.07 (0.57) <i>p</i> ₁ = 0.93	3.08 (0.62)	0.02
Relationship	4.86 (0.92) <i>p</i> ₁ = 0.84	4.83 (0.89)	4.78 (0.95) <i>p</i> ₁ = 0.92	4.79 (1.04)	0.90
Outcome	3.06 (0.47) <i>p</i> ₁ = 0.74	3.08 (0.47)	3.08 (0.45) <i>p</i> ₁ = 0.13	2.96 (0.41)	0.27
Strength	5.06 (1.11) <i>p</i> ₁ = 0.19	5.27 (1.11)	5.13 (1.01) <i>p</i> ₁ = 0.08	4.76 (0.92)	0.05
Purpose	4.41 (1.44) <i>p</i> ₁ = 0.03	4.79 (1.21)	4.66 (1.16) <i>p</i> ₁ = 0.09	4.33 (1.19)	0.10
Engagement	4.92 (1.03) <i>p</i> ₁ = 0.91	4.94 (1.32)	4.81 (1.05) <i>p</i> ₁ = 0.97	4.80 (1.05)	0.63
Resilience	4.54 (1.27) <i>p</i> ₁ = 0.01	5.13 (1.05)	4.73 (1.05) <i>p</i> ₁ = 0.77	4.65 (1.20)	0.09

Note. *p*₁ = Pre-test versus post-test *p* value; *p*₂ = Post-test intervention versus post-test control *p* value.

Table 5
Univariate analysis adjusted for gender, age, and teaching experience (years).

Post-test dimensions	Pre-test level of PROSPER dimensions			Intervention conditions ^a		
	<i>b</i>	95% CI	<i>p</i>	<i>b</i>	95% CI	<i>p</i>
Positivity	0.40	[0.11, 0.69]	0.01	0.41	[0.16, 0.65]	0.01
Relationship	0.55	[0.31, 0.78]	<0.001	0.04	[-0.33, 0.43]	0.71
Outcome	0.22	[-0.04, 0.49]	0.11	0.15	[-0.03, 0.33]	0.12
Strength	0.27	[0.01, 0.53]	0.05	0.62	[0.22, 1.01]	0.01
Purpose	0.32	[0.07, 0.56]	0.01	0.61	[0.18, 1.04]	0.01
Engagement	0.29	[-0.02, 0.60]	0.07	0.18	[-0.09, 0.68]	0.52
Resilience	0.33	[0.05, 0.61]	0.04	0.57	[0.07, 1.07]	0.04

Note. ^aIntervention conditions were coded as: 1 = intervention group, 0 = control group.

showcasing the desirable effects of growth mindset interventions (Brunzell et al., 2016; Parada & Verlihiac, 2022; Yeager et al., 2016) on a wide range of well-being outcomes. It is likely that growth mindset exercises (e.g., activities promoting a belief that cognitive skills are malleable and can be improved through practice) can boost positive emotions, which in turn, might enhance the capacity to persist in dealing with complex responsibilities among preschool teachers. However, whereas these previous studies focused on examining the well-being benefits of mindset intervention in student samples, this investigation concentrated on the effects of this exercise in preschool teachers. This research complements existing evidence regarding the mental health benefits of promoting growth mindset even in a collectivist cultural setting.

This intervention had positive impacts on resilience via a module on effective breathing exercises and stress management. It is plausible that such activities may potentially improve resilience given that research (Birchinall et al., 2019; Klingbeil & Renshaw, 2018) has demonstrated the mental health payoffs linked to comparable psychological activities (e.g., mindful breathing, body scan). This self-care practice can also be used as an easily administered and cost-effective strategy to regulate maladaptive emotional states such as stress, anxiety, and disgust. This study contributes to extant research on the advantageous effects of simple breathing exercises on resilience among teachers during the COVID-19 pandemic.

There also is evidence showing the effects of this intervention on strengths use among teachers, which confirmed previous research findings on how psychological resources such as hope (Chan, 2009) might be linked to well-being in teachers in Hong Kong. The present study addressed shortcomings of previous studies, such as the reliance on a single-component gratitude intervention (Chan, 2010, 2013b), through incorporating hope-increasing activities. Because research has shown that hope served as a strong predictor of well-being among teachers in Hong Kong (Chan, 2009), there is reason to argue that hope interventions might matter for well-being among preschool teachers in this context. It is plausible that hope can promote well-being given that hopeful employees tend to demonstrate higher levels of adaptive career-related behaviors such as career planning and career decision-making confidence (Hirschi, 2014).

The positive impacts of the PROSPER-based intervention on teachers' resilience, positivity, and strengths resonate with the basic assumptions of the positive activity model (Lyubomirsky & Layous, 2013) that highlights the importance of empirically supported actions in promoting needs satisfaction and, consequently, increased well-being outcomes. The present study also contributes to the existing evidence on the effectiveness of well-being interventions for teachers, which mainly focus on how these programs can facilitate positive changes on teachers' happiness and psychological well-being (Taghvaeinia & Alamdari, 2020), as well as work engagement and satisfaction (Dreer, 2020). However, future research is needed to pinpoint the specific social, emotional, and psychological processes underlying the mental health benefits of the PROSPER-based intervention among in-service teachers in non-

WEIRD societies.

4.2. Does the PROSPER-based positive psychological intervention significantly improve interpersonal dimensions of well-being among in-service preschool teachers?

This study showed that the PROSPER-based intervention significantly improved purpose among preschool teachers. This result resembled what was found by Dreer (2020), who evaluated the impacts of a multicomponent positive psychological intervention with a module on meaning in life among teachers in Germany. It is reasonable to argue that boosting meaning may serve as a possible route to cultivate well-being among teachers as the teaching profession typically involves a commitment to positively contribute to children's lives and future development. This finding corroborates the fundamental tenets of broader well-being frameworks (Noble & McGrath, 2015; Seligman, 2012) that emphasize the psychological benefits linked to living a meaningful life in various contexts. The findings of this study also address the marked scarcity of studies on the efficacy of meaning-making interventions in non-WEIRD societies, such as Hong Kong.

This finding complements existing evidence on the effectiveness of a PROSPER-based positive psychological intervention among pre-service teachers (Lee et al., 2022) through exploring its effectiveness among in-service teachers in Hong Kong during the COVID-19 pandemic. It is likely that this intervention might yield beneficial consequences on *purpose* as prior research (Diener & Suh, 2000; Uchida & Ogiwara, 2012) has shown that people in collectivist societies tend to adopt a socially oriented construal of well-being. This research sought to augment existing literature on the importance of meaning-oriented interventions in non-Western contexts.

4.3. Non-significant intervention effects

There were no significant interaction effects on relationship, outcome, and engagement well-being dimensions. A potential reason for these non-significant intervention effects involves the relatively small sample size in this study. It is also possible that the diverse socio-contextual backgrounds of participants might explain why this intervention did not impact on relationship. Specifically, people from Hong Kong tend to endorse collectivist norms and socio-centric culture where interpersonal relationships are important in individuals' daily life (Chang et al., 2011; Lee, Standage, et al., 2020). As teachers in this study had baseline scores on perceived mutual and collegiality which were operationalized as the relationship dimension of PROSPER, it is plausible that the intensity or dosage of our intervention may not be enough to boost the participants' scores on this outcome. For the outcome dimension, it is possible that the non-significant intervention effects might have been influenced by the inadequate opportunities and time for participants to achieve their personal goals (Koydemir et al., 2020; Sin & Lyubomirsky, 2009). This is corroborated by extant literature (Lyubomirsky & Layous, 2013) that has also considered dosage or the frequency and duration of intervention as essential factors that impact the effectiveness of happiness-increasing activities. It is also likely that this intervention did not have an impact on outcome as there had been limited hands-on-training to master mental health skills embedded in the PROSPER intervention curriculum. For the engagement domain, the non-significant intervention effects may have been caused by the lack of evidence on how cultivating state flow or sense of deep immersion in a specific task can boost engagement among teachers in various contexts (Rodríguez-Sánchez et al., 2011). Although existing flow-based interventions have been effective in athletes (Scott-Hamilton et al., 2016), parents (Pentti et al., 2019), and adolescents (Wan & Chiou, 2006), there is limited evidence regarding how these interventions affect work engagement and similar outcomes among teachers in non-Western cultural contexts.

4.4. Limitations and future directions

This research has several conceptual and methodological shortcomings. First, given that various intervention components did not tap into the multidimensional nature of some PROSPER domains (e.g., strength and positivity), future research could integrate other aspects of each well-being domain to offer more comprehensive insights into the efficacy of PROSPER-based intervention. Second, it is possible that the relatively small sample size might account for non-significant intervention effects on selected well-being outcomes, and future research should recruit larger sample sizes to increase the likelihood of detecting significant intervention effects. According to the power analysis, it was suggested that a minimum sample size of 128 participants was needed with a power of 80% ($\beta = 0.80$; $\alpha = 0.05$) to detect small to medium effects in a repeated MANOVA (Faul et al., 2007). Third, because this research only concentrated on measuring more proximal outcomes that corresponded to each PROSPER dimensions, it is not possible to draw conclusions on the extent to which this intervention impacted other mental health domains. Incorporating measures of distal outcomes, such as life satisfaction, sense of calling, depression, and work adjustment, might help strengthen the external validity of this PROSPER-based intervention in future research. Fourth, because all participants were recruited in Hong Kong and that there was a high refusal rate of participation, the current intervention effects cannot be generalized to a broader sample of teachers or more generally. However, the efficacy of the intervention identified in the current findings prepares the way for broader application and provides support for the intervention effects. The implementation of effectiveness trials is also needed to explore the applicability of the PROSPER-based intervention in real-life contexts especially in other non-Western societies. Fifth, although there is evidence supporting the validity of the self-reported measures of well-being dimensions in this study (Malik & Garg, 2018; McGrath, 2019; Poghosyan et al., 2009; Schaufeli et al., 2006; Shah, 2011; Steger et al., 2006; Watson et al., 1988), it is possible that social desirability and self-serving bias might distort the potential effectiveness of our intervention. It therefore is important to explore alternative assessment approaches of well-being, such as biophysiological measures (Kreibig & Gross, 2017), to provide more precise estimates of psychological well-being. Sixth, as the design of this research did not allow rigorous examination of how each intervention component impacted intrapersonal

and interpersonal aspects of well-being, future studies should test the effects of individual intervention components by using, for example, factorial designs (Collins et al., 2014). Finally, there were potential threats to the study's validity. The participation in the online activity and the educational videos were voluntary with to avoid overburdening participants' with their schedules. The record showed 31 and 10 intervention participants filled out the questions for online activity and educational videos, respectively. For the educational videos, participants were not required to complete the questions after watching the videos. This may explain the small number of participants in this activity. Specific information, including participants' time spent in the activities, correct answers obtained, and activity engagement should be considered in future investigation. We did not record if the participants from the wait-list control group completed any well-being promotion activities on their own during the intervention period (i.e., before the second wave of data collection). To ensure validity, future investigations are encouraged to collect additional information regarding participants receiving training on well-being promotion during the intervention.

4.5. Practical implications

The present research has concrete implications for school psychologists, school administrators, and teachers on promoting preschool teachers' well-being that is considered fundamental to children's positive behaviors (Jennings et al., 2019), development (Kwon et al., 2021), and academic achievement (Kim et al., 2020). Although school psychologists are frequently expected to collaborate with teachers in designing effective learning and mental health programs for students, the increasing complexity of teachers' responsibilities amid the pandemic (e.g., creating and implementing highly engaging virtual classrooms) underscores the importance of crafting well-being programs for teaching practitioners. School principals and vice principals are also encouraged to invest in school-based teacher training initiatives that focus on teachers' well-being as pandemic-related job stressors might potentially deplete their psychological resources and mental health. Teachers are also encouraged to engage in empirically supported happiness-increasing activities, such as counting their blessings and hope visualization exercises to boost their well-being, even in the midst of the pandemic. Importantly, school psychologists, well-being scientists, and policy makers need to advocate for culturally sensitive positive psychological interventions to ensure equal access to mental health opportunities among teachers in non-WEIRD societies.

5. Conclusion

Given that studies on the efficacy of multicomponent positive psychological interventions among teachers in non-WEIRD societies has remained relatively limited, this research explored the mental health impacts of a PROSPER-based well-being intervention among preschool teachers in Hong Kong. Results demonstrated the positive effects of this psychological intervention on resilience, positivity, purpose, and strengths. Indeed, these findings highlight the importance of designing theoretically grounded and empirically supported mental health training programs for teachers in non-WEIRD and collectivist societies.

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