PARENTS WITH ADVERSE CHILDHOOD EXPERIENCES: EXPLORING BUFFERING EFFECTS OF A BRIEF COUPLE INTERVENTION

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Abstract

Adults with Adverse childhood experiences (ACEs) report greater relational distress and lower relationship satisfaction. Enhanced risk amongst those with ACEs may be due to increased stress sensitization. The transition to parenthood (and years thereafter) is therefore an important window for intervention. The 'Love Together, Parent Together' (L2P2) program was designed to support couples by teaching conflict reappraisal strategies. The current study used piecewise growth curve modelling to assess whether participation in L2P2 buffers against the risk of ACEs in the prediction of parent mental health and relationship quality, respectively. One hundred forty couples (N = 280) were recruited to participate. ACEs did not predict weekly changes in relational or psychological outcomes in our sample, nor did the effectiveness of L2P2 differ as a function of ACEs. This study furthers our understanding of the complex relationship between ACEs, parents' mental health, and relationship quality.

Keywords: Relationship quality, mental health, adversity in childhood, couple intervention, moderation.

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Introduction

Adverse childhood experiences (ACEs) have demonstrated deleterious effects on mental health throughout the lifespan (Anda et al., 2006; Felitti et al., 2010). Examples of negative outcomes following early adversity include increased risk of mental health disorders (e.g., post-traumatic stress disorder, depression, substance use disorder; Herzog & Schmahl, 2018; Leza et al., 2021), adverse somatic, physical health outcomes (e.g., poor sleep hygiene, obesity) (Chapman et al., 2011; Wiss & Brewerton, 2020), greater relational distress, and lower relationship satisfaction (Friesen et al., 2010; Wheeler et al., 2018). Moreover, ACEs have been linked to disrupted stress response systems marked by a lower threshold for stress reactivity, making individuals sensitive to perceived threats (Manyema et al., 2018; Scorza et al., 2022).

The transition to parenthood and years to follow are often regarded as a turbulent period of the family life cycle (Don et al., 2014; Saxbe et al., 2018). Associated stressors may be more pronounced for parents who have had previous exposure to adversity in childhood, due in part to disrupted stress response systems. In the present study, we examine the relationship between ACEs and parental mental and relational functioning in a sample of couples with young children. Moreover, we will explore whether a brief couple intervention targeting conflict reappraisal (i.e., taking the perspective of a neutral third party to reappraise disagreements; Prime et al., 2023) has a buffering effect amongst 'at-risk' parents (i.e., parents with more ACEs) against mental health and relational outcomes.

Adverse Childhood Experiences

Since the seminal study by Felitti and colleagues (1998), almost three decades of research supports the notion that there are many long-term effects associated with hardship in childhood. In the original study, 13,494 adults received a questionnaire in which they were asked about

adverse childhood experiences across the following domains: psychological, physical, sexual abuse, violence against their mother, sharing a home with a substance abuser, a parent with mental illness or suicidal ideation, or a parent incarcerated. Several variables were measured, including risky behaviours in adulthood, physical health and disease, and mental illness. Findings demonstrated a graded relationship between exposure to adversity in childhood and adverse outcomes in adult life, including substance abuse (e.g., alcoholism, drug abuse), depression, suicidal ideation and attempt, smoking, risky sexual behaviour (e.g., more sexual intercourse partners and increased susceptibility to sexually transmitted disease) and poor self-rated health (e.g., less physically active and increased risk of obesity). Since this landmark study, there has been an emergence of robust literature showing that individuals with at least four ACEs are at risk for greater mental health problems in adulthood (e.g., disrupted emotion regulation, behavioural problems, post-traumatic stress disorder, trouble fostering relationships with others, perpetrating violence) (Cicchetti et al., 2016; Nelson et al., 2020).

Impact of ACEs on Adult Relationship Quality and Parent Mental Health

ACEs have shown deleterious effects on relationship quality and parent mental health (Dube et al., 2002; Khalifian et al., 2022), which has been linked to poorer family functioning (Sherman & Hooker, 2018) and child mental health (Hughes et al., 2020). With respect to relationship quality, exposure to childhood trauma is predictive of poor relationship quality in adulthood (Khalifian et al., 2022; Wheeler et al., 2018). For example, individuals with ACEs who pursue relationships in adulthood are likely to report greater instances of distress and lower satisfaction during the relationship (Friesen et al., 2010; Wheeler et al., 2018). This is especially problematic when considering how positive relationship quality may predict physical and mental health, as healthy relationships may decrease physiological arousal and stress reactivity

(Umberson & Montez, 2010). Researchers posit exposure to ACEs make it difficult for individuals to form relationships, trust others, engage in intimacy, and are more likely to become socially withdrawn in adulthood (Wells, 2016).

A study by Whisman (2006) found that experiencing a traumatic event in childhood was associated with greater instances of marital disruption (i.e., separation or divorce) and poorer marital satisfaction (i.e., how satisfied couples were with the relationship and how they would personally evaluate their relationship quality) overall. In another study, being exposed to abuse (i.e., physical or sexual) in childhood was linked with having lower relationship adjustment scores in adulthood (Nelson & Wampler, 2000). It also appears that women and men are differentially impacted by adversity in childhood (Khalifian et al., 2022). Women with a history of adversity have poor relationship quality due to difficulty building and maintaining trust with their partners. These women are also typically more withdrawn from their partners. Men's relationship quality also decreases as a function of ACEs, though the underlying mechanism for this low relationship quality is attributed to feeling more disconnected from their partners.

ACEs have also been associated with extreme forms of conflict, such as of inter-partner violence (Friesen et al., 2010). For example, one study consisting of a sample of sexual abuse survivors found that these individuals were more likely to abuse their partners at 30 years of age (Friesen et al., 2010). Similar patterns of association have been documented in other studies (Mair et al., 2012; Morton et al., 2020). Additionally, exposure to ACEs increases the likelihood of risky behaviours, such as alcohol abuse, in adulthood, which puts couples at a greater risk for domestic violence (Dube et al., 2002). Moreover, as elaborated below, mental health outcomes (e.g., depression, anxiety) are associated with ACE exposure, which also confer risk for inter-partner violence (Mair et al., 2012).

With respect to mental health outcomes, there is a positive association between parent mental health challenges and exposure to ACEs (Vederhus et al., 2022; Bellis et al., 2019). Amongst clinical populations seeking mental health treatment, patients with ACEs are more likely to suffer adverse mental health outcomes (i.e., frequency and intensity of mental health-related symptoms) compared to those without, as well as report poorer treatment outcomes when seeking mental health services (Porter et al., 2020).

Regarding internalizing symptoms, there is an existing link between ACEs and depression, bipolar, and suicidal ideation (Fuller-Thompson et al. 2016; Merrick et al., 2017). Of these internalizing symptoms, depression was the most prevalent (Kim et al., 2022). As the number of ACEs increases, the greater the risk of depression in adulthood; adults who have been exposed to four or more ACEs were three times more likely to develop depression compared to adults who had fewer or no ACEs by (Felitti et al., 1998; Tzouvara et al., 2017). This is indeed a significant issue beyond the distress and impairment inflicted on the individual, as depression is associated with problematic parenting practices such as withdrawn parenting, hostility, less warmth, and negative parenting (England & Sim, 2009; Wang et al., 2021).

Thus, exposure to ACEs acts through several pathways to put individuals at risk for later mental health issues in adulthood (Anderson et al., 2021; Hicks et al., 2021). In addition to the impact on individual health and well-being, this puts the family at risk for a myriad of adverse outcomes including poor family functioning, and elevated internalizing (Wang et al., 2021) and externalizing problems in children (Fava et al., 2020).

Stress Sensitivity Theory

The stress sensitization model was initially created to elucidate the link between stress and the onset of affective disorders (Stroud, 2020). This model posits that people become

increasingly sensitive to stress over time, meaning that the level of stressors required to trigger the onset of stress decreases with each successive stressful experience. Stress sensitization theory has been used a framework for mood and depressive disorders (e.g., major depression, bipolar) and anxiety disorders (e.g., social anxiety) (Farmer & Kashdan, 2015; Stroud, 2020). In recent years, empirical support for the stress sensitization model as a model for linking causal pathways of early adversity and later adult issues have been explored (Bondoli et al., 2017). Within the context of ACEs, individuals who experience adversity in early childhood may be more susceptible to subsequent bouts of stress. Elevated sensitivity, characterized by a persistent disruption of stress response systems, can be the outcome of substantial exposure to stress during critical developmental stages when physiological systems are undergoing maturation (Andersen & Teicher, 2008). Additional support for this idea is derived from longitudinal controlled studies to demonstrate sensitization in neuroendocrinological stress responses (McLaughlin et al., 2020; Russo et al., 2022). Thus, individuals exposed to adversity in childhood are more prone to frequent and comparatively intense feelings of stress later in life.

The notion of stress sensitization is relevant to parenting and the family unit, as the transition to parenthood and early years of parenting is a critical period characterized by heightened demands and feelings of stress (Saxbe et al., 2018). In the absence of support for parents within this window of vulnerability, those with a history of childhood adversity may suffer poorer mental health and relational outcomes, with negative implications for their children and family (Vederhus et al., 2022; Bellis et al., 2019)

Applications for the Early Years in Parenting

Welcoming a new baby into the family is typically regarded as a joyful, monumental event for families. However, this period of transition to parenthood and years thereafter also

encompasses several biological, psychosocial, economic, and behavioural changes that make it a turbulent period for some parents (Saxbe et al., 2018). Saxbe et al. (2018) have outlined several associated outcomes which include: poorer sleep hygiene due to increase sleep disruption, increased stress, changes in physical health (e.g., weight gain), all of which may give rise to the onset of mood disorders. There is also a shift in neuroplasticity characterized by both behavioural and biological changes (e.g., fluctuations in hormones and restricting neural pathways to foster adaptive parenting), as shown in animal models (Brunton & Russel, 2008). Despite the limited scope of research on human parents (due in part to the paucity of longitudinal research), there is extensive literature exploring changes in the parental brain nonetheless (e.g., changes in grey matter structure; Hoekzema et al., 2017). Of particular concern is the psychosocial change that accompanies the transition to parenthood, characterized by increased time, cognitive, and financial demands (Saxbe et al., 2018). For example, longitudinal research has found that the transition to parenthood and years to follow is associated with a decline in happiness, more so than other tragic life events (e.g., divorce, the death of a significant other, and loss of employment; Saxbe et al., 2018).

The stressors associated with the transition to parenthood often persist throughout the early years of parenting (Bogdan et al., 2022; Doss et al., 2009). For example, a study by Bogdan et al. (2022) found that the most pronounced decrease in marital satisfaction occurred between pregnancy and 12 months post-birth. Marital satisfaction, however, continues to decline up to 24 months post-birth, suggesting the years following the initial transition to parenthood are important. Similarly, a study by Doss et al. (2009) found that relationship functioning, as measured by positive (e.g., relationship confidence, dedication, and marital satisfaction) and negative (e.g., observed negative communication, poor conflict management, and problem

intensity) characteristics of relationship functioning, deteriorated following birth. While the decline in relationship functioning was most stark immediately following childbirth, there was indeed a gradual deterioration across the first 8 years of life. The transition to parenthood and years following therefore represent a critical window of vulnerability where parents already predisposed to psychological distress and relationship problems from ACEs may be particularly vulnerable to the stress incurred by the demands of parenting infants and young children.

Social Support as a Promotive Factor

Research has increasingly focused on the link between health and well-being, particularly through the lens of close and caring relationships (Feeney & Collins, 2015). In a theoretical model proposed by Feeney and Collins (2017), the authors demonstrate relational support is indeed conducive to thriving (i.e., growth and prosperity related to hedonic well-being, eudemonic well-being, psychological well-being, social well-being, and physical well-being), particularly with respect to various life contexts including adversity and trauma. The immediate outcomes associated with receiving social support are increased trustworthiness, emotional closeness, feeling understood and validated, feeling cared for, and recognizing the importance of being vulnerable with loved ones to receive compassion.

Social support from either a friend or a partner may serve as a buffer against the adverse outcomes of ACEs (Logan-Greene et al., 2017; Umberson & Montez, 2010). Relationship closeness (i.e., the degree to which one feels emotionally connected to another person) is a significant predictor of better relationship satisfaction and commitment, higher perceptions of relationship support, and greater emotional intimacy between partners (Duong et al., 2023; Frost & LeBlanc, 2022). Of particular relevance is the notion of relationship closeness as a promotive factor in couples (Gómez-López et al., 2019). In a systematic review by Gómez-López et al.

(2019), the authors demonstrate that romantic relationships are important to foster well-being in emerging adulthood. Specifically, emotional interdependence (i.e., the extent to which the couple's emotions are linked) and shared relationship efficacy (i.e., the couple's expectations and ability to sustain satisfaction in their relationship) were identified as critical components of a healthy relationship, inextricably linked to well-being. For example, couples with higher closeness often observe better physical and mental health outcomes (e.g., fewer depression, anxiety, and PTSD symptoms; Panagou & MacBeth, 2022). Conversely, couples with low closeness are more likely to report negative moods when experiencing stress, suggesting having higher closeness with one's partner may be a buffer against the impact of stress.

Emerging literature suggests relationship quality may thwart the impact of early adversity. In a study by Duong et al. (2023), the authors used ecological momentary assessment to measure in vivo relationship closeness as a protective factor against the sensitizing effects of lifetime adversity in the context of daily stress. Individuals with greater adversity reported more nervousness and anger when stressed. In addition, individuals who reported greater relationship closeness reported less decline in happiness, and dampened rises in sadness and anger, when experiencing stress. Importantly, relationship closeness was a buffer for individuals with high adversity history, mitigating against drops in happiness when stressed. The results of this study indicate that closeness in couples thwarts stress sensitization effects in individuals with a high adversity history, particularly in relation to happy moods. Thus, targeting relational processes, such as closeness between partners, may be a promising method to curb the impact of adversity.

Brief Couple Interventions

Brief couple interventions (BCIs) target precise relational processes, using micro-strategies, with the aim of fostering healthy relationships (Kanter & Schramm, 2017). There are

several types of BCIs, varying in the relational processes they target (e.g., how to address and reduce conflict) and modality (e.g., number of sessions offered, virtual or traditional delivery). The literature generally supports the notion that BCIs are a promising avenue to support couples' relationship quality in an accessible fashion (Kanter & Schramm, 2017).

The 'Love Together, Parent Together' (L2P2) program is a writing-based BCI that targets problematic conflict patterns, the likes of which typically negatively impact relationship quality (Prime et al., 2024). The aim of this intervention is to thwart relationship deterioration, which declines normatively over time (Finkel et al., 2013), by teaching couples conflict reappraisal strategies. Research suggests mentalizing the perspective of a neutral third-party during bouts of conflict with a partner may increase the couple's emotion regulation abilities, which in turn reduces inter-partner conflict and promotes relationship quality (Rodriguez et al., 2020; 2021). In a recent pilot randomized controlled trial (RCT) of L2P2, couples with young children were randomly assigned to either the L2P2 intervention group or control. The findings revealed that, whereas the control group reported declining relationship quality from baseline to post-intervention, relationship quality was preserved in couples assigned to the L2P2 intervention group. A recent study examined child, couple, and family moderators of the intervention, with no evidence for differential effects based on baseline risk factors (Markwell et al., Under Review). However, parents' histories of adverse childhood experience have not yet been considered in the context of L2P2.

Intervention as Moderation

Emerging literature has explored whether couples-based interventions can curb the impact of cumulative risk on relationship quality (Kanter et al., 2023). While there is indeed ample evidence in support of brief interventions to improve couples' relationship quality (Kanter

& Schramm, 2017), there is a paucity of research exploring possible implications for BCIs to moderate the relationship between ACEs and relationship quality and parent mental health. A recent study by Kanter et al. (2023) explored relationship education as a protective factor against cumulative risk exposure in the prediction of relationship satisfaction. Participants received one of four evidence-based relationship education programs. Though the programs differed in their modality, length, and content, there were six underlying characteristics: Understanding their relationship, managing conflict, fostering positive connections between partners, improving social connections between couples and their broader community, learning how to identify and address external challenges, and learning to overcome parent-specific stress. All RE curricula were between 24 and 30 hours in duration. Cumulative risk was based on the amalgamation of individual-level (e.g., low education, psychological distress, substance use, childhood maltreatment, and perceived stress), couple-level (i.e., relational aggression), and external risks (i.e., poverty, stressful life events). The findings reveal that participating in a RE program did not reduce the effects of cumulative risk on couples' relationship satisfaction. The authors conclude RE programs targeting communication processes in relationships may not be sufficient to reduce the effects of individual, relational, and external risk factors on couples' relationship quality. As noted by the authors, a limitation of this study is its reliance on a clinical cut-off for psychological distress to measure cumulative risk exposure instead of an empirical, theoretically relevant approach to measuring adversity. It is therefore possible adversity measured in a graded way using ACE scores may yield different results. In addition, targeting couples during a vulnerable period of the family life cycle, wherein individuals are experiencing heightened stress, may be an entry-point to support individuals who are particularly vulnerable due to previous experiences of adversity. Taken together, with this literature in its infancy, continued

exploration of the potential of BCIs to improve the relationship quality of individuals exposed to adversity in childhood is needed.

To conclude, there is extensive research that shows that adversity in childhood is a precursor to adverse mental health outcomes (Ports et al., 2021) and relational issues in adulthood (Friesen et al., 2010; Wheeler et al., 2018). New parents or parents of young children may be particularly at risk, given the challenges associated with this phase of the family life cycle (Saxbe et al., 2018). Social support, including from one's romantic partner, is important. However, the role of BCIs designed to bolster relationship quality as a buffer against the risk of ACES remains to be further elucidated.

Current Study

The present study examined a brief couple intervention, L2P2, as a potential buffer between ACEs and parental mental and relational health, using a sample of community couples with children under six years old. We addressed the following research questions: Does exposure to ACEs predict changes in relationship quality and parent psychological distress, respectively, over the course of five months? Does participation in the L2P2 buffer against the risk of ACEs in the prediction of and relationship quality and psychological distress, respectively?

We hypothesized that: (1) ACEs will predict negative changes in relationship quality (i.e., individuals with higher levels of adversity will have steeper negative declines over time compared to individuals with lower levels of adversity), which will be buffered by participating in the L2P2 intervention (i.e., those who participate in the L2P2 condition will show less negative change as compared to those in the control group). (2) ACEs will predict psychological distress (i.e., individuals with higher levels of adversity will have steeper increases in psychological distress over time), which will be buffered by participating in the L2P2

intervention (i.e., those who participate in L2P2 will show less increase in psychological distress).

Methodology

Study Design

The present study is a secondary data analysis from the L2P2 study, which is an RCT wherein couples were randomized to either a treatment (n = 144) or control group (n = 136). The data collection process spanned approximately one year from the period of April 2022 to May 2023. Study participation spanned five months and was carried out in four phases: Baseline, 1-week post intervention, 1-month follow up, and 3-month follow up. Participants were given several measures at baseline, including sociodemographic questionnaires and the ACE questionnaire. Relationship quality and psychological distress were assessed at four time points; baseline, post-intervention (i.e., one week following the completion of L2P2), 1- and 3-month follow up.

Recruitment and Sample

Participants were recruited from community-based organizations within Ontario, Canada. Examples of these organizations include the EarlyON Child and Family Centres, YMCA Canada, and Mommy Connections. Participants were also recruited from early childhood education and recreation centres. Participants were offered compensation totalling a maximum of $80 per person ($160 per couple) for surveys they filled out (either partially or to completion). Five eligibility criteria were instated for recruitment. Firstly, participants must have been at least 18 years of age. Secondly, they must have been in a relationship with their partner. Thirdly, they must share a residence with their partner and have lived in the same home at the time of the

study. Fourth, they must have at least one child under the age of 6. Finally, participants could not have a history of divorce or separation.

Two hundred and eighty individuals (140 couples) were recruited for the present study, of which 138 women (50.36%) were women and 136 were men (49.63%). The sample was predominantly heterosexual (n = 256, 91.43%). Child age ranged from 0.8-13.17 years of age, with a mean age of 3.08 years old. The majority of the sample identified as White (n = 171, 61.11%), in addition to participants self-identifying as Chinese (n = 25, 8.93%), mixed ethnicity (n = 24, 8.57%), South Asian (n = 23, 8.23%), and Latin American (n = 21, 7.50%), amongst others (n = 13, 4.64%). The sample was mostly Anglophone (68.57%); however, a sizeable portion of the sample spoke multiple languages (including English) in the home (22.86%). Most of the participants reported post-secondary education including university (35.7%), graduate studies (e.g., masters – 32.85%, doctorate – 5%), and professional schooling (7.10%). The mean household income was captured by the interval $125,000 and $149,999.

Measures

Perceived Relationship Quality. The 'Perceived Relationship Quality Components' (PRQC; Appendix A) inventory (Fletcher et al., 2000) is an 18-item Likert scale where participants were asked to rate each item on a 7-point Likert scale between 1 (Not at all) to 7 (Extreme). A mean score is computed across all 18 items, with a higher mean corresponding to higher levels of relationship quality. This questionnaire taps into couples' satisfaction and commitment with their relationship, intimacy and passion between the couple, trust, and love. Per Fletcher et al. (2000), the PRQC possesses satisfactory psychometric properties, namely face validity and internal consistency.

Psychological Distress. The 'Kessler Psychological Distress Scale' (Kessler et al., 2002; Appendix B) is a brief, 10-item screening scale that measures non-specific psychological distress. Participants are asked to select responses that represent how they feel based on the last 30 days. They are given a prompt (e.g., how often did you feel tired for no good reason?) and asked to rate the item from 1 (none of the time) to 5 (all of the time). To obtain a score on this scale, the sum of responses on all 10 items was obtained, yielding a possible minimum score of 10 and maximum score of 50. The higher the score, the more psychological distress reported by the participant. The scale demonstrates excellent psychometric properties including good validity, high predictability (i.e., accurate detection of mental health challenges), and excellent factorial and construct validity (Easton et al., 2017; Kessler et al., 2002). Moreover, it retains its validity and reliability across varying sociodemographic subsamples (Kessler et al., 2002).

ACEs. A revised version of the 'Adverse Childhood Experience' (ACE; Appendix C) questionnaire was used to measure exposure to adversity in childhood (Finkelhor et al., 2015). There are fourteen items in the scale, which are answered in a yes-no format (scored as a one or zero respectively). In this revised version, the original 10-item scale was expanded to include four additional items measuring peer victimization and rejection, exposure to community violence, and low socioeconomic status experienced in childhood. Participants' ACE score is calculated by taking the sum of scores across all items completed by the participant. The higher the score obtained, the more adversity experienced in childhood (i.e. up to 18 years of age).

Intervention

After completing baseline surveys, participants were randomized to either the L2P2 intervention or control group and, regardless of group assignment, were asked to participate in three online writing sessions over a period of nine weeks. Email reminders were sent to

participants two weeks after each writing session. Writing sessions were conducted in three phases. In the first phase, participants in both the control and L2P2 conditions were given a writing exercise in which they were asked to write a summary of a disagreement they had with their significant other. Following the completion of the activity, participants were then asked to report their conflict-related negativity. In the second phase, members of the L2P2 group were asked to watch a video containing both instructions and examples of conflict reappraisal (i.e., taking the perspective of a neutral third-party). After the video, participants were asked to complete three multiple-choice questions assessing what they learned from the video. Finally, L2P2 participants were given writing prompts where they were asked to describe the disagreement they had discussed in the first phase from the perspective of a neutral third party. The control group completed phase one, only. Details of the intervention can be found in Appendix D. After completing the writing sessions, all participants completed assessments one week post-intervention, as well as follow-ups at one-month and three-months. After the three-month follow-up assessment, participants in the control group were offered the L2P2 intervention.

Data Analytic Plan

Statistical analyses were conducted using 'R' (Version 4.3.2) software and SPSS (Version 29). Firstly, descriptive statistics were used to examine the spread (e.g., variance, range, interquartile range), measures of central tendency (e.g., mean, median, standard deviation), and shape of the distribution (e.g., skewness, kurtosis, unimodality) of childhood adversity exposure (ACEs), relationship quality, and psychological distress. The ACE variable was mean centred prior to computing the interaction term to support interpretation of results. Correlational analyses were conducted to examine the interrelations between main study variables.

We employed an “intention-to-treat” approach and MLR estimator to conduct our analyses, which reduces the risk of bias and fosters confidence in conclusions by including all participants regardless of group they were assigned to (i.e., treatment versus control; McCoy, 2017). Primary analyses used piecewise growth curve modelling, which examined whether group assignment (i.e., L2P2 or control) and/or ACEs predicted change in relationship quality and psychological distress, respectively, across different time periods (i.e., Slope 1: pre- to post-intervention; Slope 2: post-intervention to 3-month follow-up). In addition, we explored a possible interaction effect between group assignment and ACEs in the prediction of change in relationship quality and psychological distress, respectively. The moderation analysis tests the main study question of whether participation in L2P2 buffers against risk associated with ACEs in the prediction of relationship quality and psychological distress respectively.

Whereas the original paper combined the scores of partners within a couple prior to analysis (Prime et al., 2024), we instead used individual-level data to address main study objectives. All analyses were modeled at the individual level in R. To correct standard errors to account for clustering within couples, the robust covariance matrix (i.e., ‘sandwich)’ estimators was used. Additionally, models in our analyses were estimated to account for missing data (due to participant attrition across time points) using full-information maximum likelihood estimation, which is regarded as a parsimonious strategy that ensures power is not compromised (Schminkey et al., 2016). Finally, model fit statistics were evaluated based on standard criteria (i.e., comparative fit index (CFI), root mean square error of approximation (RMSEA), and the chi-square goodness-of-fit (χ_2;GFI); Little, 2013).

Relationship Quality

Baseline Model. First, we ran a baseline model exploring weekly change in relationship quality with only group assignment (1 = L2P2, 0 = Control) as a predictor. First, we looked at mean weekly change in relationship quality from baseline to post-intervention in the reference group (i.e., control group), as indicated by the intercept of Slope 1. We also looked at changes in relationship quality from post-intervention to 3-month follow-up (Slope 2). Additionally, we examined the effect of group assignment on the slope (i.e., weekly change of relationship quality) at both time intervals (Slope 1, Slope 2), respectively. This baseline model was conducted to replicate findings from the primary paper, prior to adding additional predictors (Prime et al., 2024).

H1. To address our first hypothesis, we added ACEs, as a main effect, and the interaction between ACEs and group assignment, to the baseline model (which included the main effect of group assignment). To determine whether ACEs impact weekly change in relationship quality, we examine the main effect of ACEs on our first (Slope 1) and second time intervals (Slope 2). Specifically, we examined whether there were differences in the rate of weekly change between those with higher/lower ACEs. Finally, we examined interaction effects between ACEs and group assignment to determine whether participation in L2P2 moderates the effect of ACEs in the prediction of relationship quality at our first (Slope 1) and second (Slope 2) time intervals.

Psychological Distress

Baseline Model. We first began by running a model exploring weekly changes in psychological distress from baseline to post-intervention (Slope 1), and post-intervention to 3-month follow-up (Slope 2), with only group assignment as a predictor. The intercept of the slope represents weekly change for the control group. We then examined the effect of group

assignment on the slope at both time intervals (Slope 1, Slope 2), respectively, to see if weekly change in psychological distress varied as a function of group assignment

H2. To address our second main study hypothesis, in addition to group assignment (main effect), we added ACEs (main effect) and the interaction between ACEs and group assignment. We examined the main effect of ACEs to determine whether ACEs predict the mean weekly change in psychological distress at our first (Slope 1) and second (Slope 2) time intervals. This would tell us whether there were differences in the rates of change in psychological distress between those with higher/lower ACEs. Finally, we examined possible interaction effects between ACEs and group assignment to determine whether participating in L2P2 moderates the impact of ACEs on the slope (i.e., mean weekly change of psychological distress) at the first (Slope 1) and second (Slope 2) time intervals.

Ethics Approval

The L2P2 RCT received ethics approval from the Research Ethics Board at York University (e2022-267) and the University of Toronto. As this is a secondary data analysis, the HPRC approval certificate and statement of relationship between the proposed research and an existing HPRC-approved project were submitted to the Faculty of Graduate Studies at York University. The study was pre-registered on ClinicalTrials.gov (NCT05261022) to maintain open access and transparency. Prior to data collection, informed consent was collected. Participants consented to have their data collected and securely stored. To conduct randomization, participants were assigned an ID and randomly assigned to either the L2P2 or control condition using randomize.net. While the L2P2 group received the intervention, participants in the control group were given the option of receiving the L2P2 intervention after the completion of the study.

Results

Preliminary Analyses

Descriptive statistics at baseline include individual-level sample characteristics (Table 1), couple-level sample characteristics (Table 2), and clinical characteristics (Table 3). Moreover, statistics regarding the shape (i.e., skewness and kurtosis) are provided in Table 4. Psychological distress showed strong to moderate positive skewness across all three time points (0.75-0.98) and relationship quality demonstrated moderate negative skewness across all three time points (0.58 to -0.83). ACEs (M = 2.34, SD = 2.48) was also moderately positively skewed. The mean number of ACEs (M = 2.34) is in line with prevalence rates reported by Madigan et al., 2023 (i.e., approximately 44.1% of participants pooled from 206 studies had fewer than 3 ACEs). Kurtosis values were generally acceptable, though psychological distress at baseline and relationship quality post-intervention were somewhat flatter than normal. Moreover, psychological distress at 3-month follow-up had the highest kurtosis (0.79) indicating the tail of the distribution was slightly heavier. However, these deviations were not extreme.

Bivariate correlations can be seen in Table 5. ACEs were negatively correlated with relationship quality at baseline ($p < 0.05$) and subsequent time points (i.e., post-intervention, 1-month follow-up, and 3-month follow-up; $p < 0.01$), wherein those who reported more ACEs also reported lower relationship quality. Psychological distress and relationship quality were negatively correlated with one another across all three time points ($p < 0.05$), which shows that greater psychological distress is related to poorer relationship quality. Additionally, we observed a significant positive association between ACEs and psychological distress at all time points, indicating that the more ACEs one reports, the greater their levels of psychological distress ($p < 0.01$).

Primary Analyses

H1: Relationship Quality

We first ran a baseline model exploring weekly change in relationship quality with only group assignment (i.e., L2P2 vs. control group) as a predictor (Table 6). Participants in the control group reported significant declines in relationship quality from baseline to post-intervention (mean of Slope 1; $\beta = -0.192$ $p < .001$). In contrast, there were no significant mean weekly changes in relationship quality from post-intervention to 3-month follow-up (Slope 2; $\beta = -0.025$, $p = 0.323$). The main effect of group assignment predicted mean weekly change in relationship quality from baseline to post-intervention (Slope 1; $\beta = 0.195$, $p = 0.008$), indicating that couples assigned to the L2P2 group declined less than those in the control group. From post-intervention to 3-month follow-up, group assignment did not predict mean weekly change (Slope 2; $\beta = -0.043$, $p = 0.276$). Thus, intervention and control groups did not vary in their weekly change in the follow-up period.

To address main study objectives, we then ran a model with the main effect of group assignment and ACEs, and the interaction between the two, in the prediction of weekly change in relationship quality (Slope 1 and Slope 2; Table 7). Model fit statistics including latent variance in variables (i.e., variance not constrained to zero) were favourable ($\chi_2(11.9)$ CFI = 0.998, RMSEA = 0.026, SRMR = 0.019). As in the baseline model, the mean of Slope 1 was significant, indicating declining relationship quality amongst the control group from baseline to post-intervention (Slope 1; $\beta = -0.018$, $p < 0.001$). As in the baseline model, the mean of Slope 2 indicated no weekly change in the control group (Slope 2; $\beta = -0.003$, $p = 0.24$). Mean weekly change in relationship quality from baseline to post-intervention varied as a function of group assignment (Slope 1; $\beta = 0.017$, $p = 0.02$), wherein relationship quality did not decline as much

in the L2P2 group as compared to the control. The mean weekly change in relationship quality from post-intervention to follow-up did not vary as a function of group assignment (Slope 2; β = -0.003, $p = 0.38$), which is consistent with the baseline model. The main effect of ACEs marginally predicted mean weekly changes in relationship quality, wherein participants with higher levels of ACEs reported less decline in relationship quality than those with fewer ACEs from baseline to post-intervention (Slope 1; β = 0.004, $p = 0.07$). ACEs did not predict weekly change in relationship quality from post-intervention to 3-month follow-up (Slope 2; β = -0.002, $p = 0.12$). Finally, the interaction between ACEs and group assignment was not significant at either baseline to post-intervention (Slope 1; β = -0.001, $p = 0.75$) or post-intervention to 3-month follow up (Slope 2; β = 0.001, $p = 0.41$), thus not supporting moderation of group assignment in the relationship between ACEs and weekly change in relationship quality.

H2: Psychological Distress

To address our second hypothesis, we first ran a baseline model exploring weekly change in psychological distress with only group assignment as a predictor (Table 8). Participants in the control group did not report significant weekly changes in psychological distress from baseline to post-intervention (β = -0.005, $p = 0.207$) or from post-intervention to 3-month follow-up (Slope 2; β = -0.002, $p = 0.37$). We then looked at the main effect of group assignment on mean weekly changes in psychological distress. From baseline to post-intervention (β = -0.009, $p = 0.146$) and post-intervention to 3-month follow-up, (β = 0.001, $p = 0.639$), differences in mean weekly change in psychological distress did not differ significantly based on group assignment.

To address main study hypotheses, we added the main effect of ACEs and the interaction between ACEs and group assignment to the model (Table 9). Model fit statistics similarly included latent variance in variables and were generally favourable ($\chi_2(21.3)$ CFI = 0.99, SRMR

= 0.05, RMSEA = 0.06). As in the baseline model, there were no mean weekly changes in psychological distress in Slope 1 or Slope 2 for the control group (Slope 1; β = -0.004, p = 0.31, Slope 2; β = -0.002, p = 0.22). The mean weekly change in psychological distress did not vary as a function of group assignment from baseline to post-intervention (Slope 1; β = -0.014, p = 0.10) or post-intervention to 3-month follow-up (Slope 2; β = 0.002, p = 0.50). Mean weekly change in psychological distress did not vary as a function of ACEs from baseline to post-intervention (Slope 1; β = -0.001, p = 0.53) or from post-intervention to 3-month follow-up (Slope 2; β = 0.001, p = 0.17). Finally, we explored interaction effects between ACEs and group assignment, which were not significant at baseline to post-intervention (Slope 1; β = 0.002, p = 0.44) and post-intervention to 3-month follow up (Slope 2; β = -0.001, p = 0.27). Thus, the effect of ACEs on mean weekly changes in psychological distress did not vary as a function of group assignment.

Discussion

The present study examined the association between adversity in childhood and subsequent relationship quality and psychological distress in parenting couples of young children, in relation to participation in a brief couple intervention. Overall, we did not find support for our main hypotheses: ACEs did not predict weekly changes in relational or psychological outcomes in our sample, nor did the effectiveness of L2P2 differ as a function of ACEs (vis a vis a moderation/interaction). Findings will be further elaborated below.

Regarding our first aim (H1: Relationship Quality), we successfully replicated findings from Prime et al. (2024), showing that participation in L2P2 prevents a deterioration in relationship quality from baseline to post-intervention, as compared to the control group. Similar to the primary paper, intervention effects were not observed from post-intervention to 3-month

follow-up (i.e., the L2P2 and control groups did not significantly differ in the rates of mean weekly change in relationship quality during this time interval).

Unexpectedly, our results demonstrate ACEs marginally predicted weekly changes in relationship quality between baseline and post-intervention: participants who reported greater ACEs did not observe as much decline in relationship quality compared to those with fewer ACEs. This is contrary to our hypothesis informed by stress sensitization theory and previous findings, wherein we anticipated steeper declines in relationship quality amongst participants with higher ACEs (Friesen et al., 2020; Khalifian et al., 2022; Schütze et al., 2020). To interpret why we observed these effects, we turn to the resilience literature. A breadth of research has found that individuals experiencing adversity in childhood may show resilience based on a combination of salient protective factors and the severity/intensity of ACEs they experience. For example, post-secondary education and socioeconomic advantage fosters resilience in individuals with ACEs in the prediction of adverse mental health outcomes in adulthood (Brodbeck et al., 2024; Klopack et al., 2022). The present sample is socioeconomically advantaged, which may have served a protective function for those who reported a history of ACEs.

Moreover, an emerging theoretical framework for conceptualizing the positive aspects of trauma known as ‘post-traumatic growth’ (PTG) may explain these findings. (Tedeschi & Calhoun, 1996). PTG refers to the experience by which individuals observe positive changes in self-perception, interpersonal relationships, and more openness towards others (Dell’Osso et al., 2022) regardless of the nature of the trauma (Kadri et al., 2025). Following a traumatic event, some individuals develop an awareness of their ability to navigate trauma that strengthens the individual’s identity, leading to a greater ‘mental apparatus’ tool (i.e., the ability to experience

relational life within their frame of self-awareness). However, how this plays out in a romantic context is largely unknown. At present, only one study has observed PTG's applications for romantic relationships using a parallel mediation analysis in a sample of veterans. In this study, social supports (including romantic relationships) were found to be a significant mediator in the relationship between post-traumatic symptomology and PTG. That is, interpersonal functioning is a critical tenet of PTG that, in the context of trauma, may reduce post-traumatic symptoms. Taken together, the complex pathways between trauma, relationship quality, and PTG warrant further investigation (Barden et al., 2025).

An additional explanation may be that individuals in the current sample with higher ACEs may be employing a wealth of coping strategies. Individuals with ACEs often engage in problem-focused (i.e., resolving the problem directly to foster self-efficacy) and avoidant emotion-focused coping (i.e., strategies to reduce affective responses to stressors without addressing the stressor itself; Sheffler et al., 2019). Regardless of whether these strategies are adaptive, these skills may be useful to circumvent significant life stressors that may result in declines to relationship quality, particularly during transition periods within the family life cycle. Thus, resilience factors that dampen the impact of adversity in combination with experiences of PTG and coping may explain our findings.

Regarding our second aim (H2: Psychological Distress), we did not find evidence for weekly changes in psychological distress across the study period, nor did changes in psychological distress vary as a function of group assignment, ACEs, or the interaction between the two. Our findings raise important considerations about the goals of the L2P2 intervention and its underlying mechanisms of action. L2P2 is intended to target specific negative conflict dynamics (Finkel et al., 2013). L2P2 is regarded as a 'wise' intervention (Prime et al., 2023)

informed by the tenets of theory-based psychological intervention to incur gradual, far-reaching effects as change becomes embedded within the individual to inform how they interact with their partner. A key component of L2P2 is that it is intended to target maladaptive communication between partners by eliciting conflict reappraisal through third-party perspective-taking. As our study indicates, it is indeed effective at bolstering relationship quality, though it may not be able to incur spillover changes in psychological distress. Couples in relationships characterized as 'discordant' (i.e., poorer coping during stressful events, greater conflict) often report greater psychological distress in the form of social role dysfunction, greater suicidal ideation, and impairment on par with the effects of many psychiatric disorders (Khalifian et al., 2024; Whisman & Uebelacker, 2006). Thus, support that aims to bolster couples' relationship quality may yield positive spillover effects for well-being. However, this effect was not observed in our study. These findings do not negate the value of L2P2, but rather clarify its scope and help refine hypotheses about what domains of functioning are most directly targeted.

ACEs were not a significant predictor of mean weekly changes in psychological distress. However, ACEs and psychological distress were indeed correlated across all time points which is consistent with the well-chronicled relationship between adversity sustained in childhood and heightened psychological distress in adulthood (Manyema et al., 2018). The amount of adversity and the intensity/severity of adverse events predicts adults' responses to early adversity (Haczkewicz et al., 2024). For example, a high number of ACEs (Lin et al., 2022) and adversity involving physical abuse, exposure to substance use at home, household mental illness, bullying, and environmental (i.e., unsafe neighbourhoods) are amongst the most substantial threats to mental and cognitive well-being (Li & Xiang, 2022). The sample's mean risk score, though low, still represents some degree of risk as the literature shows exposure to even one ACE can predict

poorer well-being (i.e, psychological and social) and life satisfaction (Meeker et al., 2022). Moreover, psychological distress was stable (i.e., no change) across all five months of the study. It is possible that the negative impact of ACEs on psychological is already embedded in individuals, thus reducing the likelihood of observing mean weekly change as a function of childhood adversity.

Across hypothesis 1 and hypothesis 2, we did no find evidence of a significant interaction effect (i.e., L2P2 did not dampen the impact of ACEs on relationship quality and psychological distress, respectively). This is in line with a recent study using the same dataset, wherein pre-existing risk factors at the child-, couple-, and family-levels did not moderate the effectiveness of L2P2 on relationship quality (Markwell et al., Under Review). There are several possible explanations for these results. First, it is possible that the intervention worked similarly across participants, regardless of whether participants self-reported high or low exposure to ACEs. Such an interpretation lends itself to the universality of the intervention and the potential applicability to varied contexts and diverse participants. Second, though we obtained sufficient variability in our study variables (i.e., variable relationship quality and mean ACE scores in line with general prevalence rates; Madigan et al., 2023), a sample of at least $N = 1{,}000$ is advised to obtain adequate statistical power (i.e., ≥ 0.8) to detect moderation effects (Hyatt et al., 2021, as cited in Vize et al., 2023). Finally, our findings are consistent with findings from Kanter and colleagues (2023), who similarly did not find support for relational intervention as a protective factor against cumulative risk exposure. While relying on null-hypothesis significance testing in empirical research is common practice (Harms & Lakens, 2018), a null-hypothesis can only reject the null rather confirm the absence of an effect in the population altogether (i.e., observing a non-significant effect allows us to merely conclude the observed effect size was not

significantly different from zero). However, a true population effect may exist, though have gone undetected due to extraneous factors (e.g., sample size and power).

Limitations

There are several associated methodological limitations within the present study. Firstly, our measure of psychological distress includes one questionnaire, which is a non-specific measure of psychological distress (i.e., the Kessler psychological distress scale). Though this measure is a reliable and adaptable tool suitable for research in general and clinical populations (Wojujutari & Idemudia, 2024), a more comprehensive battery of mental health assessment exploring internalizing and externalizing behaviours would allow for a more nuanced understanding of the relationship between ACEs and psychological distress. Secondly, an inherent limitation of correlational analyses is that it is difficult to infer causation. Though statistically significant correlations were found between several variables, it is difficult to ascertain which underlying mechanisms are driving the strength and direction of the relationship between ACEs and these target variables. While bivariate correlations were observed between ACEs and both psychological distress and relationship quality, the directionality of these relationships remains unclear. It is possible that individuals with higher ACE scores are more vulnerable to experiencing distress or challenges in their romantic relationships. However, it is also plausible that current psychological distress or strained relationships may bias retrospective reporting of childhood adversity. Additionally, third variables such as current socioeconomic status or social support may simultaneously influence both ACEs and the outcomes measured, obscuring the mechanisms driving these associations.

Finally, the distribution of ACE scores was positively skewed in our sample, with individuals reporting an average of 2.34 ACEs. Though this is consistent with meta-analytic

prevalence rates (Madigan et al., 2023), future trials may need to oversample high-risk participants to capture complex relationships between history of adversity, current functioning, and the potential buffering effects of interventions. Moreover, ACEs are regarded as complex, with long-term outcomes varying as a function of number and severity of ACEs. The present study does not account for these nuances and thus make it difficult to parse out whether there are indeed differences between individuals with "high-risk" and "low-risk" ACEs. Despite these limitations, our experimental design is a robust assessment of whether enhancing conflict reappraisal in couples causally influences their relationship quality and mental health.

Implications

Given the extent to which ACEs incur a negative toll on both parent mental health and relationship quality (Ports et al., 2021; Saxbe et al., 2018), the present study furthered our understanding of the potential for BCIs to thwart this. While we did not find evidence in support of this, we have further delineated the scope of L2P2 and its effects to inform future iterations of this program, specifically with respect to targeting domains of functioning most impacted by ACEs. As the transition to parenthood and overseeing the provision of childcare for young (i.e., under six years of age) children is a markedly distressing time for parents (Margolis & Myrskyla, 2015; Saxbe et al., 2018), it is especially critical to consider the role of parent mental health and relationship quality. Thus, a BCI with the potential to support at-risk parents by targeting relationship quality, which has been shown to yield positive mental health effects (Umberson & Montez, 2010), has important implications for parents with ACEs. However, additional research is needed to fine-tune existing programs.

Conclusion

The transition to parenthood, along with the subsequent early years of parenting, constitute a period of joy and heightened stress, marking a vulnerable stage in the family life cycle. In this thesis, we hypothesized that individuals with ACEs would report reduced relationship quality and greater psychological distress due to stress sensitization theory, which posits individuals exposed to stress in childhood are more likely to show adverse responses to stressors in adulthood. Moreover, we explored a potential social pathway by which targeting relational processes may be a way to curb the impact of ACEs on relationship quality and psychological distress. Our findings did not find support of L2P2 as a possible moderator to support parenting couples predisposed to heightened stress through exposure to adversity in childhood. Despite null findings, the present study does indeed further our understanding of the complex relationship between ACEs, psychological distress, and relationship quality during a stressful period of the family life cycle. Our study addresses a gap in the literature by exploring whether couple interventions circumvent the risk associated with early childhood adversity, with the potential of breaking cycles of intergenerational transmission of risk.

Tables

Table 1. *Individual-Level Sample Characteristics*

	Overall		Control		L2P2	
	N	*Freq. (%)*	*n*	*Freq. (%)*	*n*	*Freq. (%)*
Below college education	280	22 (7.85)	136	13 (9.55)	144	9 (6.25)
Graduate/professional degree	280	126 (45)	136	66 (48.53)	144	60 (41.66)
Born outside Canada	279	91 (32.62)	135	53(39.26)	144	38(26.39)
Income < $150,000 CAD	136	72 (52.94)	67	35 (50.24)	71	37 (52.11)
LGBTQIA2S+	277	22 (7.94)	133	10 (7.52)	144	12 (8.33)
Racially minoritized	277	106 (38.27)	133	54 (40.60)	144	52 (36.11)

Table 2. *Couple-Level Sample Characteristics (Aggregated at the Couple-Level)*

	Overall			Control			L2P2		
	N	*Mean(SD)*	*Range(Min, Max)*	*n*	*Mean (SD)*	*Range(Min, Max)*	*n*	*Mean (SD)*	*Range(Min, Max)*
Relationship length (years)	140	10.76 (4.32)	20.8 (0.7, 21.40)	68	10.58 (4.44)	20.7 (0.7, 21.30)	72	10.92 (4.20)	18.6 (2.8, 21.40)
Number of children	140	1.70 (0.78)	3 (1, 4)	68	1.66 (0.84)	3 (1, 4)	72	1.74 (0.73)	3 (1, 4)
Child age (baseline)	140	3.08 (1.99)	13.08 (0.8, 13.17)	68	2.72 (1.94)	8 (0.08, 8.08)	72	3.42 (1.99)	12.98 (0.19, 13.17)

Table 3. Clinical Characteristics

	N	*Mean (SD)*	*Range*
ACEs	278	2.34 (2.48)	0-12 (12)
KPDS B	280	2.07 (0.74)	1-4.8 (3.80)
KPDS PI	237	1.97 (0.71)	1-4.3 (3.30)
KPDS FU1	219	1.93 (0.74)	1-4.5 (3.50)
KPDS FU3	212	1.94 (0.71)	1-4.6 (3.60)
PRQC B	280	5.43 (0.99)	1.94-7 (5.06)
PRQC PI	238	5.3 (1.01)	2.39-7 (4.61)
PRQC: FU1	219	5.32 (1.01)	1.89-7 (5.11)
PRQC: FU3	212	5.28 (1.04)	1.44-7 (5.56)

Note. ACEs = Adverse Childhood Experience Questionnaire – Revised; KPDS B = Kessler Psychological Distress Scale (at baseline); KPDS PI = Kessler Psychological Distress Scale (at post-intervention); KPDS FU1 = Kessler Psychological Distress Scale (at 1 month follow-up); KPDS FU3 = Kessler Psychological Distress Scale (at 3 month follow-up); PRQC B = Perceived Relationship Quality Components Inventory (at baseline); PRQC PI = Perceived Relationship Quality Components Inventory (at post-intervention); PRQC FU1 = Perceived Relationship Quality Components Inventory (at 1 month follow-up); PRQC FU3 = Perceived Relationship Quality Components Inventory (at 3 month follow-up); Group = group assignment (i.e., L2P2 or control).

Table 4. Kurtosis & Skewness

	Kurtosis(g_2)	*Skewness*
ACEs	0.56	1.08
KPDS B	0.68	0.98
KPDS PI	-0.16	0.75
KPDS FU1	0.43	0.95
KPDS FU3	0.79	0.95
PRQC B	0.61	-0.83
PRQC PI	-0.06	-0.62
PRQC: FU1	-0.09	-0.58
PRQC: FU3	0.44	-0.68

Note. ACEs = Adverse Childhood Experience Questionnaire – Revised; KPDS B = Kessler Psychological Distress Scale (at baseline); KPDS PI = Kessler Psychological Distress Scale (at post-intervention); KPDS FU1 = Kessler Psychological Distress Scale (at 1 month follow-up); KPDS FU3 = Kessler Psychological Distress Scale (at 3 month follow-up); PRQC B = Perceived Relationship Quality Components Inventory (at baseline); PRQC PI = Perceived Relationship Quality Components Inventory (at post-intervention); PRQC FU1 = Perceived Relationship Quality Components Inventory (at 1 month follow-up); PRQC FU3 = Perceived Relationship Quality Components Inventory (at 3 month follow-up); Group = group assignment (i.e., L2P2 or control). *$p < 0.05$.

Table 5. *Correlation Matrix of Primary Variables*

	1	2	3	4	5	6	7	8	9
1. ACEs	-	-	-	-	-	-	-	-	-
2. KPDS B	0.28**	-	-	-	-	-	-	-	-
3. KPDS: PI	0.29**	0.78*	-	-	-	-	-	-	-
4. KPDS: FU1	0.30**	0.76**	0.83**	-	-	-	-	-	-
5. KPDS: FU3	0.33**	0.75**	0.83**	0.85**	-	-	-	-	-
6. PRQC: B	-0.13*	-0.35**	-0.19**	-0.21**	-0.20**	-	-	-	-
7. PRQC: PI	< -0.00	-0.30**	-0.26**	-0.25**	-0.23**	0.83**	-	-	-
8. PRQC: FU1	-0.08	-0.30**	-0.20**	-0.27**	-0.23**	0.83**	0.88**	-	-
9. PRQC: FU3	-0.06	-0.31**	-0.24**	-0.26**	-0.25**	0.79**	0.84**	0.86**	-

Note. ACEs = Adverse Childhood Experience Questionnaire – Revised; KPDS B = Kessler Psychological Distress Scale (at baseline); KPDS PI = Kessler Psychological Distress Scale (at post-intervention); KPDS FU1 = Kessler Psychological Distress Scale (at 1 month follow-up); KPDS FU3 = Kessler Psychological Distress Scale (at 3 month follow-up); PRQC B = Perceived Relationship Quality Components Inventory (at baseline); PRQC PI = Perceived Relationship Quality Components Inventory (at post-intervention); PRQC FU1 = Perceived Relationship Quality Components Inventory (at 1 month follow-up); PRQC FU3 = Perceived Relationship Quality Components Inventory (at 3 month follow-up); Group = group assignment (i.e., L2P2 or control).

*$p < 0.05$. **$p < 0.01$.

Table 6

Weekly Mean Change in Relationship Quality in the Reference (i.e., Control) Group

	Slope 1 β	*p*-value	Slope 2 β	*p*-value
Intercept[1]	-0.19	< .00**	-0.03	0.32
Main effect of group assignment	0.21	0.01*	-0.04	0.28

Note. [1]Mean change in RQ in the control group. *p < 0.05, **p < 0.001.

Table 7

Piecewise Growth Curve Model of ACEs, L2P2, and Their Interaction in Predicting Slopes in Relationship Quality

Predictor	Slope 1 β	*p*-value	Slope 2 β	*p*-value
Intercept	-0.02	< 0.00**	< -0.00	0.24
Main effect of L2P2	0.02	0.02*	< -0.00	0.38
Main effect of ACEs	< 0.00	0.07	< -0.00	0.12
Interaction L2P2 x ACEs	< -0.00	0.75	< 0.00	0.41

Note. *p < 0.05, **p < 0.001.

Table 8

Weekly Mean Change in Psychological Distress in the Reference (i.e., Control) Group

	Slope 1 β	*p*-value	Slope 2 β	*p*-value
Intercept[1]	-0.01	0.21	< -0.00	0.37
Main effect of group assignment	-0.01	0.15	< 0.00	0.64

Note. [1]Mean change in psychological distress in the control group.

Table 9

Piecewise Growth Curve Model of ACEs, L2P2, and Their Interaction in Predicting Slopes in Psychological Distress

Predictor	Slope 1 β	*p*-value	Slope 2 β	*p*-value
Intercept	< -0.00	0.31	< -0.00	0.22
Main effect of group assignment	-0.01	0.10	< 0.00	0.50
Main effect of ACEs	< -0.00	0.53	< 0.00	0.17
Interaction L2P2 x ACEs	< 0.00	0.44	< -0.00	0.27

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Appendix A

Perceived Relationship Quality Components (Fletcher et al., 2000)

Please read each of the following items carefully, and using the rating scale, rate your current partner and relationship (ranging from 1 = not at all to 7 = extremely). Please circle your response.

	Item
1	How satisfied are you with your relationship?
2	How committed are you to your relationship?
3	How intimate is your relationship?
4	How much do you trust your partner?
5	How passionate is your relationship?
6	How much do you love your partner?
7	How content are you with your relationship?
8	How dedicated are you to your relationship?
9	How close is your relationship?
10	How much can you count on your partner?
11	How lustful is your relationship?
12	How much do you adore your partner?
13	How happy are you with your relationship?
14	How devoted are you to your relationship?
15	How connected are you to your partner?
16	How dependable is your partner?
17	How sexually intense is your relationship?
18	How much do you cherish your partner?

Appendix B

Kessler Psychological Distress Scale (Kessler, 2002)

Instructions: These questions concern how you have been feeling over the past 30 days. Tick a box below each question that best represents how you have been feeling.

	Question	1. None of the time	2. A little of the time	3. Some of the time	4. Most of the time	5. All of the time
1	About how often did you feel tired out for no good reason?					
2	About how often did you feel nervous?					
3	About how often did you feel so nervous that nothing could calm you?					
4	About how often did you feel hopeless?					
5	About how often did you feel restless or fidgety?					
6	About how often did you feel so restless you could not sit still?					
7	About how often did you feel depressed?					
8	About how often did you feel that everything was an effort?					
9	About how often did you feel so sad that nothing could cheer you up?					
10	About how often did you feel worthless?					

Appendix C

Expanded ACEs Questionnaire (Finklelhor et al., 2015)

Instructions: For each question, circle "Yes" or "No" (all items preceded by "prior to your 18th birthday …)

1. Did a parent or other adult in the household often or very often swear at you, insult you, put you down, or humiliate you?
    a. Or act in a way that made you afraid that you might be physically hurt?
2. Did a parent or other adult in the household often or very often push, grab, slap, or throw something at you?
    a. Or ever hit you so hard that you had marks or were injured?
3. Did an adult or person at least 5 years older than you ever touch or fondle you or have you touch their body in a sexual way?
    a. Or attempt or actually have oral, anal, or vaginal intercourse with you?
4. Did you often or very often feel that no one in your family loved you or thought you were important or special?
    a. Or your family didn't look out for each other, feel close to each other, or support each other?
5. Did you often or very often feel that you didn't have enough to eat, had to wear dirty clothes, and had no one to protect you?
    a. Or your parents were too drunk or high to take care of you or take you to the doctor if you needed it?
6. Was a biological parent ever lost to you through divorce, abandonment, or other reason?
7. Was your mother or stepmother:
    a. Often or very often pushed, grabbed, slapped, or had something thrown at her?
    b. Or sometimes, often, or very often kicked, bitten, hit with a fist, or hit with something hard?
    c. Or ever repeatedly hit over at least a few minutes or threatened with a gun or knife?
8. Did you live with anyone who was a problem drinker or alcoholic, or who used street drugs?
9. Was a household member depressed or mentally ill, or did a household member attempt suicide?
10. Did a household member go to prison?
11. Did other kids, including brothers or sisters, often or very often hit you, threaten you, pick on you, or insult you?
12. Did you often or very often feel lonely, rejected, or that nobody liked you?
13. Did you live for 2 or more years in a neighborhood that was dangerous, or where you saw people being assaulted?
14. Was there a period of 2 or more years when your family was very poor or on public assistance?

Appendix D

'L2P2' Intervention Description

Couples completed initial surveys spanning 20-25 minutes in which they were asked sociodemographic information, their relationship, family-level relationships (e.g., parent-child, family well-being), participants' mental health, and child outcomes (e.g., emotions, behaviours, thinking). Upon completion of the survey, couples were randomly assigned to either the L2P2 or control conditions.

Participants assigned to the L2P2 program engaged in an online writing program over a 12-week period with three brief writing sessions provided once every four weeks. Prior to beginning the writing session, couples were asked to complete a brief survey about their relationship. Participants were asked to write about a disagreement they recently had with their partner. They were directed to focus specifically on actions (not thoughts or feelings associated with the disagreement), and to provide a rating of conflict-related distress. They were then provided the L2P2 program (i.e., video content teaching couples conflict reappraisal strategies to manage disagreements). These videos were approximately three and a half minutes in duration; participants learned specific strategies to reappraise conflict, as well as viewed examples of core principles of the task. Participants were asked three follow-up questions to assess whether they have understood the concepts presented in the video. Participants then viewed content that included examples of problems that many couples with young children face (e.g., challenges related to coparenting/parenting, couple relationship, division of labour).

Participants then completed a conflict reappraisal writing task. Participants were given nine minutes to provide a response to three prompts such as, "Think about the disagreement from the perspective of a third party who wants the best for all involved", "Think about the disagreement from the perspective of a neutral point of view?", "What might make it hard to take this third-party perspective during a disagreement?", and "How might you be able to take this perspective to help you make the best of disagreements?". Feedback was not provided on participants' writing samples. Writing sessions took approximately 20 minutes. Participants were sent reminders post-session to use strategies they have learned. To those assigned to the control group, participants received the same pre-session survey and writing prompt to complete without exposure to L2P2 intervention content.

One week after completing the final writing session, participants (regardless of group assignment) were asked to complete a post-writing survey assessing their relationship quality, family relationships, their mental health, and questions about their child. Participants were also solicited for feedback about the study. Follow-up assessments were conducted at 1-month and 3-month follow-up, respectively. After the 3-month follow-up, participants in the control group were offered the L2P2 intervention (though this data was not collected).