Mindfulness
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ORIGINAL PAPER

Therapeutic Process of Change During Participation in the Parents Under Pressure Program for a Cohort of Parents Who Misuse Substances

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Abstract

Objectives Despite a large evaluation literature for interventions aiming to improve the lives of families affected by parent substance misuse, very few studies have examined how families change when engaged with treatment. This study examines the interactive process of change in parent psychopathology and mindful parenting during participation in the Parents under Pressure (PuP) program for parents engaged in community addiction services.

Methods Parents ($n = 164$) provided baseline, mid- and end-treatment measures of parent psychopathology and mindful parenting. Cross-lagged modelling was used to examine therapeutic process of change.

Results Parent psychopathology decreased, and mindful parenting increased from baseline to end-treatment ($ps < .001$). Less psychopathology at mid-treatment predicted higher levels of overall mindful parenting upon completion of the PuP program ($p = .005$). Examination of the mindful parenting dimensions revealed variation in the therapeutic process of change. While higher levels of Non-Judgemental Acceptance of Parental Functioning (NJAPF) at baseline predicted lower psychopathology at mid-treatment ($p = .03$), higher levels of Compassion for Child (CC) at baseline predicted greater psychopathology at mid-treatment ($p = 0.004$). Higher levels of NJAPF mid-treatment predicted lower psychopathology upon treatment completion ($p = .023$), yet higher levels of Emotional Awareness of Child (EAC) at mid-treatment predicted greater psychopathology upon treatment completion ($p = .023$). Lower parent psychopathology at mid-treatment predicted higher levels of LFA, EAC, Self-Regulation in Parenting and NJAPF upon completion of the PuP program ($ps < .05$).

Conclusions The findings highlight the importance of reducing parent psychopathology as a precursor to more mindful parenting and also provide new evidence regarding the way in which variation in mindful parenting dimensions influences the therapeutic process of change.

Keywords Mindful parenting · Parent psychopathology · Substance misuse · Vulnerable families · Mechanisms of change

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Families with substance-misusing parents typically experience multiple complex adversities that can lead to detrimental child outcomes (Bountress & Chassin, 2015; Kuppens et al., 2020) and involvement with child welfare systems (Doidge et al., 2017; Freisthler et al., 2017). One explanation for this is the cumulative and interactive impact of multiple risk factors on the parenting capacity of parents who misuse substances (Hatzis et al., 2019; Neger & Prinz, 2015). Parental substance misuse can directly impact the capacity of parents to use sensitive and developmentally appropriate parenting (Seay, 2020; Slesnick et al., 2014). Yet parental substance misuse is commonly comorbid with other mental health difficulties and psychosocial stressors (Canfield et al., 2021; Nair et al., 2003) which can also undermine parenting

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capacity (Seay & Kohl, 2015; Siqveland & Moe, 2014). This, in turn, reduces parental emotional availability and the overall quality of the parent–child relationship (Biringen et al., 2014; Hyysalo et al., 2021), often leading to poor child and family outcomes (Hser et al., 2015; Stith et al., 2009).

Due to the complexity and multilayered risk in families affected by parental substance misuse, there is growing consensus that integrated and family-focused intervention models that address the cumulative and complex nature of vulnerabilities are needed (McGovern et al., 2021; Niccols et al., 2012a, 2012b). A range of intervention models have been developed and are often focused on reducing parent psychopathology and improving the capacity to parent in a sensitive and developmentally appropriate manner (Eggins et al., in press; Syed et al., 2018). These integrated programs can range from comprehensive and long-term residential programs (e.g. Tarasoff et al., 2018; Vazquez & Bergin, 2019) to community-based interventions focused on two or more specific areas such as parental substance misuse, parent psychopathology and parenting practices (Gannon et al., 2019; Neger & Prinz, 2015). Evidence suggests that this holistic family-focused approach can be effective for reducing parent substance misuse, improving parent emotional regulation, reducing child abuse risk and enhancing developmentally appropriate and sensitive caregiving (Eggins et al., in press; West et al., 2020).

Contemporary Western psychology has incorporated mindfulness-based strategies into a range of interventions for many adult disorders, including substance use disorders (Howarth et al., 2019; Korecki et al., 2020). Notably, there has also been growing interest in the way mindfulness can be incorporated into parenting (Parent & Dimarzio, 2021). Following the work of Kabat-Zinn and Kabat-Zinn (1997), Duncan (2007) expanded mindfulness concepts to the parent–child relationship. Duncan et al. (2009) conceptualised mindful parenting as a multidimensional construct comprised of five dimensions: Listening with Full Attention, Emotional Awareness of Self and Child, Self-Regulation in Parenting, Non-Judgemental Acceptance of Self and Child and Compassion for Self and Child. Within the parent–child dyad, mindful parenting can cultivate an enhanced capacity for parenting with calmness and consistency, and with warmth and nurturance (Duncan et al., 2009). However, the presence of parenting stress, depression and anxiety can limit a parent's capacity to adopt a mindful approach to parenting (Fernandes et al., 2021; Moreira & Canavarro, 2018). This underscores the importance of providing support to increase parent emotion regulation and management of mood disorders. Providing this type of support is particularly key when treating parents with substance misuse problems given the extent to which substance misuse is both a cause and consequence of emotional dysregulation and impulsive action (Jakubczyk et al., 2018).

Research conducted over the past decade highlights the growth in parent and family interventions with a focus on mindful parenting (Burgdorf et al., 2019; Fernandes et al., 2022). There is diversity in the delivery and content of these programs, with some programs focused entirely on mindfulness and others integrating mindfulness with other treatment components (e.g. training in developmentally appropriate parenting practices). Nonetheless, a key underlying theme is bringing non-judgemental awareness to emotions and parent–child interactions in combination with improving emotion regulation to facilitate more attuned and compassionate parenting, improve the quality of the parent–child relationship and reduce parental stress (Harnett & Dawe, 2012; Townshend et al., 2016). Programs may include formal mindfulness components (e.g. meditation practice) or informal mindfulness practices.

These programs have shown benefits across a range of family outcomes, including improved parenting practices, reductions in parent psychopathology and improved child emotion regulation (see Burgdorf et al., 2019; Townshend et al., 2016 for reviews). A small number of studies have also found that parenting programs with mindfulness intervention components can improve parenting in vulnerable families engaged in the child welfare system (Brown et al., 2021) and mothers engaged in treatment for addiction (Gannon et al., 2017; Short et al., 2017). A program with a mounting evidence base is Parents under Pressure (PuP), which is designed for families facing multiple adversities including parental substance abuse, engagement in child protection and significant social and economic disadvantage. Two randomised controlled trials (RCT; Barlow et al., 2019; Dawe & Harnett, 2007) and one quasi-experimental study (Harnett et al., 2018) have found that the PuP program generates significant reductions in child abuse potential, involvement with the child protection system and improvements in emotional regulation compared to families receiving treatment as usual.

Despite growing evidence for the effectiveness of interventions for families affected by parental substance misuse, there has been little investigation of the therapeutic processes of change for current intervention models. Examining therapeutic processes of change is important to ensure that practitioners understand the key processes and intervention components that generate such change. This understanding can then promote fidelity to the key mechanisms underpinning treatment effectiveness (Paris et al., 2009) when interventions are used in routine clinical practice across different settings (Carey et al., 2020; Kazdin, 2007). Yet there are only two empirical examinations of the mechanisms underpinning interventions for families affected by parental substance misuse.

Based on two RCTs, Suchman and colleagues (2012, 2018) found that the attachment-based *Mothers and Toddlers Program* indirectly improved maternal caregiving

behaviours in substance-misusing mothers through its direct impact on two processes: (1) reflective functioning, defined as the outward manifestation of the capacity for a parent to identify and understand their own and their child's mental state (mentalisation); and (2) flexible mental representations of the child and the caregiving relationship (representation quality). Notably, a reduction in maternal depression was also a significant predictor of sensitive caregiving behaviours in the Suchman et al. (2012) study. Dawe et al. (2021) found that improved emotion regulation following engagement in the PuP program mediated a reduction in child abuse potential 12 months after treatment completion.

These studies highlight the pivotal role of parent-level functioning—including emotion regulation, depressive symptoms and flexible representations of the parent–child relationship—for improving outcomes in families affected by parental substance misuse. This, in turn, suggests that interventions focused on improving parent psychopathology (e.g. depressive symptoms, emotion dysregulation) may also impact other areas of family functioning (e.g. parenting) and child outcomes. Indeed, an emerging view is that improving parent emotion regulation should be a transdiagnostic focus for parenting interventions (Milligan et al., 2017; Rutherford et al., 2015). Recently, mentalisation and mindfulness have been highlighted as important conduits for improving parent emotional regulation (Chaplin et al., 2021b; Rutherford et al., 2015), which likely have flow-on effects for the quality of caregiving, the parent–child relationship and child behaviour (Bosk et al., 2019; Chaplin et al., 2021a). Overall, the extant evidence suggests that a range of interventions can reduce parent psychopathology and enhance mindfulness for vulnerable families, including those affected by parental substance misuse. Given the close relationship between the capacity for mindful parenting and parent psychopathology (Fernandes et al., 2021; Henrichs et al., 2021), further examination of the therapeutic process of change for families affected by parental substance misuse is needed to explore how these two factors are affected *and* interact during the delivery of an integrated treatment model.

The current study aimed to investigate the therapeutic process of change in parent psychopathology and mindful parenting in a cohort of families engaged in community addiction services and who participated in the Parents under Pressure Program (PuP). Based on existing research, we first tested whether engagement with the PuP program was associated with reductions in parent psychopathology and improvements in mindful parenting over time. A second aim of the study was to explore how changes in the dimensions of mindful parenting related to changes in parent psychopathology. We did this by drawing upon the conceptualisation of mindful parenting as a multidimensional construct comprised of five dimensions, and anticipated that parents' process of change may vary by the different dimensions of mindful parenting (Dodsworth, 2018; Potharst et al., 2021) .

Methods

Participants

This study forms part of a larger study evaluating the PuP program across 11 community-based substance misuse services in the UK (Hollis et al., 2018). To be included in the study, parents needed to be engaged with community-based substance misuse services and be the primary caregiver of a child aged under 2.5 years who resided with them, or where a reunification plan was in place. Pregnant mothers with a delivery date more than 4 weeks after the recruitment date and parents presenting with psychosis or suicidal ideation were excluded from the study. Families were referred to the study by practitioners working in the area of substance misuse treatment. Recruitment took place between October 2014 and December 2016, with a total of 223 eligible families invited to participate and 180 providing consent. Eleven families disengaged from the study prior to completing any baseline measures and data could not be located for a further 5 families, resulting in a final cohort of 164 families. Parent and child sociodemographics are presented in Tables 1 and 2 respectively.

Procedures

Families were enrolled in the study upon receipt of informed consent, completed a range of baseline measures (Time 1) to inform treatment planning and then engaged with the PuP program in the community. Parent psychopathology and mindful parenting at mid-treatment (Time 2, $M = 100.1$ days ($SD = 34.61$) after Time 1) and upon treatment completion (Time 3, $M = 168.85$ days ($SD = 42.82$) after Time 1; $M = 72.80$ days ($SD = 27.64$) after Time 2). The duration of the PuP program can range between 16 and 20 weeks when implemented with complex families (e.g. see Barlow et al., 2019; Ivers & Barry, 2018), with a variable number of treatment sessions contingent on the family's needs and treatment plan. Therefore, the mid-treatment measure was tentatively planned to take place approximately 10 weeks after baseline, with some variation due to families' needs and ability to schedule outcome measurements.

Accredited PuP practitioners across 11 NSPCC service centres in the UK delivered the PuP program. To obtain PuP accreditation, practitioners received a minimum of 40 h of training and supervision in the PuP model. The PuP program is designed to be delivered in the home, although this is

Table 1 Baseline characteristics of parents ($N = 164$)

Sociodemographic	Mean (SD) or % (n)
Age	30.76 (5.98)
Gender (% male)	6.1 (10)
Marital status	
Married/cohabiting	37.8 (62)
Single parent household	48.8 (80)
Separated/divorced	3.0 (5)
Other	5.5 (9)
Missing	4.9 (8)
Education	
≤ 10 years of education	44.5 (73)
12 years of education	4.4 (7)
Tertiary	1.8 (3)
None	0.60 (1)
Other	15.9 (26)
Missing	32.9 (54)
Primary source of income	
Paid employment	7.9 (13)
Government benefits	64.0 (105)
Other	2.4 (4)
Missing	25.6 (42)
Primary substance of concern	
Alcohol only	19.5 (32)
Drugs only	72.0 (118)
Mixture of alcohol and drugs	8.5 (14)
Current substance misuse treatment	
Opiate substitution therapy[1]	55.5 (91)
Counselling	13.4 (22)
Opioid substitution therapy and counselling	2.4 (4)
Other	19.5 (32)
Missing	9.1 (15)
MSPSS (total)	4.85 (1.25)
Parenting support	8.59 (3.48)
Daily hassles	6.61 (6.78)
AUDIT-C	2.64 (2.96)
Severity of Dependence Scale score > 3 (% yes)[2]	47.6 (78)
Other parent in substance misuse treatment (% yes)[3]	29.3 (48)
Family history of substance misuse (% yes) [4]	36.6 (60)
Criminal offence ever (% yes)[5]	42.1 (69)
Criminal offence in last 12 months (% yes)[6]	9.1 (15)
Domestic violence (% at or above cut-off)[7]	6.71 (11)
Mental health diagnosis (% yes)[8]	42.7 (70)
Family history of mental illness (% yes)[9]	31.1 (51)
Number of stressful life events (last 12 months)	4.04 (2.55)

[1]Methadone or Subutex/Buprenorphine; [2]missing $n = 77$ (47.0%); [3]unsure or missing $n = 54$ (32.9%); [4]missing $n = 55$ (33/5%); [5]missing $n = 48$ (29.3%); [6]missing $n = 52$ (31.7%); [7]$n = 83$ (50.6%) who endorsed some experience with domestic violence; [8]missing = 35 (21.3%); [9]missing = 57 (34.8%)

Table 2 Baseline characteristics of children ($N = 164$)

Sociodemographic	Mean (SD) or % (n)
Age (months)	16.8 (17.02)
Gender (% male)	53.6 (89)
Child resides with	
Mother	62.8 (104)
Father	2.4 (4)
Both parents	27.1 (45)
Foster family	1.8 (3)
Extended family	.60 (1)
Other	4.0 (5)
Missing	1.2 (3)
Current involvement with child protection[1]	83.54 (137)

[1]Missing data $n = 7$ (4.3%)

not a strict requirement for program delivery (e.g. has been delivered to women in prison and in residential addiction settings). The program is individually tailored to each family using a case formulation process and is embedded in a case management model. Delivery of the PuP program is guided by a Practitioner Manual and practitioners and families collaborate to develop a therapeutic family support plan with identified goals. A Parent Workbook is also available as additional support to complement sessions. The workbook contains twelve modules addressing different domains of family functioning that may or may not be targeted in a treatment plan.

The underlying program logic for the PuP program proposes that child developmental outcomes are directly influenced by parental capacity to provide sensitive and responsive caregiving (Biringen et al., 2014; Saunders et al., 2015). This parental capacity often depends on the knowledge and ability to put into practice sensitive and developmentally appropriate parenting strategies (Gadsden et al., 2016). Parental stress and poor emotion regulation—particularly in the context of parental mental health and substance use problems—can also impact parenting capacity. Factors further influencing parents and parenting are placed in a broader ecological context and include connectedness to family, culture and community. In essence, the PuP program aims to enhance child developmental outcomes and sensitive caregiving by building parenting knowledge and skills, improving parent emotion regulation and building capacity to reduce stressors that impede family functioning more generally.

A significant focus of the PuP program is the use of informal and formal mindfulness strategies to enhance emotion regulation in both parents and children. For example, the module *How to Manage Emotions When Under Pressure: Increasing Mindful Awareness* introduces mindfulness exercises to enhance parent emotion regulation.

Other modules provide parents with developmentally appropriate and non-punitive strategies to enhance child self-regulation (e.g. *Supporting Your Child to Develop Self-Regulation; Connecting with Your Child to Help Them Feel Loved and Safe*). Parents are supported to develop emotional awareness of themselves and their child and learn skills to improve their self-regulation in everyday parenting situations (e.g. tantrums or prolonged infant crying). Specific examples include facilitating 'mindful play' and bringing mindful awareness to parent–child interactions to support parents in becoming more accepting and attuned to their child's needs. Enjoyment in the dyadic interaction is captured by filming a parent–child play, replaying for the parent moments of warmth and attunement, thereby enhancing emotional awareness, and creating empathic joy (e.g. "*look how your child loves your smile*"). Compassion is emphasised through helping parents identify their own and their child's special qualities and supporting parents to understand how their own childhood experiences have shaped their parenting. Formal practice, including more established mindfulness exercises such as mindful eating and mindful walking, is complemented by informal practice where everyday events are harnessed as therapeutic opportunities to practice emotion regulation strategies to reduce dysregulation. This occurs both within a parenting context and in a wider ecological context where strategies are planned and practiced prior to exposure (e.g. a visit to a housing office where there is anticipated stress and/or potential conflict).

Measures

Sociodemographic and Baseline Covariate Measures

Practitioners used a questionnaire to collect key sociodemographic variables and indicators of current substance use at the point of recruitment. This questionnaire included a range of items pertaining to substance use (e.g. type of substance, frequency of use) and captured a broad range of demographic domains, including age and gender of all participants, family composition, employment status and income. As part of the assessment and treatment planning process, primary caregivers also completed other measures to ascertain the overall level of family functioning. These included measures of general (MSPSS; Zimet et al., 1990) and parenting-specific (adapted from Power et al., 1988) social support, family stressors (adapted from Crnic & Greenberg, 1990), alcohol use (AUDIT-C; Meneses-Gaya et al., 2010), intimate partner violence (HITS; Sherin et al., 1998) and stressful life events (adapted from Department of Health, 2000). These measures and key sociodemographic variables (age, income source, marital status) were used as covariates in the statistical analysis due to their association with parent psychopathology and parenting practices (Dawe et al., 2021).

Mindful Parenting

Primary caregivers completed the 27-item Interpersonal Mindfulness in Parenting Scale – Infant Version (IMP-I, Laurent et al., 2017), an adaption of the original 31-item self-report Interpersonal Mindfulness in Parenting Scale (Duncan et al., 2009). Respondents rated the frequency of each item on a 5-point Likert scale ranging from 1 = 'Never' to 5 = 'Always', whereby higher scores represent a larger degree of mindfulness within the parenting context. Internal consistency for total mindful parenting was high ($\alpha = 0.86$). Given that recent psychometric examinations suggested that the Duncan et al. (2009) factor structure had a poor fit, the Portuguese five-factor structure originally reported by Moreira and Canavarro (2017) was used to construct the mindful parenting dimensions (subscales). These five subscales are as follows: Listening with Full Attention (LFA); Emotional Awareness of Child (EAC); Self-Regulation in Parenting (SRP); Non-Judgemental Acceptance of Parental Functioning (NJAPF); and Compassion for Child (CC). This approach was taken because psychometric studies supporting this structure had utilised an infant-adapted IMP measure, commensurate with the current study (e.g. see Caiado et al., 2021; Fernandes et al., 2021). Burgdorf and Szabó (2021) used an English version of the IMP to examine the five (Portuguese) and six-factor (Dutch; de Bruin et al., 2014) structures with parents of children aged 0–2 years, but the IMP was not adapted for infants. Regardless, their study demonstrated the appropriateness of using either the five or six-factor model to construct the mindful parenting dimensions (subscales).

It is important to note that most research utilises a 29-item version of the IMP that omits Items 3 and 6 due to poor factor loadings for these items. For the current study, we did not omit these items when calculating the total mindful parenting score, as omission of these items did not change the internal consistency of the scale. However, these items were omitted when constructing the mindful parenting dimensions (subscales). Because four items were omitted from the IMP for the IMP-I (Items 4, 7, 8, 28), the CC subscale was comprised of three items rather than the six items used by Moreira and Canavarro (2017), and the SRP subscale was comprised of seven rather than eight items. Reliability estimates for all dimensions were sound and equivalent to those reported in other studies (Caiado et al., 2021; Fernandes et al., 2021): LFA ($\alpha = 0.82$; $\omega = 0.82$); EAC ($\alpha = 0.62$; $\omega = 0.63$); SRP ($\alpha = 0.68$; $\omega = 0.62$); NJAPF ($\alpha = 0.75$; $\omega = 0.76$); and CC ($\alpha = 0.75$; $\omega = 0.76$). Prior research has

found that the total mindful parenting score and dimensions (subscales) have sound discriminant validity with measures of parent psychopathology (Caiado et al., 2021; Fernandes et al., 2021).

Parent Psychopathology

Primary caregivers completed the 21-item Depression, Anxiety and Stress Scales Short Form (DASS-21, Lovibond & Lovibond, 1995) at Time 1, Time 2 and Time 3. The DASS-21 is comprised of three subscales that each assesses the severity of depression, anxiety and stress in the previous seven days, using a 4-point Likert scale ranging from 0 = 'Did not apply to me at all' to 3 = 'Applied to me very much, or most of the time'. The total DASS-21 score or individual subscale scores can be used as indicators of psychological distress. Reliability estimates with the current sample were sound and commensurate with prior research (e.g. Page et al., 2007): total ($\alpha = 0.94$; $\omega = 0.95$); depression ($\alpha = 0.91$; $\omega = 0.92$); anxiety ($\alpha = 0.85$; $\omega = 0.85$); stress ($\alpha = 0.87$; $\omega = 0.87$). Prior research has established that the DASS-21 has sound convergent and construct validity (Osman et al., 2012; Sinclair et al., 2012).

Data Analyses

Cross-lagged models employing maximum likelihood estimation in AMOS 28 were used to investigate the trajectories of change in mindful parenting and parent psychopathology during the course of treatment. Three observed variables, corresponding to the three-measurement timepoints, were incorporated into the model for mindful parenting and parent psychopathology. Times 2 and 3 parent psychopathology was predicted by its score at the previous time-point (autoregressive paths) and the previous timepoint for mindful parenting (cross-lagged paths). Similarly, Time 2 and Time 3 mindful parenting were predicted by its score at the previous time-point and parent psychopathology, with residuals allowed to covary at each time-point. Missing data were handled using full information maximum likelihood (FIML) estimation, which is considered ideal for handling missing data over time by producing estimates less biased than other missing data or modelling approaches (Allison et al., 2017; Zyphur et al., 2020). The comparative fit index (CFI) and root mean square error of approximation (RMSEA) were used to assess model fit with CFI ≥ 0.95 and RMSEA ≤ 0.06 indicating "good fit", and CFI ≥ 0.90 and RMSEA ≤ 0.10 indicating "acceptable fit" (Hu & Bentler, 1999; Marsh et al., 1999). While the χ^2 test of model fit (alpha = 0.05) is reported for completeness, we note that this test can overestimate poor fit in large samples (Bentler, 2007).

Results

Tables 1 and 2 summarise the sociodemographic profile of the cohort, which was characterised by extensive risk, as evidenced by involvement with child welfare and criminal justice systems, single parenthood, multiple stressful life events, mental health diagnoses and reliance on government benefits as the main source of income. A total of 111 (66.67%) parents completed measures at Time 2 and 91 (55.49%) parents completed measures at Time 3. An examination of baseline assessment data found no significant differences between families who did and did not consent to be included in the study (see Hollis et al., 2018). Likewise, there were only two significant differences between families who completed or did not complete the PuP program or evaluation measures, whereby families who completed PuP (1) were more likely to not have all their children in their care at baseline; and (2) had lower levels of family support at baseline. Families were engaged in the PuP program for an average of 197.8 days ($SD = 85.99$) and completed a mean of 16.04 sessions ($SD = 7.95$). Almost two-thirds of families completed the intervention ($n = 105$; 63.3%) leaving just over a third who did not ($n = 57$; 34.3%). Two (1.2%) families were still engaged with the PuP program when data collection ceased. Reasons for attrition ($n = 57$) included disengagement from the service, child being removed from the parent's care and change in service provision (e.g. detoxification only). Based on Little's Missing Completely at Random (MCAR) test, data were deemed to be missing completely at random $\chi(41) = 56.20$, $p > 0.05$. Table 3 provides the means and standard deviations in parent psychopathology and mindful parenting at each time-point (see Online Supplement for correlations between the baseline covariates, parent psychopathology and mindful parenting).

Change in Parent Psychopathology and Mindful Parenting Over Time

Figure 1 presents the cross-lagged model examining changes in parent psychopathology (DASS-21) and mindful parenting (IMP-I) at baseline (Time 1), mid-treatment (Time 2) and end-treatment (Time 3). The model had excellent fit to the data: $\chi(4) = 1.64$, $p = 0.80$, CFI > 0.99, RMSEA < 0.01. There was a significant positive relationship between parent psychopathology at Time 1 and Time 2, and at Time 2 and Time 3 (see also Online Supplement, Model 1). Likewise, there was a significant positive relationship between mindful parenting at Time 1 and Time 2, and at Time 2 and Time 3. In terms of the interactive change over time in parent psychopathology and mindful parenting, the only statistically significant pathway was between parent psychopathology at Time 2 and mindful parenting at Time 3. Lower levels of

Table 3 Parent psychopathology and mindful parenting over time

Measure	Time 1 (baseline)		Time 2 (mid)		Time 3 (end)	
	M	*SD*	*M*	*SD*	*M*	*SD*
DASS-21	35.05	28.72	23.41	21.39	17.25	19.32
IMP–I	102.89	14.38	108.98	13.93	112.44	12.93
LFA	20.73	3.72	21.50	3.26	22.02	2.72
EAC	12.66	2.24	13.12	1.87	13.48	2.02
SRP	26.54	4.78	28.19	4.50	28.88	4.09
NJAPF	21.69	5.89	24.68	5.78	25.79	6.16
CC	13.92	1.81	14.35	1.16	14.64	0.79

Note. *DASS-21*, Depression, Stress and Anxiety Scales – Short; *IMP-I*, Mindfulness in Parenting Scale – Infant Version; *LFA*, listening with full attention; *EAC*, emotional awareness of child; *SRP*, self-regulation in parenting; *NJAPF*, non-judgemental acceptance of parental functioning; *CC*, compassion for child

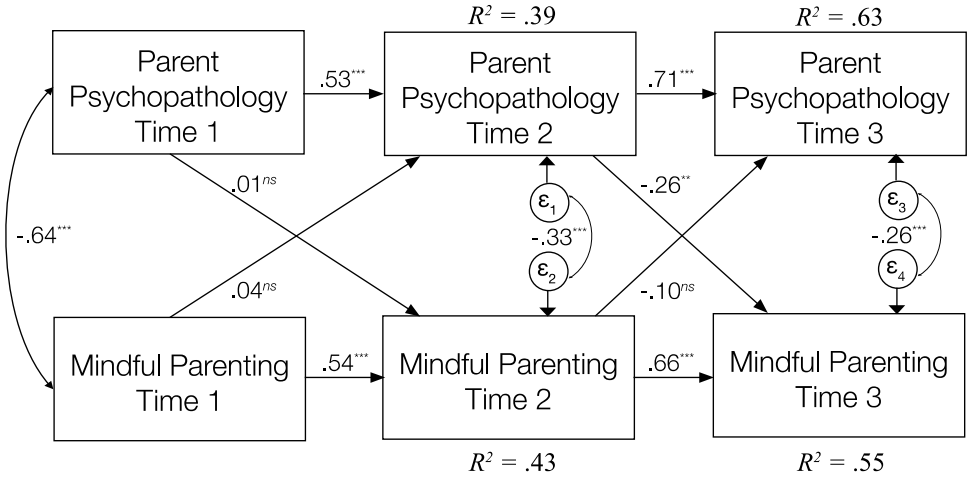

Fig. 1 Change in parent psychopathology and mindful parenting during engagement with the Parents under Pressure program. Note. Standardised parameter estimates are shown. $^{*}p \leq .05$; $^{**}p < .01$; $^{***}p < .001$; ^{ns} = not significant

parent psychopathology at Time 2 significantly predicted higher levels of mindful parenting at Time 3 ($b = -0.153$, SE = 0.05, $p = 0.005$).

Change in Parent Psychopathology and Dimensions of Mindful Parenting Over Time

Figure 2 presents the cross-lagged model examining changes in parent psychopathology (DASS-21) and the five dimensions of mindful parenting (IMP-I) at baseline (Time 1), mid-treatment (Time 2) and end-treatment (Time 3). The model had good fit to the data: $\chi(76) = 105.58$, $p = 0.014$, CFI = 0.98, RMSEA = 0.05. Consistent with the first model, autoregressive paths were significant (see also Online Supplement, Model 2). Significant pathways in parent psychopathology and dimensions of mindful parenting are bolded in Fig. 2. Higher levels of NJAPF at Time 1 significantly predicted lower parent psychopathology at Time 2 ($b = -0.748$, SE = 0.35, $p = 0.03$). Higher levels of CC at Time 1 significantly predicted greater parent psychopathology at Time 2 ($b = 3.115$, SE = 1.09, $p = 0.004$). Higher levels of NJAPF at mid-treatment predicted lower psychopathology upon treatment completion ($b = -0.659$, SE = 0.29, $p = 0.023$), yet higher levels of EAC at mid-treatment predicted greater psychopathology upon treatment completion ($b = 1.598$, SE = 0.70, $p = 0.023$). Lower parent psychopathology at mid-treatment predicted higher levels of LFA, EAC, SRP and NJAPF upon completion of the PuP program ($ps < 0.05$).

Discussion

This study examined the interactive therapeutic process of change in parent psychopathology and mindful parenting for families affected by parental substance misuse who participated in the PuP program. Overall, the results revealed that parents engaged with the PuP program showed a decrease in psychopathology and an increase in mindful parenting over time. This supports findings from systematic reviews (e.g. Burgdorf et al., 2019) and contributes to evidence supporting the use of parenting interventions that incorporate mindfulness for families with complexities such as substance

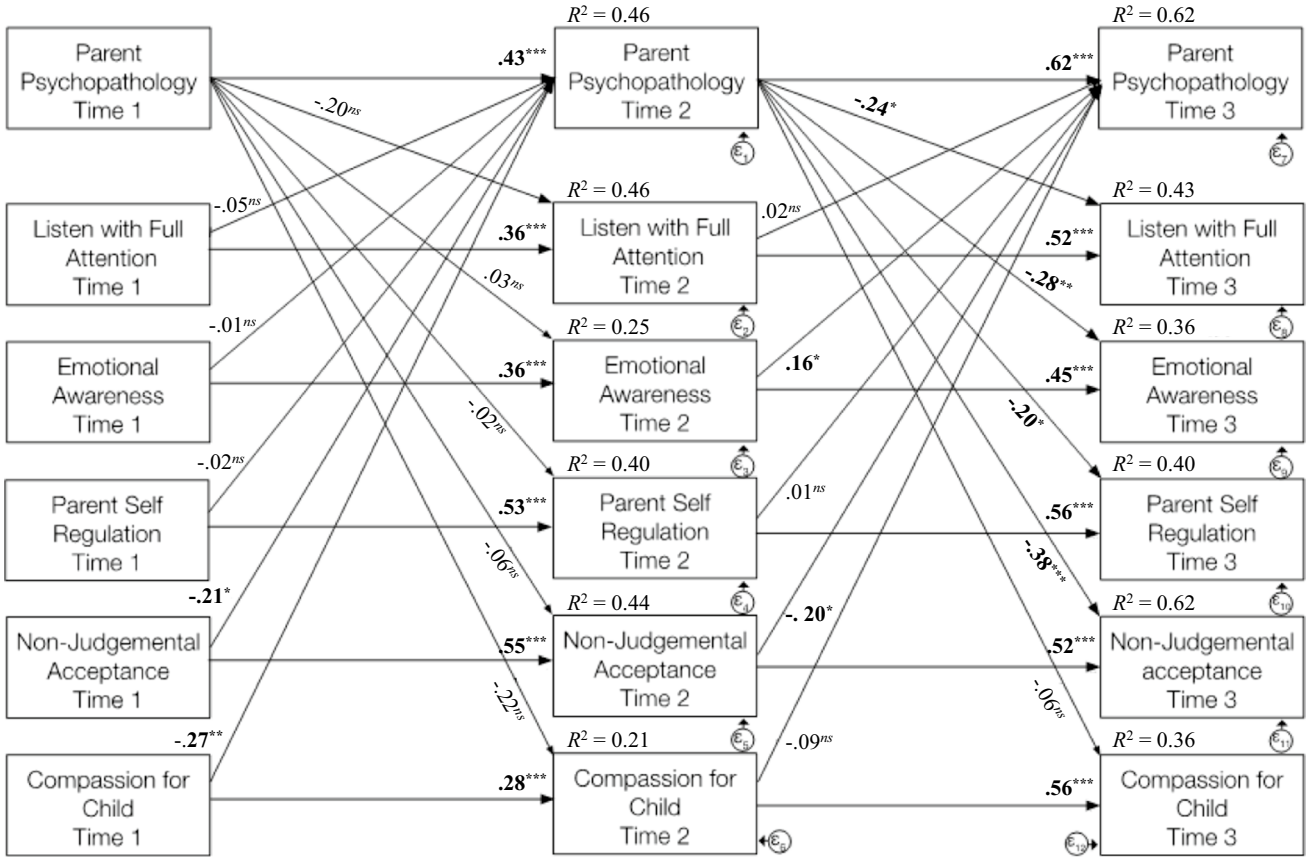

Fig. 2 Change in parent psychopathology and mindful parenting subscales during engagement with the Parents under Pressure program. Note. Standardised parameter estimates are shown. Statistically significant pathways are bolded. *$p \leq .05$; **$p < .01$; ***$p < .001$; ns = not significant

misuse (Barlow et al., 2019; Gannon et al., 2017) or involvement with child welfare (Brown et al., 2021).

The current study extends the field by testing the interactive nature of change between two key constructs: parental psychopathology and mindful parenting. We found that lower levels of parent psychopathology at mid-treatment were significantly associated with higher levels of mindful parenting at treatment completion. This provides empirical support for the proposition that supporting parents to reduce psychopathology can enable them to engage in more mindful parenting. A key focus of the PuP program is the use of mindfulness strategies to improve emotion regulation and to develop a warm, nurturing parent–child relationship. These mindfulness strategies are incorporated within the context of a broader case management model that aims to promote problem-solving and provide support for real-world problems experienced by vulnerable families, such as financial strain and family routines. Notably, these findings were obtained after controlling for key variables associated with parental psychopathology and that are known to influence parenting capacity (e.g. social support, intimate partner violence).

Given the multifaceted nature of mindful parenting, a second cross-lagged model was used to examine the process of change in parent psychopathology and the five dimensions of mindful parenting. Parents who reported higher levels of non-judgmental acceptance of their parental functioning at baseline were more likely to report lower levels of psychopathology mid-way through treatment. Similarly, higher non-judgmental acceptance of parental functioning was significantly associated with lower psychopathology upon treatment completion. These parents reported that they typically do not criticise or blame themselves for parenting difficulties and are accepting of their child's independence and themselves in the parenting role. It may be these factors that buffer against increases in distress that can be experienced by more vulnerable individuals when they begin treatment (Saunders et al., 2019), which is then sustained throughout treatment. The PuP program includes explicit strategies that support parents to identify their strengths, understand the origins of their own beliefs and values as a parent and identify and value their ability to connect with their child or infant. These therapeutic strategies may have been key to the reduction of psychopathology by enhancing non-judgemental acceptance of parental functioning.

Interestingly, parents who reported higher levels of compassion for their child prior to treatment were more likely to report higher levels of parent psychopathology mid-way through treatment. In addition, parents reporting higher awareness of their child's feelings at mid-treatment tended to report higher levels of psychopathology upon treatment completion. In other words, parents' tendency to be aware of and be kind to their children when they are upset or experiencing difficulties may be a source of distress for parents as they progress in a family-focused treatment program. This high level of compassion and/or awareness—paired with drawing attention to parenting and family-functioning difficulties during treatment—may heighten distress in parents who are predisposed to notice more instances of the difficulties their child is experiencing. This may be particularly so for parents facing multiple adversities, such as those in the current study. Nevertheless, parents who reported lower levels of psychopathology at mid-treatment were more likely to report higher scores on four of the five mindful parenting dimensions (LFA, EAC, SRP, NJAPF) at treatment completion. These findings again underscore the importance of reducing parent psychopathology to enhance sensitive and mindful caregiving.

Limitations and Future Research

The current study has a number of limitations. A cohort study that assesses outcomes over multiple time-points, coupled with cross-lagged modelling, can explore interactive trajectories of change in multiple areas over time. However, an RCT with mid-treatment measures is required to rigorously test mechanisms of change (Kazdin, 2007) and enable stronger causal conclusions. Any such study should be sufficiently large to allow the simultaneous examination of multiple mechanisms. Even with rigorousness, key challenges remain in research focused on mechanisms of change, in terms of ascertaining the most appropriate timing for mid-treatment measures (Kazdin, 2007). It is possible that families may have varied trajectories of change over the course of treatment and measuring hypothesised mechanisms at one time-point may not capture the true nature of therapeutic change. For this reason, future research should consider taking multiple within-treatment measures and using statistical analyses that can more readily model trajectories of change (e.g. latent growth curve modelling). This could also provide empirical support for practitioners routinely assessing and monitoring key mechanisms during treatment to guide their therapeutic approach with families. Another avenue for future research could be the addition of qualitative interviews with families to ascertain their perspectives on the therapeutic processes of change.

As is often the case in research with vulnerable populations, data were missing at follow-up assessments. Importantly, the pattern of missingness was random and best-practice imputation strategies were used to minimise impact. In addition, while a large range of outcome measures were collected for families participating in this study, the size of the sample did not permit more sophisticated modelling of multiple parent- and child-level variables. Previous research suggests that a reduction in parent psychopathology and an increase in sensitive and mindful caregiving can improve psychosocial and developmental outcomes for children (e.g. Bögels et al., 2014; Brown et al., 2021). Yet the current study was unable to test whether interactive changes in multiple parent-level factors translated into improvements in child outcomes due to missing and variable measures of child outcome data. Furthermore, the current study was unable to examine changes after the completion of treatment. Future research could benefit from follow-up measures to examine whether therapeutic gains are sustained or change over time (e.g. Barlow et al., 2019) and from investing time and resources in using evidence-based strategies for retaining vulnerable populations (Bonevski et al., 2014; MacLachlan et al., 2021).

Despite the wide range of data gathered from families, some valuable areas of inquiry require future exploration. For example, by gathering more precise information about pre-existing mental health diagnoses, the impact of these diagnoses on therapeutic change could be explored (e.g. Hildebrandt et al., 2020). Furthermore, there were few fathers who were primary caregivers in the current study. The role of fathers has been poorly explored across the parenting literature (Panter-Brick et al., 2014; Tully et al., 2017), yet recent studies suggest that substance-misusing fathers can engage when explicitly invited (Whittaker et al., 2022).

Overall, the findings from this study emphasise the importance of reducing parent psychopathology to improve mindful parenting, but also suggest that specific dimensions of mindful parenting prior to and during an integrated family-focused treatment may impact the degree of change in psychopathology that parents experience over time. Therefore, future research could explore whether greater and earlier treatment gains could be achieved by modifying the temporal ordering of therapeutic techniques to focus on key mechanistic pathways. For example, based on findings of the current study, parents with high levels of judgment prior to beginning treatment may require specific therapeutic support initially to increase non-judgmental acceptance of their parental functioning in order to reduce distress and other mindful parenting domains as treatment progresses.

The current study was one of few existing attempts to investigate the therapeutic process of change for families affected by parental substance misuse during their

engagement in an evidence-based program that integrates mindfulness components. The findings support existing evidence regarding the importance of reducing parental pathology as a precursor to more mindful parenting, and provide new evidence regarding the way in which variation in mindful parenting dimensions influences the therapeutic process of change.

Supplementary Information The online version contains supplementary material available at https://doi.org/10.1007/s12671-022-01982-9.

Author Contribution EE conceptualised the study, conducted data analyses and wrote the manuscript. MJG collaborated on data analyses and the writing of the results section, as well as reviewing manuscript drafts. PH collaborated on the conceptualisation of the study, prepared technical figures and reviewed manuscript drafts. JB collaborated on the conceptualisation of the study and reviewed manuscript drafts. VJH and RC executed the service evaluation underpinning the current study and reviewed manuscript drafts. SD collaborated on the conceptualisation of the study, collaborated on writing the manuscript and reviewed manuscript drafts.

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Data Availability Due to the conditions of ethical approval for this study, the research data cannot be made openly accessible.

Declarations

Ethics Approval This study has been approved by the appropriate ethics committee and has therefore been performed in accordance with the ethical standards laid down in the 1964 Declaration of Helsinki and its later amendments. The study was granted ethical approval from the NSPCC's Research Ethics Committee and Biomedical Research Ethics Committee at the University of Warwick (BREC reference number 189–03-2012).

Informed Consent All participants provided informed consent prior to inclusion in the study.

Conflict of Interest Paul Harnett and Sharon Dawe are the co-developers of the Parents Under Pressure (PuP) programme. Findings from this study contribute to the evidence base for the PuP program. The program is owned and disseminated by Griffith University. Proceeds from dissemination are distributed in accordance with Griffith University policy. The remaining authors have no conflicts of interest to disclose.

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