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Feasibility of a brief online mindfulness intervention for parents of children with developmental disabilities

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ABSTRACT

Parents of children with developmental disabilities often experience increased levels of distress but have difficulty accessing face-to-face mental health care due to parenting demands. A brief, online mindfulness intervention was designed to improve accessibility for these families. Ten mothers completed a 2-week intervention in addition to pre-post measures of mood and mindfulness. Six participants provided 3-month follow-up data. Immediate reductions in distress and improvements in mindfulness were reported, with gains maintained over time. Despite difficulties with recruitment, satisfaction ratings and user-end data suggested good engagement. Online mindfulness training may help to alleviate distress as well as enhance wellbeing for parents of children with a developmental disability. These promising findings require confirmation with an adequately powered randomised controlled trial.

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KEYWORDS
Mindfulness; parents; developmental disability; feasibility; online

Parents of children with a developmental disability have consistently reported high levels of psychological distress (Hastings, 2002). This distress is, in part, due to the ongoing and complex challenges that these parents face in managing and advocating for their child's specialised care needs (e.g., toileting, night-time settling, increased behavioural problems; Baker et al., 2005; Dumas et al., 1991; Hastings, 2002; Hayes & Watson, 2013; Plant & Sanders, 2007). These families may also experience societal stigma and prejudice—exacerbating the stress and anxiety already experienced (Ali et al., 2012). Moreover, one parent will typically assume a full-time caregiving role, leading to financial stress due to decreased family income and opportunity cost (Baker et al., 2005; Plant & Sanders, 2007). Over time, this distress can negatively influence parenting practices and, ultimately, the family system. It is, therefore, important for these parents to have the opportunity to develop skills to manage their distress and improve their wellbeing (Cuskelly, 2006; Neece, 2013; Woodman et al., 2015).

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Psychological treatments for parents of children with a developmental disability have traditionally focussed on improving parental adjustment by teaching new parenting practices and skills (e.g., Triple P-Positive Parenting Program; Plant & Sanders, 2007; Sanders et al., 2014). Cognitive interventions to help these parents identify, evaluate, and modify unhelpful or dysfunctional thinking styles have also been trialed, although the evidence base for these interventions remains preliminary (Beck, 2011; Hastings & Beck, 2004). Mindfulness offers a complimentary therapy to help these families cope (Osborn et al., 2020). Recent trials indicate that the mindfulness practice for parents in distress may even have reciprocal benefits to child behaviour concerns, at least over the short to medium term (Behbahani et al., 2018; Cachia et al., 2016; Dykens et al., 2014; Neece, 2013; Osborn et al., 2020; Rayan & Ahmed, 2018).

The origins of mindfulness lie in Buddhist meditation practices. Here, the focus is on regulating and sustaining attention to one's thoughts and feelings as they arise moment-by-moment (Bishop et al., 2004; Black, 2011). Another aspect of mindfulness involves non-judgemental acceptance of this moment-to-moment experience (Bishop et al., 2004). Mindful awareness is developed through formal meditation practice, which involves a daily time commitment (e.g., sitting meditation; Bishop et al., 2004), as well as informal practice, by maintaining focus and being aware of the 'present' during everyday tasks (e.g., mindful eating; Baer, 2003; Kabat-Zinn, 2003).

Mindfulness can help to promote psychological health by reducing maladaptive tendencies to avoid, suppress, or ruminate about distressing thoughts and emotions (Baer, 2003). Indeed, structured mindfulness-based treatments with established research protocols, such as Mindfulness-based Stress Reduction (MBSR), have been effective in treating a wide range of mood and anxiety disorders (Rodrigues et al., 2017), with broader benefits to quality of life and stress outcomes across clinical and non-clinical populations (Grossman et al., 2004). These effects are superior not only to waitlisted or treatment as usual controls (Fjorback et al., 2011) but also traditional Cognitive Behaviour Therapy (e.g., for social anxiety disorder; Abbasi et al., 2018).

It follows that mindfulness may help parents of children with a developmental disability to manage their own distress by helping them self-regulate emotionally reactive behaviours (Marchand, 2014; Chiesa & Serretti, 2010). There are, however, important caveats to this literature. In particular, parents have found the substantial time commitment required by standard mindfulness protocols quite challenging to complete. For example, traditional MBSR involves weekly 2.5 h group meetings over 8-weeks followed by a full-day retreat (Kabat-Zinn, 2003). Daily 45-min body scan meditation and hatha yoga practice are also part of the MBSR protocol, to facilitate the integration of mindfulness principles into daily life (e.g., Chan & Neece, 2018; Parswani et al., 2013; Praissman, 2008; Shapiro et al., 2005). Alongside the costs associated with face-to-face MBSR, our own research suggests that parents may have difficulty completing such a high-intensity program due to practical barriers (e.g., time constraints; Osborn et al., 2019, 2020).

Given the reported benefits of regular mindfulness practice, coupled with difficulties in treatment engagement, adaptations to standard mindfulness protocols have been trialed for parents of children with a developmental disability. Family-inclusive approaches have incorporated childcare within a mindfulness program to better support parent's needs (e.g., Dykens et al., 2014; Neece, 2013). Low-intensity

approaches have also been piloted in the general population, with suggestion that brief daily meditation practice (e.g., up to 13 minutes daily) may be easier for parents to commit to Basso et al. (2019). Moreover, there is evidence that larger doses of mindfulness do not necessarily lead to proportionate decreases in mood symptoms (Strohmaier, 2020). Treatment accessibility could also be improved through online delivery, available via smartphone or desktop computer (see Jayawardene et al., 2017; Spijkerman et al., 2016). Online interventions have the added benefit of cost-effectiveness for both the service provider and recipient (Osborn et al., 2019).

Brief Internet-based mindfulness programs have shown particular promise. More specifically, Cavanagh et al. (2013) developed and evaluated a self-guided online mindfulness intervention, titled *Learning Mindfulness Online* targeted to a student population. In addition to practising a daily 10-min body scan meditation for two weeks, students were given access to a website with general mindfulness information. Brief therapist contact was provided via emailed tips on the practise of mindfulness. The mindfulness group identified significant reductions in perceived stress, anxiety, and depressive symptoms, alongside an improved ability to incorporate mindful practice into their day-to-day life compared to wait-listed peers. More recently, Shaffer et al., (2020) piloted an introductory mindfulness training program, involving 6 weekly online classes on an interactive web platform, for parents of children with a range of disabilities (e.g., Attention Deficit Hyperactivity Disorder, Anxiety Disorder). Parents identified improvements in their ability to handle challenging situations and be more mindful of their thoughts. It follows that these findings may also apply to parents of children with a developmental disability.

The current study extends the work of Cavanagh et al. (2013) by examining the application of *Learning Mindfulness Online* to a group of parents of children with a developmental disability. The purpose of this study was to determine whether this self-guided online mindfulness intervention was feasible, and potentially beneficial, to general wellbeing for parents who endorsed high levels of stress. Our research questions were:

1. Do parents find a self-guided online mindfulness intervention feasible?
2. Do parents experience improvements in mindfulness skills (i.e., improvements in mindful awareness and reductions in reactivity and judging of experiences) and mental health (i.e., reduced depression, anxiety, distress) with such an intervention?

Method

Study design and pre-registration

A single group, repeated measures design was used. This required a post-hoc deviation to the trial protocol (ACTRN12618001654246p, Australian New Zealand Clinical Trials Registry), with low recruitment numbers and resource limitations making the initially planned randomised controlled trial unfeasible. Given the early stage of this research, an uncontrolled design was deemed appropriate. Importantly, this design

allowed us to test the real-world effectiveness of a novel adaptation of mindfulness with a smaller sample and identify future research directions for a larger scale trial (Bowen et al., 2009).

Eligibility criteria and participants

Inclusion criteria required that participants be a parent (aged 18+ years) of a child (of any age) with a developmental disability. Participants also had to self-report symptoms of current stress (scores >7 Depression Anxiety and Stress Scales—Stress subscale; Lovibond & Lovibond, 1995). Those who reported clinically significant levels of depressive symptoms (score >9 Patient Health Questionnaire 9; Kroenke & Spitzer, 2002), or suicidality (scores >2 on question 10 of PHQ 9) were excluded and provided the contact details of relevant counselling and support services in the community.

Procedure

Following ethics approval from the University of Technology Sydney Human Research Ethics Committee (approval no. ETH-18-2523), 344 community-based disability services and schools around Australia, identified via Department of Education websites and Google searches, were contacted. Of these, 23 indicated a willingness to assist with recruitment. Study flyers were posted via e-newsletters, email lists and social media platforms, with interested participants directed to contact the first author for further information. Participants who confirmed interest were then emailed a consent form and screening questions (DASS-21 stress subscale, PHQ-9) via REDCAP, a secure web-based software platform designed to support data capture for research studies (Harris et al., 2009; Harris et al., 2019). Eligible participants (i.e., DASS-21 stress >7, PHQ-9 < 9) were subsequently emailed a hyperlink to the baseline survey along with a personalised number to access the *Learning Mindfulness Online* website. The baseline survey included demographic questions and psychological measures, as described below. The same measures were emailed 2-weeks after the first login to the *Learning Mindfulness Online* website (post), as well as at 3 (follow-up 1) and 12 months (follow-up 2) thereafter.

Materials

Depression Anxiety and Stress Scales 21 (DASS-21)

The 21-item Depression Anxiety and Stress Scales was used to evaluate general distress and to discriminate between depression, anxiety and stress symptoms (DASS-21; Lovibond & Lovibond, 1995). Higher scores on the DASS-21 reflect greater symptom severity. The reliability of the subscales has previously been determined (Cronbach's alpha = .73–.81; Lovibond & Lovibond, 1995).

Patient Health Questionnaire 9 (PHQ-9)

The 9-item PHQ was used as a depression severity measure. Higher scores indicate worsening symptoms. This scale has sound reliability and validity (Kroenke et al., 2001) and good internal consistency (Cronbach's alpha = .83; Cameron et al., 2008).

Parenting Stress Index 4 Short Form (PSI-4 SF)

The 36-item PSI-4 SF was used to determine degree of Parenting Stress, including perceptions of Parental Distress (i.e., parental competence, partner support, life impact of having a child), Parent-Child Dysfunctional Interaction (i.e., parent experience of the parent child relationship), and Difficult Child Behaviour. Higher scores on the PSI-4 SF are indicative of heightened stress levels. The Cronbach's alpha for the total PSI-4 SF is excellent (alpha = .95; Abidin & Abidin, 1990).

Five Facet Mindfulness Questionnaire (FFMQ)

The 39-item FFMQ was used as a measure of mindfulness. In addition to providing a total score, there are five "sub-facets": Observing (noticing internal and external experiences), Describing (labeling of internal experiences), Acting with Awareness (mindful attention of activity moment to moment), Non-judging of Inner Experience (a non-evaluative stance towards thoughts and feelings) and non-reactivity to inner experience (letting thoughts and feelings come and go). Higher scores indicate greater degrees of mindfulness. Subscale alpha coefficients range from .75–.91, reflecting good internal consistency (Baer et al., 2006, 2008). The FFMQ is frequently used in mindfulness research, including by Cavanagh et al. (2013).

Feasibility

Feasibility was evaluated by examining recruitment and drop-out rates in addition to user-end data and self-ratings (Bowen et al., 2009; Tickle-Degnen, 2013). Specifically, intervention adherence (i.e., number of times each participant accessed a meditation, length of time each meditation was listened to) was examined in order to assess user demand for the online intervention (Bowen et al., 2009). User satisfaction was also evaluated with a single item, the Net Promoter Score (NPS)—widely used as a "gold standard" indicator of user experience (Reichheld, 2004). For this study, participants were asked to rate on a scale ranging from 0 to 10: "*How likely is it that you would recommend our mindfulness program to a friend or colleague*". Scores lower than 6 are considered "detractors" (i.e., those unhappy with the intervention), 7–8 are "passives" (i.e., those satisfied but unenthusiastic and unlikely to recommend the intervention), and 9–10 are "promoters" (i.e., enthusiastic about the intervention and likely to recommend it to others). The total NPS score reflects all respondents and is expressed as an integer ranging from −100 to +100, calculated by subtracting the percentage of detractors from the percentage of promoters (Reichheld, 2004). A negative score reflects more detractors than promoters, whereas a positive score reflects the opposite (i.e., more promoters).

Mindfulness intervention

Learning Mindfulness Online is a 2-week online intervention originally developed by Cavanagh et al. (2013). The mindfulness program included access to a purposely designed web-page. The opening page provided general information on mindfulness and its benefits, practical strategies to practice mindfulness (e.g., mindful walking), emotions and sensations that may occur when practising mindfulness or meditation, and advice regarding these experiences (e.g., noticing one's mind wandering while meditating). Alongside the opening page were three separate "tabs" (one devoted to

each week of the intervention), in addition to a "frequently asked questions" section (e.g., questions related to experiencing restlessness while meditating, noticing judgemental thoughts about ones' practice, etc). Each week of the intervention included brief instructions on how to incorporate mindfulness principles into daily life: Week 1 focused on how to bring mindful awareness to routine activities (e.g., brushing teeth, having a shower), Week 2 focused on how to bring mindfulness principles to walking. The website also provided two versions of a daily 10-min-guided body scan (meditation exercise), with a male or a female voice (Cavanagh et al., 2013). Participants accessed the meditation by entering their unique study identification number. The website content (i.e., information on mindfulness, meditation script) was provided by Cavanagh et al. (2013). In our study, the mindfulness meditation was re-recorded using Australian accented speakers to suit our specific research sample.

In addition to this online written and audio material, participants received standardised email contact from the first author, a registered psychologist, every three days (i.e., 4 emails in total over 2-weeks). The emails provided mindfulness tips consistent with information in the "frequently asked questions" section of the website, including how to normalise busy thoughts when meditating and how to generalise mindfulness principles to stressful life events.

Statistical analyses

Both short-term (i.e., pre- to immediately post-intervention) and longer-term (i.e., post-3-month follow-up) change scores were examined for each repeated measure (DASS-21, PHQ-9, PSI-4 SF, FFMQ) using paired samples *t*-tests. A low response rate ($n = 3$) precluded meaningful analysis of the results at 12-month follow-up. Significance (p) value was set at ≤.05, two tailed. No adjustment for multiple comparisons was made given the intention of this early-stage exploratory trial was to maximise identification of the potential benefits of our online intervention (Li et al., 2017). Due to the small sample size, *t*-tests were validated by bootstrapping, with no changes to the p values noted using this method.

The magnitude of pre-post change was additionally examined by calculating Hedges' g effect size (with 95% confidence intervals), which provides an unbiased population estimate for small N samples (Hedges, 1982). Effect sizes were standardised so that positive values reflected improvement with the online intervention (i.e., reduced depression and stress, increased coping and mindfulness). Cohen's (1992) criteria were applied to interpret g, with .2, .5 and ≥.8 representing small, medium and large to very large effects, respectively.

Results

Demographic data

Of 58 parents who initially responded to online advertising, 12 completed screening measures and gave consent to participate. Two participants subsequently withdrew and were not contactable, leaving a final sample of 10. All were mothers and primary carers of children with a developmental disability (see Table 1).

Table 1. Sample characteristics at baseline

	N	*M (SD)*	%
Parent age	10	46.6 (7.86)	100
Parent gender			
Female	10		100
Male	0		0
Marital status			
Married	6		60
De Facto	2		20
Single	2		20
Employment status			
Part-time employment	6		60
Full-time carer/parent	3		30
Full-time employment (35 hours +)	1		10
Income ($AUD)			
$90,0010–$180,000	4		40
$37,001–$90,000	1		10
Up to 37,000	4		40
Child age		10.13 (6.01)	
Child gender			
Male	5		50
Female	5		50
Developmental disability			
Autism spectrum disorder	7		70
Fragile X syndrome	1		10
18p depletion syndrome	1		10
Attention defecit hyperactivity disorder	1		10

Most were also married or in a de facto relationship (80%) and in paid employment (70%). The mean child age was 10.13, the sample had equal numbers of male and female children, and autism spectrum disorder comprised the primary diagnosis among their children (70%). Details relating to parent age, gender, marital status, income, as well as child age, gender, and diagnosis were all self-reported.

Preliminary outcomes associated with online mindfulness

As seen in Table 2, immediate and positive changes were reported across all psychological measures. This included a reduction in distress and related symptoms of depression, anxiety and stress (DASS-21, PHQ-9). Perceptions of parental stress also improved at the 2-week assessment, particularly the amount of stress caused by the parent-child relationship (PSI-4 SF Difficult Child, Parent Child Dysfunctional Interaction subscales). These findings were associated with large to very large intervention effects. In addition, parents reported positive and large to very large impacts on most facets of the FFMQ (Describing mindfulness, Non-judgemental inner experience, Non-reactivity, p >.05). Three-month follow-up data were provided by six participants. Although changes in mood (DASS-21, PHQ), parenting stress and mindfulness over time were not statistically significant, very large effects were noted, suggesting the potential for benefits to continue after the online intervention had ceased (see Table 3 and Figures 1 to 4).

Table 2. Pre-post group differences on psychological measures ($n = 10$)

	Baseline		Post-treatment		Statistical analyses				
								95% CI	
Measure	*M*	*SD*	*M*	*SD*	*t*	*p*	*g*	L	U
DASS-21 total	27.2	10	14	10.2	8.95	<.001**	−2.53	−4.07	−1.33
Depression	8	5.7	4.2	4.4	4.84	.001**	−1.53	−2.34	−.56
Anxiety	5.8	3.7	2.6	3.6	2.82	.020*	−3.74	−1.56	−.13
Stress	13.3	2.8	7.2	2.9	7.29	<.001**	−2.76	−3.36	−1.03
PSI total	120	18.4	106.7	19.6	3.91	.004**	−1.19	−1.97	−.37
Parenting distress	42.2	5.1	37.5	8.3	2.10	.065	−.64	−1.30	.38
Parent–child dysfunctional interaction	36.6	7.3	31.7	6.1	5.44	<.001**	−1.65	−2.69	−.68
Difficult child	41.2	8.4	37.5	7.3	2.88	.018*	−.87	−1.57	−.14
FFMQ total	106.3	17.0	119.1	17.6	−2.96	.016*	.90	.16	1.60
Observing	21	3.0	21.2	2.4	0.26	.798	.80	−.52	.67
Describing	24	3.9	26.9	4.8	−2.69	.025*	.81	.10	1.50
Acting with awareness	21.3	7.3	23	5.6	−1.46	.178	.44	−.20	1.06
Nonjudging	22.1	5.4	28.2	7.4	−3.13	.012*	.95	.20	1.66
Nonreactivity	15.1	3.8	18.2	3.6	−3.65	.005**	1.10	.31	1.87
PHQ-9	13.4	4.22	7.9	3.5	5.68	<.001**	−1.72	−2.68	.72

*$p < .05$.
**$p < .01$.
M: Mean; SD: standard deviation; DASS-21: Depression Anxiety and Stress Scales-21 item; PSI: Parenting Stress Index 4 - Short Form; FFMQ: Five Facet Mindfulness Questionnaire; PHQ-9: Patient Health Questionnaire; g: Hedges'g effect size; CI: 95% confidence interval for *g* (with lower and upper limits).

Table 3. Group differences between post-treatment and follow-up on repeated measures ($n = 6$).

	Post-treatment		Follow-up		Statistical analyses				
								95% CI	
Measure	*M*	*SD*	*M*	*SD*	*t*	*p*	*g*	*L*	*U*
DASS 21 Total	24.83	8.50	10.67	5.43	.53	.620	−.20	−.94	.56
Depression	6.67	4.85	2.83	2.71	1.09	.328	−.41	−1.20	.39
Anxiety	5.50	2.89	2.33	1.50	−1.09	.328	−.41	−1.20	.39
Stress	12.50	2.74	5.50	2.17	.96	.383	−.36	−1.11	.43
PSI total	112.50	14.68	97.5	29.01	.37	.728	−.14	−.88	.61
Parenting distress	41	4.20	33.83	10.36	.63	.554	−.24	−.98	.53
Parent–child dysfunctional interaction	33.83	6.24	27	9.94	1.44	2.10	−.54	−1.33	.29
Difficult child	37.67	7.12	36.67	9.54	−.48	.651	−.18	−.92	.57
FFMQ total	116	14.45	141.67	25.08	−1.32	.244	.50	−.32	1.27
Observing	22.67	1.03	24.83	3.50	−1.47	.200	.56	−.28	1.34
Describing	24.67	3.50	29.67	6.15	−1.01	.358	.38	−.41	1.14
Acting with awareness	25.17	5.12	28.50	4.37	−1.18	.291	.45	−.36	1.21
Nonjudging	24.50	4.51	33.17	2.99	−.75	.489	.28	−.49	1.11
Nonreactivity	16.50	4.23	25.50	6.28	−2.36	.064	.89	−.05	1.78
PHQ 9	13	4.90	3.83	1.47	1.85	.124	−.70	−1.80	1.52

* $p<.05$.
** $p<.01$.
M: Mean; *SD*: Standard Deviation; DASS-21: Depression Anxiety and Stress Scales-21 item; PSI: Parenting Stress Index 4—Short Form; FFMQ: Five Facet Mindfulness Questionnaire; PHQ 9: Patient Health Questionnaire; *g* = Hedges'*g* effect size; CI: 95% confidence interval for *g* (with lower and upper limits).

Feasibility of online mindfulness

The *Learning Mindfulness Online* intervention was associated with a modest 17% ($n = 2/12$) drop-out rate. Reasons for withdrawal could not be determined as both participants were unable to be contacted. This rate increased over time (i.e., 12 months post, 75%, $n = 9/12$).

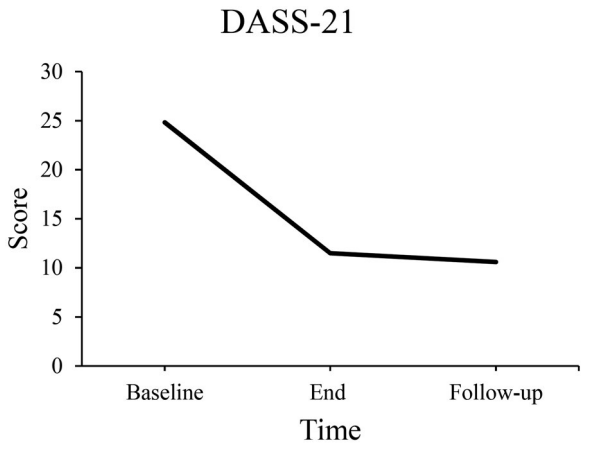

Figure 1. Note. DASS-21: Depression Anxiety and Stress Scales-21. Total score range: 0–63. Trend scores at baseline, post-intervention and 3-month follow-up. Higher scores reflect more severe symptoms.

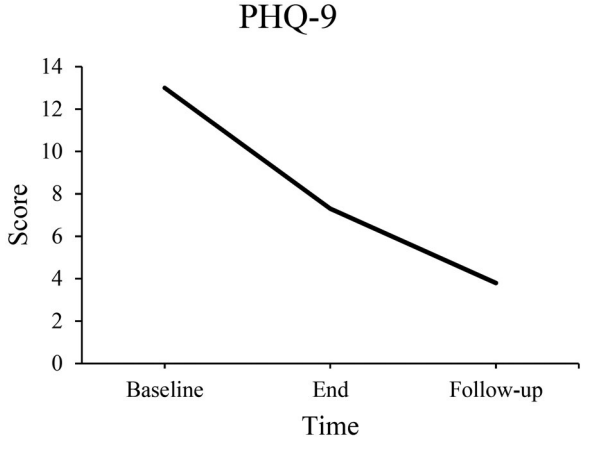

Figure 2. Note. PHQ-9: Patient Health Questionnaire Questionnaire 9. Total score range: 0–27. Trend showing PHQ- 9 scores at baseline, post-intervention and 3-month follow-up. Higher scores reflect more severe symptoms.

Data recordings indicated that the online meditations were regularly accessed, with each participant listening to 35 min (SD = 36.47) of meditation, on average, at least four times (SD = 3.61) over the 2-week period

The total NPS score of 30 indicated that participants were, generally, willing to use the online intervention. Responses did, however, range from passive scorers (score 7–8, $n = 6$)—or those with neutral feelings about the website, to promoters (score 9–10, $n = 3$)—or those likely to recommend the website to others.

Discussion

An accumulating body of evidence suggests that mindfulness may be beneficial for reducing distress in parents of children with a developmental disability; a group that is at risk for experiencing chronic mood symptoms (Osborn et al., 2019).

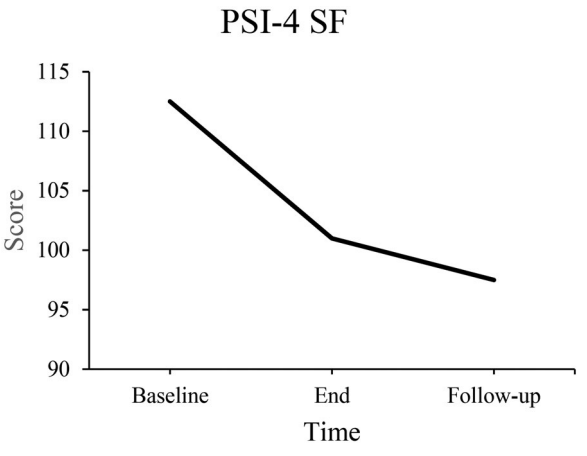

Figure 3. Note. PSI-4 SF: Parenting Stress Index 4 Short Form. Total score range= 36–180. Trend showing PSI-4 SF scores at baseline, post-intervention and 3-month follow-up. Higher scores reflect more severe symptoms.

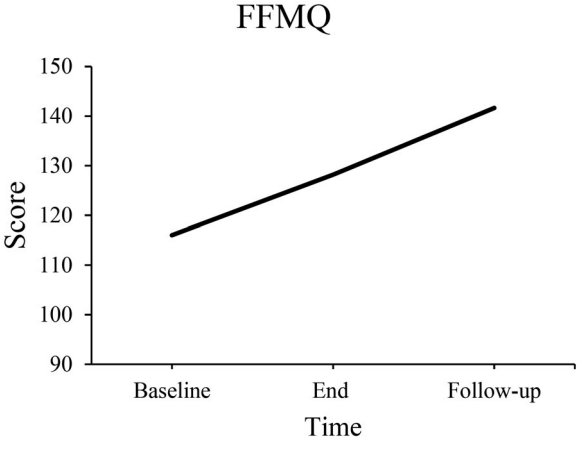

Figure 4. Note. FFMQ: Five Facet Mindfulness Questionnaire. Total score range= 38–190. Trend showing FFMQ scores at baseline, post-intervention and 3-month follow-up. Higher scores reflect greater levels of mindfulness.

However, mindfulness interventions that have been trialed in this population are time intensive. To improve accessibility of treatment, we piloted a brief, self-guided mindfulness intervention that was entirely online, with no face-to-face contact required.

In keeping with Cavanagh et al.'s (2013) student trial, we identified general improvements across tested psychological outcomes for parents who completed *Learning Mindfulness Online*. There was also a trend towards maintaining these gains at 3-month follow-up. The large and significant improvements in mood noted in the present study are comparable to those associated with more time-intensive face-to-face mindfulness interventions for this parent group (e.g., Dykens et al., 2014 [*d* range: .49 to .98]; Neece, 2013 [*d* range: .7 to .9]).

We also observed improvements in parental perceptions of stressors, particularly the quality of the parent-child interaction (i.e., parents reporting less negative feeling about their child's behaviours), in our trial. This finding, alongside evidence of the development mindfulness skills (e.g., non-judging, non-reactivity), is very promising. Given the bidirectional relationship between parental stress and child behaviour problems (Hastings, 2002; Plant & Sanders, 2007), an intervention that reduces parenting stress and leads to positive parent perceptions and behaviours could potentially benefit the health of the broader family system (Neece et al., 2012).

It is important to note that the non-significant result associated with some PSI-4 SF subscales may reflect the scale content. Whilst items capture the impact of parenting tasks (e.g., amount of time given towards parenting tasks), parenting tasks can still be described or experienced as challenging, even if parents are more accepting of challenges. Moreover, the mixed findings on the FFMQ subscales are perhaps not surprising given the brevity of the online intervention we examined. It is possible that longer-term practice of mindfulness principles would help to consolidate mindfulness skill, leading to further widespread improvements (Lykins & Baer, 2009).

Notably, the majority of our sample found that 10 min of meditation per day was manageable. They also listened to the meditations and deemed the intervention acceptable. This finding is in keeping with research that has found briefer periods of meditation to be acceptable (Basso et al., 2019). That said, a substantial number of parents did report indifference to the online intervention (the "passives"), highlighting a need to further explore how to connect and engage with this cohort.

Methodological limitations

This research is not without limitations. In addition to difficulties with recruitment, loss to follow-up was substantial: 40% at 3-month follow-up and 70% by the 12-month follow up. The 12-month follow-up did, however, coincide with the onset of the COVID-19 pandemic in Australia. A further limitation relates to our reliance on self-reported data, which included information on the child's diagnosis (i.e., autism) but not their level of functioning. Research has demonstrated that both the type and severity of a child's disability (i.e., degree of cognitive and adaptive behaviour functioning in autism) are a major influence on the level of distress experienced by parents (Efstratopoulou et al., 2022). Similarly, changes in child behaviour and wellbeing were not evaluated, thereby precluding an examination of potential flow-on effects resulting from improvements in parental mental health and mindfulness skills (Plant & Sanders, 2007).

Implications for future practice and research

Notwithstanding these limitations, our results offer promising early evidence that adaptions to traditional mindfulness programs, including a time-limited, low-intensity intervention with online delivery, are possible. *Learning Mindfulness Online* may provide some relief to parents who otherwise may not present to therapy or are not able to commit to a lengthy protocol (Cavanagh et al., 2013). *Learning Mindfulness*

Online also provides a low-cost psychological tool for families experiencing chronic emotional and financial stressors (Baker et al., 2005; Plant & Sanders, 2007). There is even potential for *Learning Mindfulness Online* to be used as an adjunct to child-focused behavioural treatments in the hopes of improving treatment potency, by helping parents manage their distress and, in turn, their ability to implement recommended parenting strategies (Plant & Sanders, 2007; Whittingham et al., 2014). Future research could extend our findings in a larger-scale randomised control trial, or, given the high dropout rates anticipated when conducting intervention research with this group (e.g., Osborn et al., 2020), a more stringent quasi-experimental design (e.g., case series or multiple baseline design).

The dropout rates observed in this trial do, however, suggest that these parents still find difficulties in accessing psychological support, despite adapting treatment. In addition to addressing practical barriers (e.g., competing time commitments, travel), offering parents an opportunity to provide feedback about *Learning Mindfulness Online*, alongside real-time contact with a trained therapist (as required) may be needed to enhance their motivation to engage. Initial engagement strategies might include brief discussions about a program's potential benefits and relevance as well as any misconceptions about mental health treatment (Ingoldsby, 2010). The longer-term impact of *Learning Mindfulness Online* might also be maximised by maintaining interprofessional collaboration and communication throughout treatment. Depending on the policy climate, teams of professionals (e.g., disability service providers, health practitioners, general practitioners) working together with children and their families can help to ensure that a families' changing expectations and needs for mental health treatment are addressed. There remains a need to empirically test the effectiveness of different parental engagement strategies within psychological interventions (Gonzalez et al., 2018; Ingoldsby, 2010). Theoretical frameworks of family health development can be used to guide this research (e.g., Feinberg et al., 2022) and assist local practise settings in identifying barriers to care and integrating engagement approaches into their services.

Conclusion

This study presented the initial results of a 14-day online mindfulness program for parents of children diagnosed with a developmental disability. Parents who completed the self-help mindfulness program reported improvements in their mental health and general wellbeing. A brief mindfulness-based intervention appears to be feasible and acceptable to these parents. Further research with a larger sample is needed to confirm these findings.

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Data availability statement

The dataset analysed in this article is not publicly available. Requests to access the dataset should be directed to the corresponding author.

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