

ORIGINAL ARTICLE

An online intervention for 18–25-year-old youth whose parents have a mental illness and/or substance use disorder: A pilot randomized controlled trial

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Abstract

Aim: Young adults aged 18–25 whose parents have a mental illness or substance use problem can be vulnerable to multiple difficulties in adulthood. There are, however, few available interventions designed for this group. This study evaluated a 6 week online intervention (mi. spot; mental illness: supported, preventative, online, targeted) specifically designed for this population. The intervention aims to improve mental health and wellbeing.

Methods: Forty-one young people, recruited from the community, participated in a two-arm parallel randomized controlled trial where participants were randomized to mi. spot ($n = 22$) or a wait list control group ($n = 19$). They were assessed at baseline, immediately post intervention and at six weeks post intervention with measures covering depression, anxiety and stress, wellbeing, coping, general self-efficacy, help seeking and social connectedness.

Results: Intervention participants reported significantly improved psychological wellbeing, coping, general self-efficacy, and a reduction in anxiety. Participants in the control group reported significant improvements in emotional wellbeing and help seeking and a reduction in self-blame.

Conclusion: This pilot controlled trial supported previous findings and shows preliminary evidence that mi.spot is effective for young adults who grew up with parents who have a mental illness or substance use problem. A large-scale, randomized controlled trial with a diverse group of young people is needed.

KEYWORDS

early intervention, mental health, parental mental illness, young adults

1 | INTRODUCTION

Young adulthood, between the ages of 18 and 25 years, is an established at-risk transitional period with changes in social networks, education,

employment and living situations (Adams et al., 2014). Having a parent with a mental illness and/or substance use issue is an additional risk factor. Previous research has shown that children growing up in these families are at risk for their own impairment and disorder (Reupert,

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et al., 2015). Children's difficulties can continue into adulthood with young people from these families reporting higher incidences of substance abuse, mental health difficulties and lower self-esteem than their peers (Weissman et al., 2016; Wong et al., 2018). The 18–25-year period is, however, an opportune time for prevention and early intervention as these young adults assume increased responsibility for their wellbeing.

Despite the needs of this group, there is a paucity of support for young people aged 18–25 who grow up in these families. Most interventions, primarily consisting of peer support programs, target children aged 12–16 years (Reupert et al., 2012). A Delphi study among 16–25-year olds from these families found that online approaches are the preferred intervention medium, given their anonymous and flexible nature (Matar et al., 2018). Young people want to connect with other young people, who grew up in similar families, and opportunities to learn more about their parents' illness (Matar et al., 2018). Other intervention targets for this age group include learning adaptive coping strategies (Marston et al., 2016) and help seeking behaviours (Murphy et al., 2015). Some youth assume caring responsibilities for their parent and siblings, and learning how to manage these demands is another identified need (Blake-Holmes, 2019). Reupert et al., (2015) found that young people often blame themselves for their parents' illness and hence, self-attribution is another intervention target. There are some online interventions specifically designed for these youth in the 18–25 age group, with varying levels of effectiveness; though none for English speaking participants and all are in the early stages of development (Elgan, et al., 2016; Woolderink et al., 2015).

This study aimed to evaluate mi.spot (mental illness: supported, preventative, online, targeted), an online intervention that targets this population. A previous evaluation of the intervention found it be acceptable and safe, with a single group design demonstrating significant reductions in depression and stress from pre-intervention to six-week postintervention (Reupert et al., 2020). The current study builds on the previous evaluation by employing a randomized controlled trial. We hypothesized that the intervention would lead to significant improvements in mental health and wellbeing (primary outcomes). We also hypothesized that the intervention would lead to significant improvements in adaptive coping, general self-efficacy, social connectedness and help seeking (secondary outcomes).

2 | DESIGN

A two-arm parallel randomized controlled trial was employed in 2019, consisting of baseline measurements (pre) and two follow-up periods (post and six-week follow up). A protocol for the trial was published (Maybery et al., 2020) and registered by the Australian and New Zealand Clinical Trials Register on May 5, 2019 (registration number: ACTRN12619000335190), guided by the Consolidated Standards of Reporting Trials of Electronic and Mobile Health Applications and onLine TeleHealth checklist. The study was approved by the Monash University Human Research Ethics Committee (number 2019–18660-38 129).

3 | PROCEDURE

Participants were recruited into the study through a Facebook advertisement that generated 153 initial enquiries. Following removal of incomplete responses, duplicate enquiries, and those outside of the 18–25 age range, 65 participants remained. They were contacted by telephone to confirm eligibility, with 48 participants meeting the inclusion criteria. Eligible participants completed the pre-questionnaire package, which provided detailed information about the intervention and baseline measures. Two weeks prior to intervention commencement, facilitators contacted participants via telephone to confirm emergency contact details, discuss terms of use for the intervention and to conduct a brief mental health assessment. With researchers blind to the procedure and following completion of pre-questionnaires, 45 participants were randomly assigned to the two conditions using a random number generator (in SPSS); 24 were allocated to the intervention and 21 to the control condition. Intervention participants were emailed a link to the password protected intervention website. Control group participants were given information about services they can access and offered the intervention after the intervention group completed post-intervention questionnaires.

4 | PARTICIPANTS

Young adults aged between 18 and 25 years (inclusive) with a parent with a mental illness and/or substance use issue were eligible. Exclusion criteria included non-English speaking youth, those without regular internet access and those in crisis or distress. Young people experiencing a current crisis (e.g., homeless) or in distress (e.g., suicidal) were referred to other services. A power calculation (using GPOWER 3.1.9.2, assuming two groups and three repetitions, a small effect size, an alpha of 5% and power of 95%) indicated a minimum $n = 36$ participants with $\text{Crit } F = 2.69$ to be required for the study. While respecting the number of young people who could be accommodated in the online approach, recruitment aimed to achieve larger number of participants in an effort to account for dropout throughout the trial.

Participants provided information about their parents' mental health issue. Forty-five participants completed the pre-evaluation questionnaires, and 41 (two intervention and one control did not continue after pre-evaluation) completed three waves of assessment. Participants were paid (AUD20) after completing the surveys at each time frame. The sample comprised of 41 young adults (92.7% female) with a mean age of 21.83 years, ($SD = 2.18$) from across Australia. Table 1 provides further details regarding participants' demographics.

Of the 41 participants, 13 indicated that their mother had a mental illness and/or substance use issues, two reported their father had a mental illness and/or substance use, and 26 indicated that both parents had a mental illness or substance use issue. Depressive disorders (23%), substance use disorders (21.3%), and anxiety disorders (19.7%) were the most frequent reported mental illnesses for mothers and

TABLE 1 Demographic characteristics of participants in study N (%)

Demographic Characteristics	Intervention (n = 22)	Groups		χ^2 Total (41)
		Control (19)		
Age (years)				.364
18	2 (10.5)	2 (9.1)		4 (9.8)
19	0 (0)	3 (13.6)		3 (7.3)
20	3 (15.8)	2 (9.1)		5 (12.2)
21	3 (15.8)	2 (9.1)		5 (12.2)
22	1 (5.3)	6 (27.3)		7 (17.1)
23	3 (15.8)	3 (13.6)		6 (14.6)
24	4 (21.1)	2 (9.1)		7 (14.6)
25	3 (15.8)	2 (9.1)		5 (12.2)
Sex				.641
Male	1 (5.3)	1 (4.5)		2 (4.9)
Female	18 (94.7)	20 (90.9)		38 (92.7)
Other		1 (4.5)		1 (2.4)
Marital status				.584
Boyfriend/girlfriend	11 (57.9)	9 (40.9)		20 (48.8)
De facto	2 (10.5)	4 (18.2)		6 (14.6)
Married	0 (0)	1 (4.5)		1 (2.4)
Single	6 (31.6)	8 (36.4)		14 (34.1)
Highest level of education				.616
Primary school	0 (0)	1 (4.5)		1 (2.4)
Secondary school	9 (47.4)	13 (59.1)		22 (53.7)
TAFE/Diploma	7 (36.8)	6 (27.3)		13 (31.7)
Undergraduate tertiary	3 (15.8)	2 (9.1)		5 (12.2)
Ethnic group				.772
Australian	15 (78.9)	15 (68.2)		30 (73.2)
Indigenous Australian or Torres Strait Islander	2 (10.5)	2 (9.1)		4 (9.8)
Other	1 (5.3)	2 (9.1)		3 (7.3)
White European	1 (5.3)	3 (13.6)		4 (9.8)
Main language spoken at home				.403
English	19 (100)	20 (90.9)		39 (95.1)
Greek	0 (0)	1 (4.5)		1 (2.2)
Other	0 (0)	1 (4.5)		1 (2.2)
Currently live with parent with mental illness and/or substance use				.430
Yes	5 (26.3)	4 (18.2)		9 (22.0)
No	13 (68.4)	17 (77.3)		30 (73.2)
Other	1 (5.3)	1 (4.5)		2 (4.9)

Note: Chi Square tests indicated that there were no statistically significant differences between the groups on baseline characteristics.

substance use disorders (40.6%), depressive disorders (15.6%) and bipolar disorders (12.5%) were the most frequently reported for fathers (See Table 2).

Thirty young people (73.2%) indicated they had been diagnosed with a mental illness and/or substance use issue, 3 (7.3%) indicated undiagnosed/ self-diagnosis, and 8 (19.5%) indicated none (see Table 2).

Of the 41 participants, 33 (80.5%) were currently receiving treatment for their mental illness and/or substance use problem. Of those receiving treatment, 10 participants (24.4%) were seeing their GP for medication only, 4 (9.8%) were seeing a GP for medication and counselling, 17 (41.5%) were seeing a psychologist/counsellor, 5 (12.2%) were seeing a psychiatrist, one (2.4%) was accessing animal assisted therapy, one received ECT, and one (2.4%) was

TABLE 2 Participants' reports of their own and their parents' mental illnesses including substance use

Self-reported diagnosis	Mother #(%)	Father #(%)	Young person (n = 41) #(%)
Anxiety disorders	12 (19.7)	3 (9.4)	14 (29.2)
Bipolar disorder	7 (11.5)	4 (12.5)	1 (2.1)
Depressive disorders	14 (23.0)	5 (15.6)	15 (31.3)
Personality disorders	4 (6.6)	1 (3.1)	5 (10.4)
Trauma and stressor related disorders	3 (4.9)	3 (9.4)	6 (12.5)
Substance use disorder	13 (21.3)	13 (40.6)	4 (8.3)
Neurodevelopmental disorders (e.g., ADHD, ADD)	1 (1.6)	0 (0)	2 (4.1)
Schizophrenia spectrum disorders	3 (4.9)	0 (0)	0 (0)
Gender dysphoria	0 (0)	0 (0)	1 (2.1)
Do not know/unknown	4 (6.5)	3 (9.4)	0 (0)
Total, N (%)	61 (100)	32 (100)	48 (100)

Note: The total number of disorders is higher due to reporting of comorbidities.

accessing spiritual counselling. Ten participants had never accessed support in relation to their parent's mental illness and/or substance use disorder. Of those that had accessed support, 5 (12.2%) had attended a peer support program, 2 (4.9%) had watched a DVD about their parent's illness, 12 (29.3%) had accessed a mental health website/s, 27 (65.9%) had received individual psychology/counselling sessions at school or elsewhere, 2 (4.9%) indicated they had moved into a helping profession, and one (2.4%) had accessed a Facebook support group for this population.

5 | THE INTERVENTION: MI.SPOT

mi.spot (mental illness, supportive, preventative, online, targeted) is a 6 week, professionally moderated and manualised online intervention, specifically designed for 18–25-year olds whose parents have a mental illness and/or substance use problem. The strengths-based, cognitive behavioural intervention draws on the theory of health information by including passive and active modes of information (Longo et al., 2010). The mi.spot intervention aims to improve participants' wellbeing and reduce anxiety, depression and stress symptoms by increasing mental health literacy, adaptive coping, help seeking, connectedness and self-efficacy and reducing feelings of guilt regarding their parents' illness (self-attribution).

The intervention includes several optional features; weekly, facilitator guided sessions on selected topics (see Table 1) with related videos and audio materials; one to one synchronous chats with a facilitator (initiated by either the participant or the facilitator); online chat rooms for participants to chat; self-monitoring questionnaires for participants to track progress; and mi.thoughts.spot, an asynchronous online private diary for participants to record their feelings and thoughts, with facilitator prompts to reframe and challenge unhelpful thoughts. Participants use a non-identifying nickname in all online interactions (Table 3).

The intervention was delivered at a university psychology clinic servicing the community. After two training days, Masters-level

TABLE 3 mi.Spot six weekly topics

Topic	Description
1. What's mi.spot all about?	An orientation to the site and introduction to each other including the facilitator
2. Learning more about mental health and illness	Exploring what participants know about their parents' illness or substance use issue and what more they want to know. Genetic vulnerabilities are presented with an emphasis on promoting wellbeing
3. Me, my parent and other relationships	Discussion about participants' relationship with their parent and how this relationship might inform other relationships
4. Managing stress	Discussion on current stressors, adaptive coping strategies and emotional regulation
5. Caring—who, me?	Caring responsibilities are discussed, within context of self-care and self-compassion
6. Taking control of my life	A strength-based summary of participants' progress, plus help seeking strategies covering when, who and how they might ask for help

psychology students facilitated the intervention under the supervision of experienced clinicians. Fidelity was monitored by weekly supervision sessions and reviewing the weekly session transcripts.

6 | MEASURES

6.1 | Primary measures

The *Depression, Anxiety and Stress Scale (DASS21)* is a validated self-administered rating scale that measures levels of depression, anxiety

TABLE 4 Variable means and standard deviations (SD) for total, intervention and control groups over time (pre, post, 6 week follow up)

Measure/subscale control (n = 22), intervention (n = 19) ^a	Pre	Post	6 weeks
	Mean (SD)	Mean (SD)	Mean (SD)
Emotional wellbeing	7.36 (3.15)	8.10 (3.11)	8.76 (2.91)
Control	7.27 (3.25)	7.36 (3.11)	8.18 (2.82)
Intervention	8.68 (2.93)	8.95 (2.95)	9.42 (2.95)
Social wellbeing	8.63 (6.26)	9.24 (5.63)	10.24 (5.71)
Control	7.50 (6.21)	8.09 (5.57)	8.64 (6.22)
Intervention	9.95 (6.22)	10.58 (5.55)	12.11 (4.53)
Psychological wellbeing	14.93 (6.81)	15.46 (6.31)	16.39 (6.82)
Control	13.68 (6.90)	14.50 (6.86)	14.14 (7.10)
Intervention	16.37 (6.60)	16.58 (5.60)	19.00 (5.58)
Help seeking	43.98 (9.23)	45.68 (12.09)	48.80 (10.64)
Control	41.00 (8.35)	40.32 (12.69)	44.95 (11.65)
Intervention	47.42 (9.20)	51.89 (7.83)	53.26 (8.00)
Social connectedness	46.36 (15.93)	50.49 (14.43)	52.74 (16.18)
Control	45.14 (14.42)	47.86 (13.90)	49.00 (15.93)
Intervention	47.78 (17.84)	53.50 (14.45)	57.11 (15.79)
Depression	20.49 (11.44)	18.54 (10.16)	16.39 (11.48)
Control	22.45 (12.6)	20.27 (10.35)	19.18 (11.75)
Intervention	18.21 (9.78)	16.53 (9.82)	13.16 (10.55)
Anxiety	18.68 (10.26)	17.32 (10.22)	16.00 (10.84)
Control	19.27 (10.54)	19.55 (11.56)	17.64 (10.36)
Intervention	18.00 (10.18)	14.74 (7.95)	14.11 (7.95)
Stress	24.78 (9.26)	22.29 (8.80)	21.46 (10.60)
Control	25.91 (8.54)	24.36 (9.12)	22.64 (9.70)
Intervention	23.47 (10.10)	19.89 (7.90)	20.11 (11.67)
Active coping	4.41 (1.41)	5.10 (1.76)	5.12 (1.58)
Control	4.27 (1.16)	4.64 (1.53)	4.77 (1.45)
Intervention	4.58 (1.68)	5.63 (1.9)	5.53 (1.68)
Planning	5.15 (1.61)	5.24 (1.74)	5.51 (1.51)
Control	5.32 (1.46)	4.68 (1.56)	5.14 (1.36)
Intervention	5.00 (1.78)	5.89 (1.76)	5.95 (1.58)
Positive reframing	4.54 (1.84)	4.80 (1.69)	5.34 (1.84)
Control	4.55 (1.77)	4.50 (1.68)	4.95 (1.94)
Intervention	4.53 (1.99)	5.16 (1.68)	5.79 (1.65)
Acceptance	5.63 (1.62)	5.49 (1.63)	5.80 (1.57)
Control	5.86 (1.46)	5.55 (1.65)	5.32 (1.67)
Intervention	5.37 (1.8)	5.42 (1.64)	6.37 (1.26)
Humour	5.59 (2.27)	5.29 (2.15)	5.17 (1.92)
Control	6.09 (2.00)	5.82 (2.13)	5.5 (1.57)
Intervention	5.00 (2.47)	4.68 (2.06)	4.79 (2.25)
Religion	3.44 (1.94)	3.73 (1.94)	3.56 (1.95)
Control	3.32 (1.81)	3.40 (1.9)	3.09 (1.44)
Intervention	3.58 (2.12)	4.00 (2.00)	4.11 (2.33)
Emotional support	4.95 (2.04)	5.34 (1.74)	5.51 (1.69)
Control	5.18 (2.13)	4.95 (1.94)	5.09 (1.78)
Intervention	4.95 (2.04)	5.79 (1.4)	6.00 (1.49)

(Continues)

TABLE 4 (Continued)

Measure/subscale/control (n = 22), intervention (n = 19) ^a	Pre	Post	6 weeks
	Mean (SD)	Mean (SD)	Mean (SD)
Instrumental support	4.80 (2.00)	5.39 (1.88)	5.20 (1.68)
Control	4.55 (1.80)	4.86 (1.83)	4.95 (1.68)
Intervention	5.11 (2.23)	6.00 (1.8)	5.47 (1.68)
Substance use	3.44 (1.83)	3.41 (1.75)	3.27 (1.79)
Control	3.68 (1.86)	3.45 (1.87)	3.23 (1.88)
Intervention	3.16 (1.80)	3.37 (1.64)	3.32 (1.75)
Self-blame	5.37 (1.83)	4.80 (1.71)	4.61 (1.88)
Control	5.55 (2.04)	4.95 (1.91)	4.91 (1.90)
Intervention	5.16 (1.57)	4.63 (1.46)	4.26 (1.85)
General self-efficacy	27.26 (5.22)	28.79 (5.27)	29.10 (5.55)
Control	26.67 (5.46)	27.76 (5.82)	27.24 (5.97)
Intervention	27.94 (4.99)	30.00 (4.39)	31.28 (4.20)

^aSocial connectedness and general self-efficacy control n = 21, intervention n = 18.

and stress (Lovibond & Lovibond, 1995). The *Mental Health Continuum short form* (MHC-SF) was used to measure emotional, social and psychological wellbeing (Keyes, 2002).

6.2 | Secondary measures

The *Brief Coping Inventory* evaluates an individual's methods of coping when confronted with stress in their lives (Carver, 1997). The *General Self-Efficacy Scale* was employed to measure self-efficacy (Schwarzer & Jerusalem, 1995). The *General Help Seeking Questionnaire* was employed as a measure of help seeking intentions (Wilson et al., 2005) and the *Social Connectedness Scale* to measure perceptions of social connectedness and belongingness (Lee & Robbins, 1995).

6.3 | Data analysis

Pre, post, and six - week mean scores and analysis of variance statistics were used to identify significant changes in the primary and secondary outcome variables. The study's hypotheses were tested using a 2 × 3 mixed model ANOVA with intervention condition (control vs intervention) serving as the between groups factor and time of assessment (pre, post, six-weeks follow up) serving as the within groups factor. Preliminary tests for distribution (skewness and kurtosis) indicated that there were no substantial deviations from normality for all outcomes. All analyses were carried out using SPSS software version 27.0.

7 | RESULTS

Initially data was examined and cleaned in excel and then input to SPSS for examination of scales and subscale reliability for later use in

ANOVA analyses. Strong internal consistency coefficients were shown for most variables (e.g., 0.91–0.82 for the DASS, 0.82 for general self-efficacy) however, using a 0.60 Cronbach-alpha cut off, the four COPE subscales of self-distraction ($\alpha = 0.37$), denial ($\alpha = 0.46$), behavioural disengagement ($\alpha = 0.42$) and venting ($\alpha = 0.47$) subscales were not used further. The remaining COPE subscales had alphas ranging from 0.64 for planning to 0.90 for use of humour.

The intervention and control group mean (SD) scores are shown at pre, post, and 6-week time frames in Table 4. Table 5 reports the corresponding within-between subject ANOVA statistics for time and groups including interaction effects (pre, post, 6 week follow up). Effect size¹ calculations are also shown with medium to larger effect sizes of interest here. As nine variables showed group by time interactions with medium to large effect sizes—and worthy of further examination - we considered it unwieldy to illustrate SPSS profile plots for each comparison. Instead, within group ANOVAs were run independently for both intervention and control groups to examine within group changes over time. Table 5 also shows the ANOVA statistics and paired comparisons (significance reported at $p < .05$) for each group. It is recognized that a large number of ANOVAs were employed with a potential for Type 1 error, however we contend this is justified due to the exploratory nature of this controlled trial.

Both groups generally showed positive changes on almost all scales and subscales over time. Seven variables (help seeking, social connectedness, positive reframing, active coping, self-blame and general self-efficacy, see Tables 2 and 3) showed significant ($p < .05$) main effect changes over time and three variables (e.g., help seeking, planning and acceptance) had significant interaction effects. Paired comparison differences are also reported for variables with medium to large interaction effect sizes.

Overall, the intervention group reported larger mean score changes than the control group over time showing positive impact on psychological wellbeing and general self-efficacy and reduced anxiety. There were also improvements in help seeking and emotional support and

TABLE 5 General linear model ANOVA statistics for time (pre, post, 6 week follow up) and groups including paired comparisons for intervention and control groups over time

Variable	Time/group	F	Df	Sig.	Partial Eta ²	Paired comparisons
Emotional wellbeing	Time	2.40	2.38	0.10	0.11	
	Interaction	0.09	2.38	0.92	0.01	
	Intervention	0.59	2.17	0.57	0.07	
	Control	2.44	2.20	0.11	0.20	3 > 1
Social wellbeing	Time	3.01	2.38	0.06	0.14	
	Interaction	0.41	2.38	0.67	0.02	
	Intervention	3.09	2.17	0.07	0.27	
	Control	0.82	2.20	0.46	0.08	
Psychological wellbeing	Time	2.88	2.38	0.07	0.13	
	Interaction	2.58	2.38	0.09	0.12	
	Intervention	3.24	2.17	0.06	0.28	3 > 1
	Control	0.43	2.20	0.66	0.04	
Help seeking	Time	7.30	2.38	0.00	0.28	
	Interaction	3.32	2.38	0.05	0.15	
	Intervention	5.39	2.17	0.02	0.39	3 > 1, 2 > 1
	Control	4.57	2.20	0.02	0.31	3 > 1, 3 > 2
Social connectedness	Time	6.93	2.36	0.00	0.28	
	Interaction	1.23	2.36	0.30	0.06	
	Intervention	5.34	2.16	0.02	0.40	3 > 1
	Control	1.99	2.19	0.17	0.17	
Depression	Time	2.33	2.38	0.11	0.11	
	Interaction	0.26	2.38	0.78	0.01	
	Intervention	2.24	2.17	0.14	0.21	
	Control	0.75	2.20	0.49	0.07	
Anxiety	Time	1.78	2.38	0.18	0.09	
	Interaction	0.83	2.38	0.45	0.04	
	Intervention	3.01	2.17	0.08	0.26	3 < 1
	Control	0.82	2.20	0.46	0.08	
Stress	Time	2.39	2.38	0.11	0.11	
	Interaction	0.36	2.38	0.70	0.02	
	Intervention	1.19	2.17	0.33	0.12	
	Control	1.39	2.20	0.27	0.12	
Active coping	Time	3.17	2.38	0.05	0.14	
	Interaction	0.60	2.38	0.55	0.03	
	Intervention	2.08	2.17	0.16	0.20	2 > 1
	Control	1.07	2.20	0.36	0.10	
Planning	Time	1.18	2.38	0.32	0.06	
	Interaction	3.77	2.38	0.03	0.17	
	Intervention	2.72	2.17	0.09	0.24	3 < 1
	Control	1.59	2.20	0.23	0.14	
Positive reframing	Time	4.26	2.38	.02	0.18	
	Interaction	.92	2.38	.41	0.05	
	Intervention	3.57	2.17	.05	0.30	3 < 1
	Control	1.36	2.20	.28	0.12	

(Continues)

TABLE 5 (Continued)

Variable	Time/group	F	Df	Sig.	Partial Eta ²	Paired comparisons
Acceptance	Time	1.52	2.38	0.23	0.07	
	Interaction	6.38	2.38	0.00	0.25	
	Intervention	6.46	2.17	0.01	0.43	3 > 1, 3 > 2
	Control	1.33	2.20	0.29	0.12	
Humour	Time	1.02	2.38	0.37	0.05	
	Interaction	0.39	2.38	0.68	0.02	
	Intervention	0.31	2.17	0.74	0.04	
	Control	1.08	2.20	0.36	0.10	
Religion	Time	1.02	2.38	0.37	0.05	
	Interaction	1.75	2.38	0.19	0.08	
	Intervention	0.80	2.17	0.47	0.09	
	Control	1.65	2.20	0.22	0.14	
Emotional support	Time	1.50	2.38	0.24	0.07	
	Interaction	2.27	2.38	0.12	0.11	
	Intervention	2.25	2.17	0.14	0.21	3 > 1
	Control	0.17	2.20	0.85	0.02	
Instrumental support	Time	1.83	2.38	0.18	0.09	
	Interaction	0.69	2.38	0.51	0.04	
	Intervention	1.93	2.17	0.18	0.19	
	Control	0.89	2.20	0.43	0.08	
Substance Use	Time	0.16	2.38	0.86	0.01	
	Interaction	0.56	2.38	0.58	0.03	
	Intervention	0.08	2.17	0.92	0.01	
	Control	0.85	2.20	0.44	0.08	
Self-blame	Time	4.44	2.38	0.02	0.19	
	Interaction	0.32	2.38	0.73	0.02	
	Intervention	1.84	2.17	0.19	0.18	
	Control	3.18	2.20	0.06	0.24	2 > 1, 3 > 1
General self-efficacy	Time	3.71	2.36	0.03	0.17	
	Interaction	1.22	2.36	0.31	0.06	
	Intervention	3.38	2.16	0.06	0.30	2 > 1, 3 > 1
	Control	1.22	2.19	0.32	0.11	

improvements in active coping, planning, positive reframing, and acceptance. Notably, participants in the intervention reported reduced anxiety over time with scores reduced by approximately 25% (from 18.00 to 14.11). There was a similar, but not significant fall in depression scores (i.e., from 18.21 to 13.16). There were also significant improvements for the control group on their emotional wellbeing, increased help seeking from others and reductions in levels of self-blame.

8 | DISCUSSION

The aim of this study was to ascertain the efficacy of an online intervention for young adults in Australia who have a parent with mental illness or substance abuse problem. The findings supported the hypotheses that the mi.spot intervention would lead to significant

improvements in aspects of primary and secondary outcomes. In an early single group study, mi.spot participants reported reduced depression and stress (Reupert et al., 2020). This current controlled trial demonstrates improvements for young adults in mi.spot group in wellbeing, coping and help seeking and reductions in anxiety. Additionally, a large percentage of young people who participated in the intervention were themselves experiencing mental health challenges, a finding that confirms previous studies (Weissman et al., 2016; Wong et al., 2018). Such a finding highlights further the need for early intervention for this particularly vulnerable group.

The intervention appears to positively impact on psychological wellbeing and general self-efficacy. Those in the intervention group reported significant reductions in anxiety over time and a similar, but non-significant fall in depression scores. Participants' improvement in mental health and wellbeing may result from two mechanisms. First,

these results might be explained by improvements in participants' ability to access support from external sources (e.g., significantly improved help seeking) and from obtaining emotional support from others in the intervention. Second, there were significant improvements in active coping and where participants engaged in active steps to do something about their situation including reframing and acceptance. The results also broadly support the previous pre-post study (Reupert et al., 2020). Both studies show important (albeit at 6 weeks only) improvements in 18–25-year old youths' mental health and wellbeing that is perhaps mediated by improvements in coping and support seeking behaviours.

There were significant improvements for the wait-list group in emotional wellbeing and help seeking and a reduction in self-blame. This may be due to the process of advertising and recruitment, which could signal to these participants that they were not alone. Alternatively, completing the baseline measures may have prompted help seeking and a subsequent reduction in self-blame. As well, improvements may have resulted from participants' knowing that, in case of emergency, there is a person, a telephone number and an email that they can access.

A limitation of the study was that 93% of participants were female, though this is not uncommon in online interventions (Maher et al., 2014). Further research is required to establish mi.spot efficacy for young men. As mi.spot components are optional, research needs to investigate what components are necessary to impact change. Participants experiencing their own (i.e., current) mental health issues were not excluded in the trial, and future studies might investigate potential intervention outcomes between those who have an existing mental illness, with those who do not. Future research might target larger participant numbers with diverse participant groups. Finally, it would be of interest to assess the two groups again after the wait group has been exposed to the intervention and ascertain the long-term impact of the intervention and whether impacts are sustained.

Overall, mi.spot was found to significantly improve psychological wellbeing and general self-efficacy and reduce anxiety for a vulnerable group of young adults. Given the importance of age specific interventions for young adults (Gilmer et al., 2012), consideration is required to determine how mi.spot might be embedded into services and delivered on a broad scale.

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ENDNOTE

¹ According to Cohen, effect sizes were considered small .01, medium .06 and large .14 (Pallant, 2011).

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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