Internet-based versus in-person Acceptance and Commitment Therapy for parental psychological flexibility

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Abstract

This study aimed to evaluate the efficacy of Internet vs. in-person Acceptance and Commitment Therapy intervention. The intervention aims to promote parental psychological flexibility and parental emotional regulation strategies in a 6-week/session program. Format efficacy was analyzed independently and comparatively in a non-randomized controlled clinical trial. The intervention protocol is the same, but the internet intervention was applied through a self-applied platform, and the in-person intervention was applied in a group setting. The sample consisted of 82 participants with a mean age of 42.79 (*SD*= 5.75), 62.2% of whom were women. The mean age of children was 8.41 (*SD*=3.9). There were 41 parents each in online and in-person experimental groups. Parental psychological flexibility, experiential avoidance, emotion regulation skills, parental stress, satisfaction with life, and the effects of the intervention on their children's psychological adjustment were measured at baseline, six-week postintervention, and follow-up at 91 days. The results showed no differences between groups were found in post-treatment. In the follow-up, the results showed that the workshop group reported significantly better scores in goal-oriented emotional regulation skills ($F=4.978$; $p<.05$; $\eta2=.119$) and children's difficulties ($F= 4.679$; $p<.05$; $\eta2=.112$) with a large effect size. The online group reported significant differences with a large effect size in satisfaction with life ($F= 10.896$; $p< .005$; $\eta2=.182$) The subgroup analysis found that in-person intervention is more powerful with larger effect size than online intervention. The results of this study provide useful evidence for the use of Acceptance and Commitment Therapy strategies in a parenting intervention.

Keywords: parental acceptance and commitment therapy; parenting; ACT; emotion regulation; intervention; non-randomized controlled trial.

Introduction

The parent-child interactions, parenting styles, or beliefs about parental efficacy are risk or protective factors for developing and maintaining psychological disorders in childhood and adolescence (Newman et al.,2008, Patterson et al., 2004; Pinquart, 2017a). In this sense, parental interventions will, directly and indirectly, affect the well-being of parents and their children (Jones & Prinz, 2005).

The purpose of parenting intervention is to improve parents' interaction with their children and their management of the children's behavior through appropriate parenting styles (APA, 2021). Such parenting styles may be authoritative, which have been related to better self-esteem and fewer children's internalizing and externalizing problems (Firouzkouhi Moghaddam et al., 2017; Pinquart, 2017a), while permissive styles are related to more children's anxiety and depression symptoms (Hemm et al., 2018; McKinney et al., 2019). These parenting styles can be modulated by various factors, including psychological flexibility (Fonseca et al., 2020) and emotion regulation (Carreras et al., 2019).

Parental psychological flexibility is defined as parents' ability to accept thoughts and negative emotions about their children as they occur while still acting to maintain a good parent-child relationship consistent with good parenting practices (Burke & Moore, 2015). Psychological flexibility has been explained as six interrelated intermediate processes: Acceptance, defusion, self-as-context, being in the present, committed actions, and values (Hayes et al., 2012). These intermediate processes can also be understood as an active response style focused on the present and open to experience (Flujas-Contreras et al., 2020; Hayes et al., 2012). Psychological flexibility in parenting may be a factor involved in child-raising, as more parental psychological flexibility in responding to children's emotional needs more healthily (Fonseca et al., 2020) is related to children having fewer internalizing and externalizing problems (Brassell et al., 2016) and better psychological skills (Williams et al., 2012).

Intervention in parental psychological flexibility has been approached from Acceptance and Commitment Therapy (ACT; Hayes et al., 2012). Parenting ACT is effective for parents of children with autism spectrum disorder (ASD; Corti et al., 2018; Hahs et al.,2019), developmental delay (Poddar et al., 2017), children with chronic pain (Kanstrup et al., 2016) and a diversity of medical problems, such as diabetes (Sairanen et al., 2019), acquired brain damage (Brown et al., 2014), or cerebral palsy (Whittingham et al., 2015). Such intervention has been reported to improve parental avoidance behavior, stress, depressive symptoms, and parental psychological flexibility, as well as parents' acceptance of their child's pain (Byrne et al., 2020). Mindfulness strategies applied to parenting have also improved the adjustment of parents with children with neurodevelopment disorders (Cachia et al., 2016; Whittingham et al., 2014) and children's internalizing and externalizing problems (Alexander, 2018; Parent et al., 2016).

Regarding online interventions in parents, a meta-analysis by Flujas-Contreras et al. (2019) found that the most employed intervention models were Cognitive Behavioral Therapy, the Triple P Positive Parenting Program, and Parent-Child Interaction Therapy (PCIT). These interventions, such as Triple P or PCIT, have been adapted for online application through web pages, the use of webcams, or videos. The results of the meta-analysis indicate that online interventions have positive effects on parenting, parent and child well-being, and parental stress with a moderate effect size (Flujas-Contreras et al., 2019). However, few studies have examined the effectiveness of third-wave therapies delivered online. Previous studies have reported that ACT intervention for parents with children with chronic medical conditions improved parental stress and depressive symptoms (Sairanen et al., 2019). A combined online ACT and ABA (Applied Behavior Analysis) intervention (Pennefather et al., 2018) has reduced parental stress in parents of children with ASD, as well as improved child functioning. However, more evidence is needed on the effectiveness of internet-based parenting interventions. Online intervention offers certain advantages, including adherence to

treatment, elimination of time-space barriers, easy access to treatment, and others (Corralejo & Domenech Rodríguez, 2018). Likewise, face-to-face therapy allows direct observation and identification of clinically relevant behaviors in therapy (Kohlenberg & Tsai, 1994). that help to contextualize and provide the client the appropriate exercise or metaphor according to the clinical conversation (Foody et al., 2014). Therefore, online intervention may be an alternative to or complement traditional in-person therapy in those cases or contexts where access to in-person therapy becomes difficult.

The objective of this study was to compare the effectiveness of an online parenting intervention protocol with its traditional in-person group application. As the same intervention protocol was applied in two different formats, protocol efficacy could be analyzed in both formats. The main hypothesis was that the parental psychological flexibility and emotion regulation skills of participants would improve in both online and in-person intervention groups. The second hypothesis is that the in-person intervention will have a stronger effect size than the online intervention. Finally, the third hypothesis is that the online intervention will have greater adherence.

Method

Design

This study was a controlled non-randomized clinical trial with a quasi-experimental design. Two groups were tested at baseline (T1), six-week postintervention (T2), and follow-up at 91 days (T3) (Montero & León, 2007) (Figure 1). The participants were distributed into two groups by order of arrival and enrollment in the study, and either attended an in-person group parenting intervention at in-person workshops (WG) or an online parenting intervention program (OG). The group intervention started up first, but later both group sessions were held in parallel. The clinical trial was registered with ClinicalTrals.gov (Ref no.: NCT04267523). CONSORT guidelines for non-randomized trials were followed (Reeves & Gaus, 2004).

Participants

The sample was incidental, comprised of fathers, mothers, or legal guardians of children from the newborn to older child stages (aged 1 to 12; WHO, 2006). The families were recruited after the trial was announced at child/juvenile mental health centers, on social networks, and through contacts in parent associations, private child psychology centers, and schools.

The inclusion criteria were: (a) Father, mother, or legal guardian of (b) at least one minor under 12, and (c) flexible parenting problems on the Parental Acceptance Questionnaire (6-PAQ; Flujas-Contreras et al., 2020), that is a score over 29.14, or (d) the child had limiting or clinical scores over the cutoff point at the 80th percentile on the Strengths and Difficulties Questionnaire (SDQ; Español-Martín et al., 2020), (e) parents showed interest in participating in the study by signing their informed consent, and (f) had daily access to internet. The cut-off points were taken from the articles of each of the validation tests in the Spanish population.

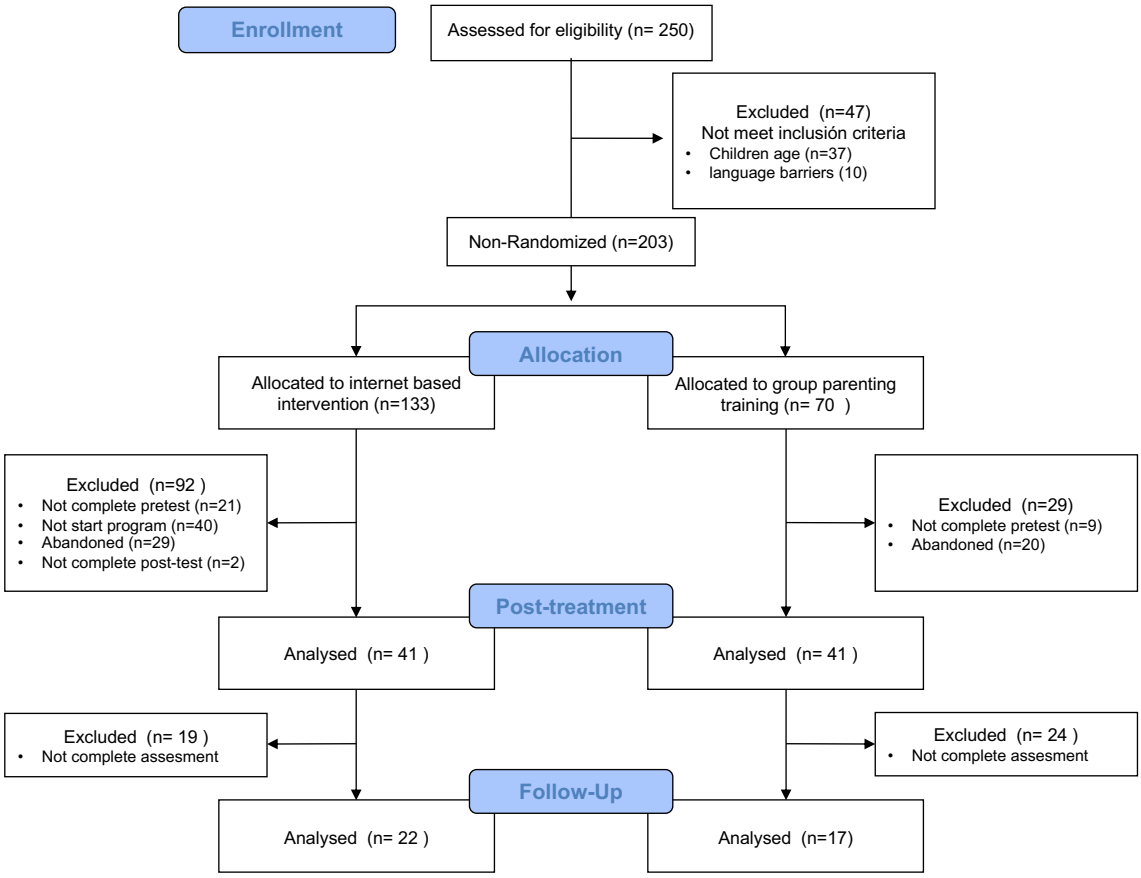
Participants were excluded if: (a) they had language barriers, (b) had been diagnosed with a severe psychological disorder (e.g., schizophrenic disorders, delusional disorders; psychotic disorders, or bipolar disorder), or used substances that could alter their performance in the intervention program. The sample size was calculated by the Jamovi *jpower* module (*jamovi*, 2021). To reliably detect (with probability over 0.9) an effect size of $\delta \geq 0.55$, a sample of 37 participants was necessary for each group, assuming a detection criterion of a maximum Type 1 error of $\alpha = 0.05$.

Sociodemographic data

Figure 1 shows the participant flowchart. The original sample was made up of 250 participants who showed interest in participating in the study, of whom 92 in the online intervention group (92/133; 69.17%) and 29 in the in-person intervention (29/70; 41.4%) did not finish. However, it should be mentioned that most of these never actually started the program. The posttreatment data were finally acquired from 41 participants in the online

intervention group (41/133; 30.82%) and 41 participants in the in-person intervention group (41/70; 58.57%).

Figure 1. Participants flow diagram.



The final sample of 82 participants had a mean age of 42.79 (*SD*=5.75), of whom 62.2% were women, 72% were married and the average number of children was 1.87 (*SD*=.67). The children were mostly boys (60.7%), with a mean age of 8.41 (*SD*=3.9; age range: 1-18 years). Table 1 presents the detailed sociodemographic data for each experimental group. There were statistically significant differences in parents' sex, the mean age of children was older and children with a clinical diagnosis were more frequent in the in-person group.

At follow-up (T3), the sample is composed of a total of 39 participants with a mean age of 43.59 (SD=5.60), 69.23% of whom are female, and 76.03% are married. They had a mean of

1.86 children (SD=0.59). The children were mostly male (58.9%) with a mean age of 9.02 (SD=4.39). The workshop intervention group (WG) at follow-up consisted of 22 participants with a mean age of 44.04 years (SD=6.20), the majority were female (90%), 81.81% were married with two children on average (SD=0.61). The mean age of the children was 9.61 years (SD=4.32), and most of them were boys (64.29%). On the other hand, in the online group (OG), 17 parents participated in the follow-up with a mean age of 43 years (SD=4.83) mostly males 58.82%, and 70.58% of them were married with a mean of 1.76 children (SD=0.56). The children had a mean age of 7.90 (SD=4.39) most of them were boys (51.16%).

Table 1. Sociodemographic data of the sample (n=82) and subgroups.

	Total sample (*n*=82)		**OG (*n*=41)**		**WG (*n*=41)**		**Chi-squared**		
	M/N	***(SD)/%***	***M/N***	***(SD)/%***	***M/N***	***(SD)/%***	χ^2 / ***t***	***df***	***p***
Age	**42.7**	**(5.72)**	**42.0**	**(5.08)**	**43.51**	**(6.33)**	**1.13**	**80**	**.260**
Sex							**15**	**1**	**<.001**
Female	51	62.2%	17	41.4%	34	82.9%			
Male	31	37.8%	24	58.5%	7	17.07 %			
Marital status							**2.82**	**3**	**.420**
Married	59	72%	27	65.8%	32	78.04 %			
Separated	13	15.9%	9	21.9%	4	9.7%			
Single	7	8.5%	3	7.3%	4	9.7%			
Widowed	3	3.7%	2	4.8%	1	2.4%			
Level of education							**4.43**	**2**	**.114**
Primary	5	6.1%	1	2.4%	4	9.7%			
Secundary	17	20.7%	6	14.6%	1	2.4%			
Higher education	60	73.2%	34	84.9%	26	63.4%			
Number of children	**1.87**	**(.67)**	**1.89**	**(0.66)**	**1.92**	**(.68)**	**.452**	**2**	**.79**
1 child	24	29.3%	13	31.7%	11	26.8%			
2 children	44	53.7%	22	53.6%	22	53.6%			
3 children or more	14	17.1%	6	14.6%	8	19.5%			
Children age	**8.41**	**(3.9)**	**7.30**	**(3.48)**	**9.57**	**(4.03)**	**2.69**	**78**	**.009**

Children sex							**.974**	**2**	**.615**
Female	66	45,2%	34	46.57%	41	56.1%			
Male	80	54.7%	39	53.42%	32	43.83%			
Diagnosed child *							**11.5**	**1**	**<.001**
ASD	10	27.7%	3	33.3%	7	25.9%			
ADHD	9	25%	2	22.2%	7	25.9%			
SLD	2	5.5%	1	11.1%	1	3.75			
DD	3	8.3%	0		3	11.1%			
Conduct disorder	8	22.2%	1	11.1%	8	29.6%			
Medical diseasses	3	8.3%	2	22.2%	1	3.7%			

*Note: ASD: Autism Spectrum Disorder; ADHD: Attention Deficit Hyperactivity Disorder; SLD: Specific Language Disorder; DD: Developmental Delay; *: percentages are calculated on the total number of children with disorder per group*

Measures

Parental psychological flexibility was evaluated with the *Parental Acceptance Questionnaire* (6-PAQ; Flujas-Contreras et al., 2020; Greene et al., 2015). This instrument consists of 16 items rated on a 4-point Likert-type scale. The scale evaluates overall parental psychological flexibility and three interrelated response styles: open, focused, and committed (or active). The sum of the item scores provides a total score ranging from 16 to 64. The questionnaire has internal consistency with a Cronbach's Alpha of .81 for the total score and from .66 to .71 for its factors. Higher scores indicate more psychological inflexibility. This instrument was used in pretreatment, posttreatment, and follow-up.

Emotion regulation was assessed using the *Difficulties in Emotion Regulation Scale* (DERS; Gratz & Roemer, 2004; Hervás & Jódar, 2008). This instrument has 28 items rated on a five-point Likert scale distributed in five factors: attention, clarity, acceptance, functioning, and strategies. Emotion regulation is defined as the external and internal processes responsible for monitoring, evaluating, and modifying our emotional reactions to meet our goals. The scale has a Cronbach's alpha of .93. Higher scores indicate greater difficulties in emotion regulation.

The total scale score ranges from 28 to 140. It was used in the pretreatment, post-treatment, and follow-up.

Parental stress was evaluated with the *Parental Stress Scale* (PSS; Berry & Jones, 1995; Oronoz et al., 2007). Parental stress is defined as the process of coping with aversive stimuli to adapt to the demands of parenting. Its 12 items are rated on a five-point Likert-type scale which are distributed in two factors: events that refer to parental stress in bringing up their children and the rewards of child-raising related to satisfaction with their role as parents. Higher scores indicate parental stress. The maximum score is 60. Internal consistency was .77. It was used for pretreatment, posttreatment, and follow-up.

General psychological flexibility: The *Acceptance and Action Questionnaire* (AAQ-II; Bond et al., 2001; Ruiz et al., 2013) measures the tendency to avoid situations generating distress, called experiential avoidance, in seven items rated on a seven-point Likert scale. Higher scores show higher psychological inflexibility. The sum of item scores provides a total score ranging from 7 to 49. The questionnaire has high internal consistency with a Cronbach's alpha of .88. It was used in pretreatment, posttreatment, and follow-up.

Satisfaction with life: The *Satisfaction with Life Scale* (SWLS; Diener et al., 1985; Vázquez et al., 2013) was used to evaluate the overall level of satisfaction with life in five items rated on a five-point Likert-type scale. The sum of item scores provides a total score ranging from 5 to 25, with higher scores indicating greater satisfaction with life. The scale has a Cronbach's alpha of .88. This scale was used in pretreatment, posttreatment, and follow-up.

Psychological adjustment of children: The *Strengths and Difficulties Questionnaire* (SDQ; Español-Martín et al., 2020; Goodman, 2001) was used to assess the effects of the intervention on the children's psychological adjustment. This questionnaire has a total score found from the following subscales: emotional symptoms, conduct problems, hyperactivity/inattention, and peer relationship problems. The questionnaire also includes a positive prosocial behavior scale. The subclinical and clinical ranges of the scales are set by a

cutoff point at the 80th percentile for the subclinical and 90th percentile for the clinical range. The maximum score is 50. It was used in pretreatment, posttreatment, and follow-up.

Procedure

The contents of the clinical protocol were identical for both groups, although the implementation format was different. The contents of the parenting program entitled "*The Parenting Forest*" and the differences between the two groups are described below. Some previous studies have explored the usefulness of the clinical protocol (references omitted for review).

Clinical protocol: The Parenting Forest.

The goal was to promote parental psychological flexibility and parents' emotion regulation strategies in confronting child-raising contexts or situations that could generate psychological distress (cognitive and/or emotional). This clinical protocol used mainly ACT strategies to pursue the following specific objectives: (1) Promote full attention in the present moment and in parent-child interaction, (2) promote acceptance rather than avoidance as an emotion regulation strategy in events or situations that generate distress, and a validating emotional atmosphere in their relations with their children, (3) improve interaction and relationships with private events, promoting perspective-taking of emotions, thoughts, and feelings about oneself, that is, diffusion or distancing, (4) lead to actions directed at areas of life that make sense, among which are care of one's children. Table 2 lists the module objectives and contents.

Implementation of the in-person workshop group (WG). The in-person intervention was implemented in groups. Each group was made up of five to seven participants. The participants interested in the parenting program enrolled in groups as places became available. The in-person program was organized in six weekly two-hour sessions. Despite differences in intensity compared to the online intervention, the content was the same in both

formats. The exercises were done following the therapist's instructions, with visual support in slides and information sheets. The intervention was carried out by a trained therapist with experience in child-juvenile and family therapy. To ensure that the protocol was followed faithfully, a checklist of the exercises assigned to each session as shown in Table 2 was provided.

Implementation of the online parenting intervention program (OG). The participants in the online intervention group had access to the protocol on the Psychology and Technology (*Psicología y Tecnología*) online platform (https://psicologiaytecnologia.labpsitec.es/) (LabPsiTec, 2011). At the beginning of the intervention, each participant received a platform manual, username, and instructions for configuring a password for access to the platform. The online intervention was organized in six sequential units as shown in Table 2, which could be repeated independently, as the session concept is nonrestrictive. At the start of the program, it was suggested that participants complete one unit per week and practice their skills in between them, so although the estimated duration of the program is six weeks, the real duration is set by each participant's availability. The contents are applied in a multimedia format (text, self-correct exercises, mainly images, and video).

The therapist monitored the evolution of each participant on the professional's administration platform. Contact was maintained in standardized emails about every ten days to encourage participation and adherence. These emails had no therapeutic content but were rather designed to motivate participation or solve technical problems in carrying out the program. Participants also received an email under certain circumstances: (1) to congratulate them on their progress, (2) when they scored 7 or more in action consistency, or (3) encouraging them to become more involved in their actions when they scored 6 or less. They were supervised by the same therapist who implemented the in-person group.

Table 2. Clinical contents and exercises of the modules by sessions

Units		**Contents**
Unit 1	To establish the objectives and the elements that will be dealt with during the intervention. Introduce acceptance as a strategy for emotional regulation and clarification of values.	Aims and contents of the program. Garden (f) Forest * (f) Mind-lake experience* Mindfulness of breathing *
Unit 2	Analyze emotional reactions. Provide families with emotional regulation skills related to acceptance. Establish specific values-based actions.	Garden (f) Wise Mind (f)
Unit 3	Analyze emotional barriers in relation to goals. Promote perspective taking regarding private events and full attention to physiological reactions related to emotions.	Garden (f) Star observatory * (f) Body scan * (f)
Unit 4	Analyze barriers and alternative value redirection actions. Promote mindfulness and perspective taking regarding private events.	Garden (f) Mindfulness of sounds * The cascade of emotions *
Unit 5	Analyze actions taken and identify barriers to their achievement. Analyze functionally the parent's behavior and its relationship to the child's behavior. Introduce positive parenting strategies (psychoeducation / therapy and behavior modification).	Garden (f) Functional analysis (f) Strategies applied * Thoughts are clouds * Connect and Shape *
Unit 6	Review long-term goals and re-direction. Identify parenting components and family dynamics. Integrate the positive parenting model with behavior modification strategies.	Garden (f) The Parenting Tree * Connect and Shape * Behavior modification techniques

Notes: *: contents with audiovisual support in online program; (f): support sheets for online program contents.

Statistical analysis

Data were analyzed with R in Jamovi v.1.1.9 (*jamovi*, 2021). First, a descriptive analysis was made of the sociodemographic variables and the chi-square test was used to find out whether there were any significant statistical differences between groups.

The change was assessed with repeated-measures analysis of variance (ANOVAs) using the time factors (T1 vs. T2 and T1 vs. T3) as the repeated measure and group (WG vs. OG) and their interactions. Post-hoc subgroup analyses were conducted to assess changes in within-group differences between T1 and T2 and between T1 and T3. Pairwise comparisons were used to follow up significant results. The effect size was analyzed with the partial eta squared (η^2) (Trigo & Martínez, 2016) and with Cohen's *d*, considering a score of .2 as small, .5 medium, and .8 large (Cohen, 1988), respectively.

Results

Effects of Treatment on Parental Outcomes

Table 3 shows the mean scores and standard deviations of the variables evaluated at baseline (T1) and post-treatment (T2). No significant between-group differences were found in the (group * time interaction) comparison (Table 3). In the posthoc subgroup analysis, statistically significant differences with a moderate effect size were found in the workshop group (WG) in parental psychological flexibility (6-PAQ; MD= 3.902; 95% CI: 1.841/5.964; p<.001; d= .596), an aware response style (MD= 1.512; 95% CI: .598/2-426; p<.001; d= .584) and emotion regulation skills directed at goals (MD= 2.415; 95% CI: .874-/3995; p<.001; d= .573). Differences with a small effect size were also found in an open response style (MD= 1.634; 95% CI: .530/2.730; p<.001; d= .489), the overall difficulties with emotion regulation score (DERS; MD= 10.22; 95% CI: 2.64/17.799; p<.005; d= .471), acceptance as a strategy (MD= 3.073; 95% CI: .207/5.940; p<.05; d= 0,415), access to adaptive strategies (MD= 3.39; 95% CI: .305/6.475; p<.05; d= .404), parental stress (PSS; MD= 2.854; 95% CI: .52/5.187; p<.005; d= .38), and rewards of child-raising (MD= 1.195; 95% CI: .032/2.358; p<.05; d= .357). In addition, significant differences with a small effect size were found a reduction of emotional symptoms (MD=1.22; 95% CI: .36/2.079; p<.001; d= .485) and children's difficulties (SDQ; MD= 2.122; 95% CI: .461/3.783; p<.005; d= .301) (Table 3).

Table 3. Mean, standard deviation, and contrast statistics of the variables and post hoc at baseline and post treatment.

	Workshop group (WG) n=41		Online group (OG) n=41		Group * Time			Post hoc comparison T1–T2					
	T1	T2	T1	T2	Interaction (T1-T2)			WG			OG		
	M (SD)	M (SD)	M (SD)	M (SD)	F	P	ES	d	MD	95% CI	d	MD	95% CI
6PAQ	33.71 (6.36)	29.80 (7.18)	33.59 (6.31)	29.29 (6.28)	.131	.718	.002	.596** *	3.902	(1.84/5.96)	.656** *	4.293	(2.23/6.35)
Open	11.90 (3.27)	10.27 (3.04)	11.71 (3.36)	9.83 (3.67)	0.179	0.674	.002	.489** *	1.634	(.53/2.73)	.562** *	1.878	(0.77/2.98)
Aware	12.41 (2.47)	10.90 (2.80)	12.41 (2.64)	10.95 (2.43)	.010	.919	.0001	.584** *	1.512	(.59/2.42)	.566** *	1.463	(.54/2.37)
Active	9.39 (2.08)	8.63 (2.23)	9.46 (2.20)	8.51 (2.13)	.164	.687	.002	.349	.756	(-.16/1.67)	.439*	.951	(.02/1.87)
DERS	64.54 (21.72)	54.32 (17.55)	69.12 (23.90)	60.34 (23.08)	.132	.717	.002	.471**	10.22	(2.6/17.79)	.405*	8.78	(1.2/16.36)
Attention	10.15 (4.09)	9.95 (3.38)	10.59 (3.86)	9.49 (3.38)	1.307	.256	.016	.053	.195	(-1.31/1.7)	.297	1.098	(-.413/2.61)
Clarity	7.95 (3.10)	6.80 (2.33)	8.90 (3.42)	7.73 (2.88)	.002	969	.00001	.388	1.146	(-.04/2.33)	.396	1.171	(-.02/2.361)
Acceptance	16.71 (7.44)	13.63 (6.39)	18.29 (8.08)	15.20 (7.57)	.0002	.987	.000003	.415*	3.073	(.20/5.94)	.419*	3.098	(.32/5.964)
Goals	10.61 (4.16)	8.20 (3.66)	11.05 (4.42)	9.95 (4.55)	2.675	.106	.032	.573** *	2.415	(.87-/3.99)	.261	1.098	(-.44/2.638)
Strategies	19.12 (8.61)	15.73 (7.10)	20.29 (8.82)	17.98 (8.92)	.443	.508	.006	.404*	3.39	(.30/6.47)	.27	2.317	(-.76/5.402)
PSS	33.49 (6.82)	30.63 (7.11)	33.39 (8.26)	30.68 (7.75)	.014	.905	.00017	.38**	2.854	(.52/5.18)	.361*	2.707	(.37/5.041)

Rewards	12.12 (3.68)	10.93 (3.37)	9.27 (3.58)	7.68 (2.69)	.412	.523	.005	.357*	1.195	(.03/2.35)	.473**	1.585	(.42/2.749)
Stressors	21.37 (5.68)	19.71 (6.08)	24.12 (6.24)	23.00 (6.29)	.277	.600	.003	.273	1.659	(-.29/3.6)	.185	1.122	(-.82/3.071)
AAQ-II	20.85 (9.59)	18.15 (8.90)	25.34 (9.31)	22.07 (10.55)	.135	.714	.002	.282	2.707	(-.21/5.65)	.34*	3.268	(.35/6.186)
SWL	18.63 (3.84)	19.95 (4.25)	22.63 (7.01)	25.44 (5.84)	2.328	.131	.028	.245	-1.317	(-3.18/.54)	.521** *	2.805	(-4.67/-.939)
SDQ	25.85 (7.16)	23.73 (7.77)	23.15 (6.52)	22.20 (6.66)	1.8	.184	.022	.301**	2.122	(.46/3.78)	.135	.950	(-.73/2.632)
Emotional	4.63 (2.75)	3.41 (2.46)	3.77 (2.62)	3.17 (2.19)	1.879	.174	.023	.485** *	1.220	(.36/2.07)	.238	.6	(-.27/1.47)
Behavioral	4.24 (2.36)	3.78 (2.55)	3.75 (2.24)	3.10 (2.49)	.314	.577	.004	.192	.463	(-.17/1.09)	.269*	.605	(.01/1.291)
Hyperactivity	6.49 (2.19)	6.10 (2.84)	5.25 (3.09)	5.17 (3.25)	.559	.457	.007	.136	.39	(-.41/1.19)	.026	.075	(-.73/.887)
Peer problems	3.83 (2.44)	3.32 (2.65)	3.60 (2.87)	3.15 (2.68)	.029	.864	.00037	.192	.512	(-.17/1.2)	.169	.45	(-.24/1.148)
Prosocial	6.66 (2.04)	7.12 (2.00)	6.78 (2.34)	7.60 (2.22)	.791	.376	.01	.215	-.463	(-1.23/.3)	.383*	-.825	(-1.61/-.043)

Note: ***= p <.001; ** p <.005; * p<.05.

In the online group (OG), post hoc analyses reported improvements with significant differences and with a moderate effect size in parental psychological flexibility (6-PAQ; MD= 4.293; 95% CI: 2.231/6.354; p<.001; d= .656), an open response style (MD= 1.878; 95% CI: 0.770/2.980; p<.001; d= .562), awareness (MD= 1.463; 95% CI: .549/2.378; p<.001; d= .566), and satisfaction with life (MD= 2.805; 95% CI: -4.670/-.939; p<.001; d= .521). Significant differences with a small effect size were found in an active response style (MD= .951; 95% CI: .029/1.874; p<.05; d= .439), acceptance (MD= 3.098; 95% CI: .321/5.964; p<.05; d= .419), parental stress (PSS; MD= 2.707; 95% CI: .374/5.041; p<.05; d= .361), rewards of child-raising (MD= 1.585; 95% CI: .422/2.749; p<.001; d= .473), and experiential avoidance (AAQ-II; (MD= 3.268; 95% CI: .351/6.186; p<.05; d= .34). Moreover, there were significant differences with a small effect size in children's behavioral problems (MD= .605; 95% CI: .009/1.291; p<.05; d= .269) and in prosocial behavior (MD= -.825; 95% CI: -1.607/-.043; p<.05; d= .383) (Table 3).

Effects of Treatment on Parent Outcomes at follow-up

Table 4 shows the mean scores and standard deviations of the variables evaluated at the three-month follow-up (T3). Significant between-group differences were found in the (group*time T1-T3 interaction) comparison on the goal scale in emotion regulation (F=4.978; p<.05; η2=.119) and fewer children's difficulties (SDQ; F= 4.679; p<.05; η2=.112) with a large effect size, where the WG had better scores. There were also differences with a large effect size in satisfaction with life (SWL; F= 10.896; p< .005; η2=.182), with better scores, in this case, in the OG (Table 4). In the post hoc subgroup analysis, it was found that the workshop group (WG) had improved their scores in parental psychological flexibility (6-PAQ; MD= 6.227; 95% CI 2.384/10.071; p <.001; d= .926), open style (MD= 2.591; 95% CI .868/4.314; p <.001; d= .836), awareness (MD= 2.727; 95% CI 1.205/4.249; p <.001; d= 1.012), emotion regulation skills (DERS; MD=20.773; 95% CI 10.983/30.563; p <.001; d= 1.046), parental stress (PSS: MD= 7; 95% CI 3.317/10.683; p <.001; d= 1.018), rewards of child-raising (MD= 4.273; 95% CI 2.194/6.351;p <.001; d= 1.29) and children's difficulties (SDQ; MD=10.912; 95% CI

6.371/15.452; p <.001; d= 1.219) with significant differences and with a large effect size. Significant differences with a moderate size effect were also found in emotional clarity (MD= 2.136; 95% CI .405/3.868; p <.005; d= .79) and in children's emotional symptoms (MD= 1.864; 95% CI .572/3.156; p <.005; d= .718) (Table 4).

In the OG, the post hoc analysis showed significant differences with a large effect size in parental stress (PSS; MD= 5.765; 95% CI 1.575/9.955; p <.005; d= .838), emotional clarity (MD= 2.294; 95% CI .324/4.264; p <.05; d= .849) and satisfaction with life (SWL; MD= -4.294; 95% CI -7.35/-1.23; p <.005; d= .86). Statistically significant differences were also found with a moderate effect size in parental psychological flexibility (6-PAQ; MD= 4.706; 95% CI .334/9.078; p <.05; d= .7), experiential avoidance (AAQ-II; MD= 6.235; 95% CI 1.381/11.09; p <.001; d= .727), acceptance as an emotion regulation strategy (MD= 4.647; 95% CI .07/9.217; p <.05; d= .688), rewards of child-raising (MD= 2.471; 95% CI .106/4.835; p <.05; d= .751) and children's behavioral problems (MD= 1.471; 95% CI .193/2.748; p <.05; d= .661) (Table 4).

Table 4. Mean, standard deviation, and contrast statistics of the variables and post hoc at 3-month follow-up.

	WG (n=22)	OG (n=17)	Group * Time Interaction (T1-T3)			Comparison T1–T3					
	T3	T3				WG			OG		
	M(SD)	M(SD)	F	p	ES	d	MD	95% CI	d	MD	95% CI
6PAQ	29.05 (7.64)	27.47 (5.34)	.531	.471	.014	.926***	6.227	(2.38/10.07)	.7*	4.706	(.33/9.07)
Open	10.05 (3.50)	9.29 (2.08)	.573	.454	.015	.836***	2.591	(.86/4.31)	.608	1.882	(-.07/3.84)
Aware	10.50 (2.91)	10.47 (2.67)	2.099	.156	.054	1.012***	2.727	(1.21/4.24)	.56	1.529	(-.20/3.26)
Active	8.50 (2.02)	7.71 (1.72)	.201	.656	.005	.437	.909	(-.61/2.48)	.622	1.294	(-.50/3.09)
DERS	51.36 (14.94)	50.59 (18.31)	1.621	.211	.042	1.046***	20.773	(10.98/30.56)	.705*	14	(2.86/25.13)
Attention	9.41 (3.50)	7.65 (2.83)	.155	.696	.004	.345	1.227	(-1.01/3.46)	.479	1.706	(-.84/4.25)
Clarity	6.36 (1.97)	5.76 (1.92)	.028	.868	.00075	.79**	2.136	(.41/3.86)	.849*	2.294	(.32/4.26)
Acceptance	12.95 (5.43)	12.24 (5.34)	.555	.461	.015	.929***	6.273	(2.25/10.29)	.688*	4.647	(.07/9.21)
Goals	8.05 (3.05)	8.88 (4.14)	4.978	.03*	.119	1.06***	3.955	(1.95/5.95)	.41	1.529	(-.74/3.81)
Strategies	14.59 (6.15)	16.06 (6.78)	2.697	.109	.068	.911***	7.182	(3.41/10.94)	.485	3.824	(-.45/8.11)
PSS	28.95 (5.87)	26.88 (8.72)	.381	.541	.01	1018***	7	(3.31/10.68)	.838**	5.765	(1.57/9.95)
Rewards	8.82 (3.23)	7.06 (2.86)	2.546	.119	.064	1.29***	4.273	(2.19/6.35)	.751*	2.471	(.11/4.83)
Stressors	20.14 (5.26)	19.82 (6.59)	.126	.725	.003	.484	2.727	(-.21/5.66)	.584	3.294	(-.05/6.63)
AAQ-II	19.86 (8.27)	17.76 (8.62)	.819	.371	.022	.482	4.136	(-.13/13.83)	.727***	6.235	(1.38/11.09)
SWL	18.50 (3.53)	26.24 (4.56)	4.679	.037*	.112	.228	-1.136	(-3.82/1.55)	.86**	(-4.294	(-7.35/-1.23)
SDQ	14.71 (12.42)	20.41 (5.47)	10.896	.002**	.182	1.219***	10.912	(6.37/15.45)	.164	1.471	(-4.95/7.89)
Emotional	3.09 (1.77)	3.00 (2.76)	3.613	.065	.089	.718**	1.864	(.57/3.15)	.204	.529	(-.94/1.99)
Behavioral	3.68 (2.57)	2.41 (1.70)	1.308	.260	.034	.347	.773	(-.35/1.86)	.661*	1.471	(.19/2.74)
Hyperactivity	5.95 (3.02)	4.59 (3.14)	.630	.443	.017	.277	.773	(-.61/2.15)	.063	.176	(-1.39/1.75)
Peer problems	3.23 (3.04)	2.76 (1.99)	.973	.330	.026	.387	1	(-.09/2.09)	.159	.412	(-.83/1.66)
Prosocial	6.77 (2.25)	7.65 (2.18)	1.757	.193	.045	.125	-.273	(-1.46/.90)	.511	-1.118	(-2.45/.21)

Note: ***= p <.001 ; ** p <.005; * p<.05.

Discussion

This study aimed to evaluate and compare the efficacy of a parenting intervention protocol applied in both online and traditional in-person group formats. The comparative analysis showed that there were no significant differences between the intervention groups at posttreatment, although there were significant differences at follow-up with a large effect size. Specifically, the workshop group scored better in the use of adaptive emotion regulation strategies to achieve goals and in reducing their children's psychological adjustment problems, while the online group had better results in satisfaction with life. However, major differences were found when the effects of the intervention were explored in the two formats separately.

In the intervention subgroup analyses, we found that the WG had made significant changes in more variables, especially the follow-up. Specifically, at posttreatment, significant improvements were found with a moderate effect size in parental psychological flexibility, an mindful parenting style and emotional regulation directed toward goals. These results strengthen the three-month follow-up when significant improvements with a large effect size were found in parental psychological flexibility and open, focused response style. Along this line, intervention with ACT for parental mental health has been reported to improve acceptance, parental psychological flexibility, and full attention (Burke et al., 2014; Casselman & Pemberton, 2015; Chong et al., 2019; Tronieri et al., 2019). There was also improvement in emotion regulation skills, such as acceptance, emotion regulation skills directed at goals, and access to adaptive emotion regulation strategies. In harmony with this, previous studies on parental intervention using mindfulness strategies have shown improvements in emotional attention, awareness of emotions, and emotional acceptance (Chaplin et al., 2018). Similarly, parenting interventions using DBT strategies have shown improvement in the emotion regulation skills of mothers with emotional dysregulation and children with ADHD (Gershy et al., 2017; Martin et al., 2017). Reduction in parental stress and rewards of child-raising. These results are in agreement with studies that have found relationships between parental

stress and psychological flexibility (Fonseca et al., 2020) and parental mindfulness (Chan & Lam, 2017). Previous interventions using mindfulness strategies, DBT and ACT have also improved parental stress (Behbahani et al., 2018; Martin et al., 2017), as well as their children's difficulties.

Moreover, in the posttreatment subgroup analysis, the OG had improved parental psychological flexibility with an open and focused response style and satisfaction with life with a moderate effect size. These results also were strengthened in the midterm follow-up where improvements with a large effect size were found in satisfaction with life and parental stress. Improvements with a moderate effect size were observed in parental psychological flexibility, acceptance as an emotion regulation strategy, rewards of child-raising, and experiential avoidance. These data are coherent with a previous study by Sairanen et al. (2019), in which an online intervention was applied to the parents of children with diabetes and other functional difficulties, finding an improvement in parents' mindfulness skills, that is, a response style focused on the present moment. An ACT intervention by videoconferencing for the parents of children with chronic diseases improved emotional impact and parental psychological flexibility (Rayner et al., 2016). Improvements with a moderate effect size were also found in children's conduct problems. These results are consistent with those found by Pennefather et al. (2018) in online intervention with ACT and ABA for parents of autistic children, who showed an increase in prosocial behavior.

Although the results of this clinical trial were promising, some limitations should be taken into consideration. The evaluation instruments used were self-reports and are therefore subject to social desirability bias. Although the study design included two experimental groups for comparing the protocol implementation format, no group without treatment could isolate the effects of the intervention on other factors. A randomized and counterbalanced technique would have improved the quality of this work. Despite the better accessibility of the online intervention, losses and quitting rates were similar and very high in both groups, so in the

future, such studies should be designed with some type of support to facilitate treatment adherence. Sociodemographic differences in the clinical diagnoses of the children could be a moderating variable of the effects of the intervention and should be considered in the selection for future studies. However, it should also be mentioned that the intervention protocol was not intended to approach any specific child pathology, but flexible parenting skills. Similarly, although the clinical protocol was the same in both groups, the application time differed.

In summary, the results across intervention formats are not differential at post-treatment, but there are differences at 91-day follow-up. It is common to find in ACT interventions that the results are strengthened in the long term since they require a change of perspective regarding acceptance and achievement in value-directed actions (Powers et al., 2009). These results confirm the hypothesis that the in-person intervention obtains more potent results since the face-to-face format allows for a more clinically relevant behavioral intervention and a deeper ideographic perspective, whereas in the self-administered online intervention, this dimension is lost. However, these changes are better for life satisfaction, since it is an attitudinal perception rather than a behavioral one. On the other hand, the online intervention has benefited accessibility to the intervention for fathers, with an even higher percentage at follow-up, although the losses in the online intervention are large.

In conclusion, family intervention with ACT could promote improvement in parental psychological flexibility, emotion regulation, and parental stress. At the end of the intervention, the effect size was moderate, but the results were reinforced during the three-month follow-up period. We also found that the workshop intervention group (WG) improved in more of the variables evaluated and with a larger effect size than the online intervention, we therefore conclude that the online intervention may be useful as a support or prevention tool, while the group intervention could be directed at more concrete problems. Nevertheless, in future studies, it would be advisable to analyze the profiles to find out what variables could

be making the intervention more effective. These results provide additional evidence of the effectiveness of family intervention with ACT. Despite the in-person intervention being superior, both formats led to important improvements. The online format may be used in those cases where in-person intervention is difficult to arrange.

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Conflict of Interest

All authors declare that they have no conflicts of interest.

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