



Group Triple P – A randomized controlled trial with low-income mothers

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ARTICLE INFO

Keywords:

Group Triple P
Randomized controlled trial
Child behavior problems
Parental practices
Low-income families

ABSTRACT

Background: Parenting is a challenging endeavor, particularly for low-income families, who are often exposed to multiple stressors known to jeopardize children's development. Research indicates that evidence-based parenting interventions mitigate the adverse effects of growing up in low-income families. The purpose of the current study is to evaluate the efficacy of Group Triple P – Positive Parenting Program in a sample of Portuguese low-income families assisted by social welfare services.

Methods/Design: A randomized control trial to evaluate the effects of the Group Triple P program was implemented in a community setting. Low-income families were randomly assigned to one of two conditions: Group Triple P intervention or Care-As-Usual intervention. Outcome measures included child behavior problems, parental practices, parental sense of competence, parental adjustment, parental stress levels, and family social support network. Data were collected at baseline (before the intervention), immediately after the intervention (3-months after baseline), 6-, and 12-months after the intervention.

Results: After the intervention, Group Triple P participants reported less children behavior problems, improvements in parenting practices, and in parental sense of competence, as well as an increase in family social support network. These effects remained stable six- and 12-months after the intervention.

Discussion: Group Triple P was found to be an effective intervention when delivered in a community setting to low-income families, demonstrating enduring positive effects in all outcomes.

Trial registration: ISRCTN19620485 (Retrospectively registered in 11/08/2018).

1. Introduction

Poverty and low income affect the lives of many families around the world, adding to them a greater risk of social exclusion. Portugal is no exception, as 21.6% of the population experience severe material deprivation or live in low-income households (INE, 2019). Low-income families often face severe difficulties in addressing children's basic needs (e.g., food, health services, education services) as well as high levels of economic stress, with negative consequences for child development, personal well-being, and parenting (Haslam & Burke, 2019).

Children that grow up in low-income families often reveal difficulties in emotional regulation and higher levels of internalizing and externalizing problems, including antisocial and aggressive behavior (Johnson et al., 2016, Neppl et al., 2016, Schofield et al., 2012). Research in Portugal has confirmed the detrimental effect of family risk factors, such as low-income, low maternal education, and low occupational status on 5-year-old children's development, namely in behavior regulation and school achievement. Cadima et al. (2010, 2015) demonstrated that the

accumulation of risk factors, which often occurs in low-income families, negatively affects children's achievement. As a rule, low-income families are exposed to a set of challenging contextual factors (e.g., frequent home moving, abusive intimacy relations, substance abuse), which lead to increasing levels of stress, anxiety, and depression over time (Beeber et al., 2008). In single-parent families, who often experience lack of social support, higher levels of parental stress, and less self-efficacy, parenting can be even more complex and challenging (Lee et al., 2013).

In low-income families, the accumulation of risk factors also relates to inadequate parenting practices, such as coercive strategies, inconsistent routines, and unclear family rules which are closely linked to developmental delays, attachment disorders, child behavior problems, and high prevalence of child abuse (Haslam & Burke, 2019). Nevertheless, parenting can act as a protective factor against the adversities of severe economic deprivation (Haslam & Burke, 2019). Nurturing and sensitive parenting, albeit important for any child, may be particularly vital for children that grow in deprived environments and may serve as a buffer against the risk of delays in cognitive and socio-emotional

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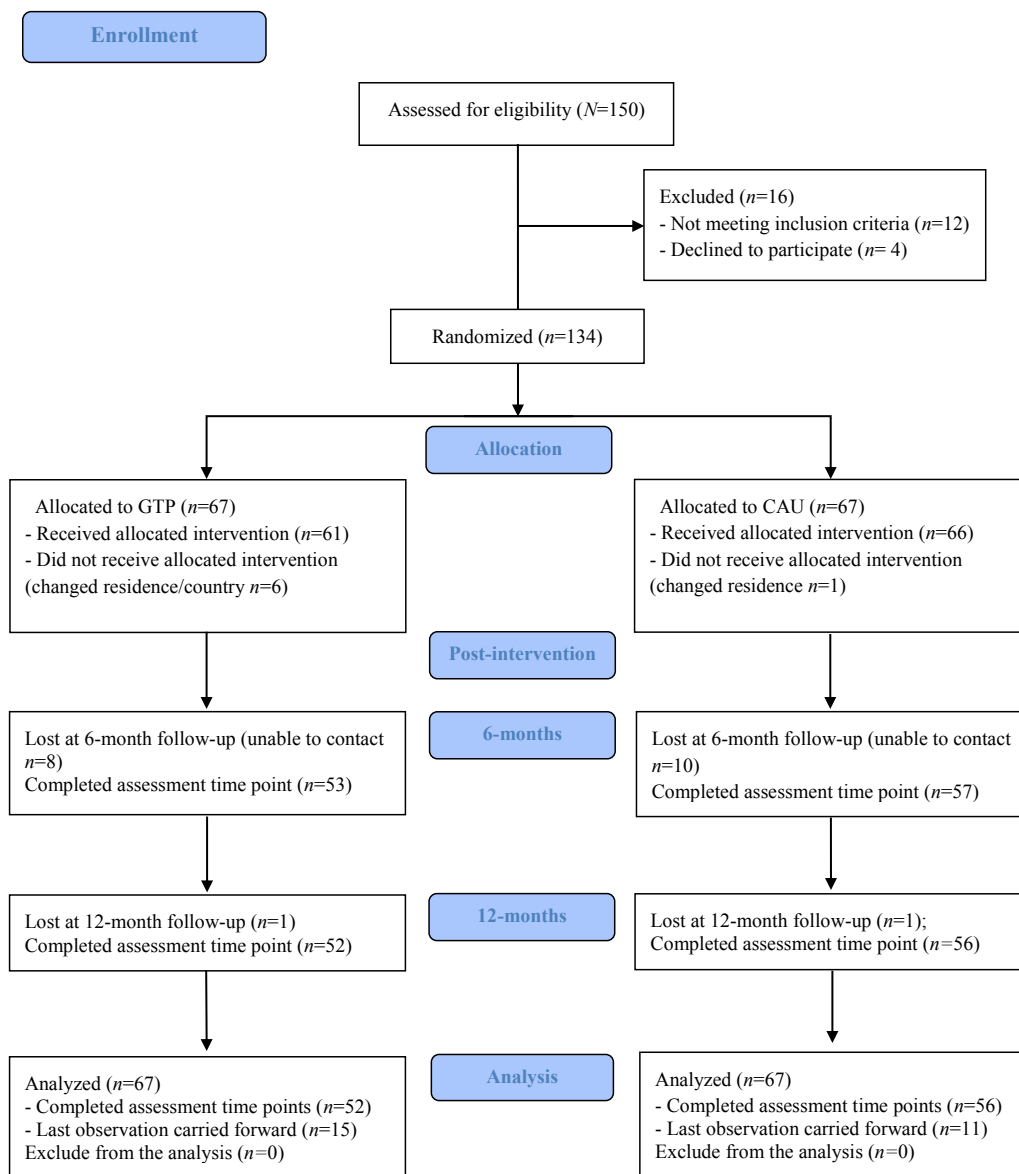


Fig. 1. Flowchart depicting participants' enrollment, allocation, assessment time points and attrition.

development (Bitsko et al. 2016; Morris et al. 2017).

Parenting programs that promote supportive and nurturing relationships between children and caregivers have a positive impact in children's, parents', and families' social support levels (Morris et al., 2017; Sanders, 2012). Parenting interventions based on social learning and family behavior therapy have proved to be effective in improving parenting skills (e.g., using praise and positive rewards, reducing harsh and inconsistent discipline), parental adjustment, and quality of parental relationships as well as in decreasing parental stress levels and disruptive child behaviors (Leijten et al., 2017; Ruane & Carr, 2019; Sanders et al., 2014; Webster-Stratton, 2011). Evidence-based parenting programs have been recommended in clinical interventions as the preferred treatment for children psychosocial problems. However, these programs have scarcely been used by social welfare services (Karjalainen et al., 2019).

In Portugal, low-income at-risk families usually receive economic and psychosocial support from the social welfare services. These services are community-based and include a multidisciplinary team (i.e., social worker, a psychologist, and a social educator) who share responsibilities in planning the support according to each family's needs. A caseworker is designated to deliver the intervention to each family. Beyond

economic support, such interventions also focus on parenting skills, according to the caseworker's knowledge, training, and experience (Baptista & Cabrita, 2009). As such, it is important to provide social welfare services with effective evidence-based interventions to be consistently delivered to low-income families by practitioners.

Triple P is a globally recognized evidence-based parenting and family support system which aims to prevent severe emotional, behavior, and developmental problems in children and adolescents (Haslam & Burke, 2019). The system incorporates five levels of intervention on a continuum of increasing support for parents of children from birth to age 16. Each level of intervention intends to increase parents' knowledge, skills, and confidence, in a family-friendly environment that supports each family's needs. Group Triple P (GTP) is a level-4 group format that provides moderate to high intensity intervention to prevent children's behavioral problems in at-risk families (Sanders, 2012). Throughout the eight sessions of GTP, parents learn specific strategies to promote child development, manage misbehavior, and plan for high-risk situations. Parents are also trained to become independent problem solvers in line with the self-regulatory framework underpinning the GTP program.

The efficacy of GTP has been confirmed through several studies using

Table 1
Contents of Group Triple P sessions.

Session number	Content	Session duration
1. Positive parenting 1	Working as a group	120 min
	What is positive parenting?	(group)
2.. Positive Parenting 2	Why do children behave as they do?	120 min
	Goals for change	(group)
	Keeping track	
3. Helping children develop	Developing good relationships with children	120 min
	Encouraging good behavior	(group)
	Teaching new skills and behaviors	
4. Managing misbehavior 1	Managing misbehavior	120 min
	Finalizing your behaviour chart	(group)
5. Managing misbehavior 2	Developing parenting routines	120 min
		(group)
6. Planning ahead	Family survival tips	120 min
	High-risk situations	(group)
	Planned activities	
7. Using positive parenting strategies 1	Preparing for telephone sessions	15–30 min
	Preparing for the session	(telephone)
	Update on practice	
	Other issues	
8. Using positive parenting strategies 2	Preparing for the session	15–30 min
	Update on practice	(telephone)
	Other issues	
9. Using positive parenting strategies 3	Preparing for the session	15–30 min
	Update on practice	(telephone)
	Other issues	
10. Program close	Preparing for the session	120 min
	Update on practice	(group)
	Phasing out the program	
	Progress review	
	Keeping up the good changes	
	problem-solving for the future	
	Future goals	

different designs (i.e., randomized controlled trials, quasi-experimental, qualitative research) which evidenced a decrease in child behavior problems (de Graaf et al., 2008a; Tully & Hunt, 2017), dysfunctional parental practices (Bodenmann et al., 2008; de Graaf et al., 2008b), depression, anxiety, and stress levels (Au et al., 2014; Sanders et al., 2014), as well as an improvement in parental sense of competence (Leung et al., 2003, 2013).

The purpose of the current study is to determine whether Group Triple P can be an effective tool to use with Portuguese low-income families assisted by social services. It was hypothesized that, when compared to parents who receive the usual support (care-as-usual), GTP parents show improvements in child behavior problems, parents' behaviors and competence (i.e., primary outcomes), and parents' psychological adjustment and social support (i.e., secondary outcomes). More specifically, at post-intervention, six and 12-months after, parents are expected to report: 1) fewer child behavior problems; 2) lower levels of dysfunctional parenting; 3) higher levels of positive parenting strategies; 4) higher self-efficacy and parental satisfaction in managing child behavior; 5) improved parental adjustment; 6) lower levels of parenting stress; and 7) higher levels of social support. This is the first RCT assessing the efficacy of GTP in Portugal and will contribute to the pool of knowledge on the program. The findings will lead to a better understanding of how the program impacts the families followed by the Portuguese social welfare.

2. Method

2.1. Design

A randomized controlled trial was conducted comparing two conditions (Group Triple P [GTP] vs. Care-As-Usual [CAU]) with four assessment time points (baseline [T1], post-intervention, three-months after baseline [T2], six- [T3], and 12-months follow-up [T4]). The study

Table 2
Sociodemographic characteristics of the participants.

	GTP n = 67 M (SD)	CAU n = 67 M (SD)	Total N = 134 M (SD)
Participants' age	37.75 (9.09)	36.52 (8.48)	37.13 (8.78)
	$t(132) = -0.81, p = .42$		
Children's age	7.15 (2.70)	7.10 (2.70)	7.13 (2.69)
	$t(132) = -0.10, p = .92$		
Children's education (years)	2.54 (2.05)	2.22 (2.00)	2.38 (2.02)
	$t(132) = 0.90, p = .53$		
	%	%	Tests of Association
Participants' school level			
4 years of schooling	27	30	$\chi^2(2) = 0.90, p = .64$
9 years of schooling	61	54	
12 years of schooling	12	16	
Children's sex			
female	60	49	Fisher's Exact Test
male	40	51	0.30
Marital status			
married / similar	33	40	$\chi^2(2) = 1.98, p = .37$
divorced / similar	52	39	
single	15	21	
Relationship with the child			
mother	94	96	Fisher's Exact Test
grandmother	6	4	1.0
Family structure			Fisher's
single parent	33	42	Fisher's Exact Test
two-parent	67	58	0.37
Psychosocial risk level			
low	22	39	$\chi^2(2) = 4.26, p = .12$
medium	58	46	
high	20	15	

design was registered and is presented in full detail elsewhere (ISRCTN19620485).

2.2. Participants

Participants were recruited amongst families assisted by social welfare services from a city of the Douro Litoral region, in Portugal. Recruitment took place between January 2016 and May 2018 in a community center. Eligibility was assessed through a face-to-face screening interview. To be included in the study, the following criteria were defined: (a) families assisted by social welfare services; (b) families with at least one child between 3- and 12-years of age. Families were ineligible if (a) the target child had an intellectual disability, (b) parents did not live with the target child, (c) any of the parents had severe mental illness or significant cognitive impairment, (d) any parent had problems with drugs or alcohol at the time of recruitment. All eligible families were invited to participate in the study. The flow-chart depicted in Fig. 1 describes participants' enrollment, allocation, involvement, and attrition rate throughout the assessment time points. A total of 134 participants completed T1 assessment and were randomly allocated to GTP (n = 67) or CAU (n = 67). Participants were all women and the primary caregivers for the children. Ages ranged from 21 to 61 years ($M = 37.1, SD = 8.8$). The majority of participants were single mothers (63%), with four years of education (58%), all unemployed. Children's age ranged between 3 and 12 years ($M = 7.1, SD = 2.69$), and more than half of the target children were female (60%). Participants' socio-demographic data is presented in Table 2, and equivalent across conditions.

2.3. Procedure

The Ethics Committee of the authors' affiliation university approved the study design, protocols, procedures, and informed consent. Participation was voluntary and all participants signed an informed consent form. No economic compensation was given for participation in the study.

Given the low literacy level of the participants, data were collected through interviews by a research assistant. The outcome assessments took place, before intervention (T1), immediately after intervention (T2), six-months (T3), and 12-months (T4) after intervention, at a local community center.

After T1, participants were randomly assigned to GTP and to the CAU conditions. Randomization was done at the family level with a ratio of 1:1 using a computer-generated blocked randomization sequence, with a block size of 20 families. Allocation of participants was performed by an independent research assistant who was not involved in data collection or coding. Researchers, the practitioner, and participants were blind to allocation only before the randomization procedure, given the open-label design. To minimize bias of allocation of participants, the research assistant who carried out the post-intervention and follow-up assessments was blind to the intervention allocation of participants.

GTP intervention was delivered to seven different groups of mothers, with 8–10 participants each. Sessions occurred once a week, with a 2-hour duration. Usually, participants kept the schedule previously established with the practitioner, who is also the first author of this study. If by any reason a participant could not attend a group session, a brief individual recap session was scheduled immediately before or after the next group session. Babysitting, snacks, and drinks for participants were provided, as well as participants' transportation to and from the center. All the participants received the "Every Parents Group Workbook", a manual with the contents of the GTP program, practical exercises, and parents' worksheets. After each session, the practitioner filled out the implementation fidelity checklist, to monitor adherence to the program contents. No adverse effects, concerns or unintended consequences were identified in the study.

2.4. Measures

Family Background Questionnaire (FBQ; Sander et al., 1999). An adapted version of this questionnaire was used to gather relevant information on current problems and concerns about child's behavior, individual characteristics of participants, family circumstances (e.g., level of education, financial difficulties, history of illness, drug use, and criminal activity), and family characteristics (e.g., psychiatric illness, drug use, family violence, and discipline styles).

Family Psychosocial Risk Profile (Rodrigo, et al., 2000). This instrument comprehends 41 risk indicators in the following areas: economic household conditions, housing characteristics, personal history of caregiver, quality of family relationships, and parenting practices. All the items are dichotomous (i.e., present or absent). After filling the questionnaire, the caseworker estimates the global level of family psychosocial risk using three categories, namely low, medium or high risk. Only the global estimates of psychosocial risk level were used for data analysis purposes.

2.4.1. Primary outcomes

Strengths and Difficulties Questionnaire (SDQ; Goodman, 1997). The Portuguese version of the SDQ was used (Ferreira et al., 2020). The SDQ is a 25-items behavior questionnaire that evaluates parents' perceptions of problem behaviors and pro-social behaviors in children aged 3–16. It comprehends five subscales, (1) emotional symptoms ($\alpha = 0.65$), (2) behavioral problems ($\alpha = 0.71$), (3) hyperactivity symptoms ($\alpha = 0.69$), (4) peer problems ($\alpha = 0.58$), and (5) pro-social behaviors ($\alpha = 0.69$). Each item is scored on a 3-point likert scale ranging from 0 ("not true") to 2 ("certainly true"). Scores on the first four subscales are summed to obtain a total score of behavior difficulties ($\alpha = 0.71$). In all subscales, except pro-social behaviors, higher scores indicate more problem behaviors. Internal consistency coefficients of SDQ subscales were relatively low but comparable with values found in other European research studies (Rodríguez-Hernández et al., 2012).

Parental Scale (PS; Arnold et al., 1993). The Portuguese version of PS (Cruz & Abreu-Lima, 2013a) was used to address changes in parental

behavior. It includes 30 items divided in three subscales, (1) laxness ($\alpha = 0.73$), (2) over-reactivity ($\alpha = 0.57$), and (3) hostility ($\alpha = 0.75$). Each item describes a typical parent-child situation. In each item, parents indicate how they typically react, using a 7-point scale with specific descriptors in the extreme of each item. In all subscales, higher scores reveal more dysfunctional parental behaviors.

Alabama Parenting Questionnaire (APQ; Shelton et al. 1996). The Portuguese version of APQ (Nogueira et al., 2020) was used to assess parental behaviors. It contains 42 items that are rated on a 5-point likert scale according to parents' assessment of their frequency, ranging from 1 ("never") to 5 ("always"). The items are organized in three subscales, (1) positive parenting ($\alpha = 0.92$), (2) ineffective parenting ($\alpha = 0.57$), and (3) poor monitoring ($\alpha = 0.80$). For the first subscale, higher scores indicate more positive parenting strategies, while for the last two subscales, higher scores indicate more negative parenting behaviors.

Parental Sense of Competence Scale (PSOC; Johnston & Mash, 1989). Parental sense of efficacy and satisfaction were assessed with the Portuguese version of PSOC (Cruz & Abreu-Lima, 2013b). The PSOC is composed of 16 items, rated on a 6-point likert scale ranging from 1 ("strongly disagree") to 6 ("strongly agree"). For both subscales, higher scores indicate higher sense of parental efficacy and more satisfaction with parental tasks. Reliability coefficients for efficacy and satisfaction subscales were 0.81 and 0.68 respectively.

2.4.2. Secondary outcomes

Depression, Anxiety and Stress Scale (DASS-21; Lovibond & Lovibond, 1995). To measure mother's psychological adjustment, the Portuguese short-version of DASS (Pais-Ribeiro et al., 2004) was used. DASS includes 21 items organized in three subscales: (1) depression ($\alpha = 0.89$), (2) anxiety ($\alpha = 0.82$), and (3) stress ($\alpha = 0.85$). Items are rated on a 4-point scale from 0 ("does not apply to me at all") to 3 ("applies to me very much or most of the time"), according to how often particular symptoms were experienced in the past week. In all subscales, higher scores indicate less parental adjustment.

Parental Stress Index Short Form (PSI-SF; Abidin, 1995). The Portuguese version of PSI-SF (Santos, 2008) was used to assess parental stress. The PSI-SF consists of 36 items organized in three subscales: (1) parental distress ($\alpha = 0.79$), (2) parent-child dysfunctional interaction ($\alpha = 0.95$), and (3) difficult child ($\alpha = 0.91$). Each subscale consists of 12-items rated from 1 ("strongly disagree") to 5 ("strongly agree"). In all subscales, higher scores indicate more difficulties and higher levels of stress.

Medical Outcomes Study Social Support Survey (MOS-SSS; Sherbourne & Stewart, 1991). The family social support was evaluated through the Portuguese version of MOS-SSS (Fachado et al., 2007). The MOS-SSS is a 20-item questionnaire with four subscales, namely (1) social interaction, (2) emotional support, (3) affective support, and (4) material support. All items are rated on a 7-point likert scale ranging from 1 ("strongly disagree") to 7 ("strongly agree"). Each subscale provides an independent score and the sum of all subscale scores provides a global social support score, with higher values indicating more social support. In this study, only the global score was used ($\alpha = 0.94$).

2.5. Intervention conditions

Both GTP and CAU interventions were delivered at a community setting sponsored by the social welfare services.

2.5.1. GTP intervention

The GTP program consists of four weekly group sessions with a two-hours duration, three individual telephone consultations (15–20 min), and a closure group session. The group sessions include content presentation, videos, group discussions, and role-play exercises to promote positive and consistent parenting practices. Parents are also encouraged to do take-home exercises, in order to practice the content provided in each session. GTP utilizes an active skills training process to teach

Table 3

Primary and secondary outcomes' descriptive statistics for each condition (GTP vs CAU) over time, and repeated measures ANOVA results.

	Condition								Repeated measures ANOVA					
	GTP (n = 67)				CAU (n = 67)				Tests of within-subject effects			Tests of within-subject contrasts		
	T1	T2	T3	T4	T1	T2	T3	T4	Time × Condition			F		
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	F (df)	η^2	Observed Power	T1 vs. T2	T2 vs. T3	T3 vs. T4
Emotional symptoms (SDQ)	4.03 (2.57)	2.93 (2.38)	2.99 (2.48)	2.82 (2.43)	3.21 (2.63)	3.00 (2.26)	3.07 (2.36)	3.12 (2.38)	5.57** (1.91, 252.45)	0.04	0.84	6.80*	0	2.47
Peer problems (SDQ)	2.09 (2.09)	1.43 (1.65)	1.36 (1.66)	1.37 (1.58)	1.82 (2.01)	1.54 (1.60)	1.54 (1.67)	1.51 (1.68)	1.38 (1.91, 252.63)					
Depression (DASS)	7.46 (8.69)	6.05 (9.05)	5.70 (8.58)	5.61 (8.61)	8.06 (9.60)	9.43 (10.76)	7.25 (8.99)	7.34 (8.80)	1.95 (2.28, 300.25)					
Anxiety (DASS)	7.31 (7.40)	5.58 (6.11)	5.34 (6.20)	5.76 (6.36)	7.40 (8.99)	8.03 (8.79)	6.62 (7.85)	6.62 (8.16)	1.45 (2.36, 311.94)					
Parental distress (PSI)	33.85 (7.07)	29.30 (7.34)	28.93 (7.32)	28.48 (7.39)	34.73 (8.30)	32.33 (8.65)	32.33 (8.29)	32.25 (8.06)	2.10 (1.95, 257.05)					
Difficult child (PSI)	32.62 (9.89)	26.48 (6.83)	26.12 (7.54)	24.45 (7.67)	31.21 (10.65)	28.30 (8.74)	29.01 (9.12)	28.31 (8.09)	3.49* (1.58, 208.06)	0.03	0.58	2.99	1.62	0

Note. T1: baseline; T2: post-intervention, 3-months after baseline; T3: 6-months follow-up; T4:12-months follow-up. * $p < .05$, ** $p < .01$.

parents a variety of parenting skills. Parents are introduced to 17 positive parenting strategies including strategies to develop good relationships with children, encourage desirable behaviors, teach new skills and behaviors, and manage children's misbehavior, as well as planned activity routines for high-risk situations. During telephone sessions, difficulties identified by parents or issues that parents would like to debate are discussed with the practitioner.

Although there is a recommended structure for GTP as far as the number of sessions is concerned (i.e., five group session and three telephone sessions), some flexibility is allowed. According to Sanders et al. (1999), the number of sessions can vary depending on the needs of the group. Bearing in mind the particular sociocultural context and the low literacy of the participants in this study, the first and third sessions were split in two to ensure that all the contents and objectives were covered. Therefore, the program was delivered over the course of 10 weeks, involved seven 2-hour face to face group sessions that actively train parental skills and three telephone sessions following the self-regulatory format to facilitate independent problem-solving. The contents of the sessions are shown in Table 1. The program was delivered by the first author, a researcher and psychologist who received the GTP training and accreditation and with a large experience in community interventions with families.

2.5.2. Care-as-usual intervention

Parents in the control group received the usual intervention provided by social welfare services through a designated caseworker. This intervention is neither structured nor manualized. Generally, it includes a monthly office interview or home-visit. After completing the four assessment time points, CAU mothers also received the GPT intervention.

2.6. Data analysis

Data was analyzed using the Statistical Package for the Social Sciences (SPSS version 26). A priori power analysis performed using the G*Power software (Faul et al., 2007) revealed that the study sample size

was adequate to identify medium effect sizes. Distance-based outlier detection methods (i.e., Mahalanobis and Cook's distances) revealed that the dataset did not include any outliers or influential points.

Baseline background characteristics of the participants in the two conditions were compared using chi-square association tests for categorical variables, and independent t-tests for continuous variables. Preliminary analysis confirmed that the GTP and CAU conditions were equivalent at baseline in all outcomes and demographic variables, indicating that the randomization resulted in comparable groups.

Results of preliminary analysis revealed significant correlations between the family's risk level and the outcome measures at T1, within-groups. For mothers in the CAU condition, a higher risk level was related to more behavioral problems, $r = 0.40$, hyperactivity symptoms, $r = 0.39$, and total behavior difficulties, $r = 0.47$, and fewer pro-social behaviors, $r = -0.33$ ($ps < 0.01$) in children; higher use of laxness, $r = 0.53$, over-reactivity, $r = 0.49$, and hostility, $r = 0.47$ ($ps < 0.001$), as well as ineffective discipline, $r = 0.38$, and poor monitoring, $r = 0.33$ ($ps < 0.01$); higher levels of stress, $r = 0.29$, $p = .02$; and less social support, $r = -0.34$, $p = .005$. For mothers of the GTP condition, a higher risk level was related to a higher score on the parent-child dysfunctional interaction subscale, $r = 0.27$, $p = .03$, and less social support, $r = -0.25$, $p = .04$.

In line with these results, the effects of the intervention on the outcome measures presented above were evaluated through repeated measures analyses of covariance (ANCOVA) including the family's risk level as a covariate, allocation condition as the between-subjects factor (GTP vs CAU), and time as within-subject factor (four assessment time points), with Bonferroni adjustment for multiple comparison to examine the changes resulting from the interaction between time and condition. For the remaining variables (emotional symptoms, peer problems, depression, anxiety, parental distress and difficult child), for which no significant correlations were found, the intervention effect was assessed through repeated measures analyses of variance (ANOVA).

Results of the repeated measures analyses of variance and covariance were described considering the Greenhouse-Geisser correction when $\epsilon < 0.75$, and the Huynh-Feldt correction when $\epsilon > 0.75$. For each model

Table 4

Primary and secondary outcomes' descriptive statistics for each condition (GTP vs CAU) over time, and repeated measures ANCOVA results.

	Condition								Repeated measures ANCOVA					
	GTP (n = 67)				CAU (n = 67)				Tests of within-subject effects			Tests of within-subject contrasts		
	T1	T2	T3	T4	T1	T2	T3	T4	Time × Condition			F		
	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	F (df)	η^2	Observed Power	T1 vs. T2	T2 vs. T3	T3 vs. T4
Behavioral problems (SDQ)	3.15 (2.55)	2.24 (1.98)	2.22 (2.14)	2.12 (2.13)	3.25 (2.40)	2.90 (2.34)	2.70 (2.07)	2.64 (2.09)	1.66 (1.97, 258.47)					
Hyperactivity symptoms (SDQ)	5.46 (2.93)	4.75 (2.41)	4.54 (2.46)	4.61 (2.58)	5.57 (2.69)	5.72 (2.78)	5.70 (2.79)	5.63 (2.81)	4.36* (1.84, 241.56)	0.03	0.73	5.85*	0.64	0.71
Pro-social behaviors (SDQ)	9.16 (1.14)	9.28 (1.06)	9.28 (1.54)	9.30 (1.48)	8.69 (1.99)	8.72 (2.05)	8.85 (1.83)	8.90 (1.84)	0.82 (1.85, 242.22)					
Total behavior difficulties (SDQ)	14.73 (6.70)	11.34 (5.97)	11.10 (6.40)	10.93 (6.51)	13.85 (6.34)	13.15 (5.85)	13.01 (5.80)	12.90 (5.82)	7.66*** (1.72, 224.68)	0.06	0.99	20.28**	0.02	0.04
Laxness (PS)	2.61 (1.41)	1.88 (1.12)	1.80 (1.05)	1.99 (1.30)	2.61 (1.38)	2.73 (1.64)	2.70 (1.70)	2.63 (1.60)	7.38*** (2.15, 289.10)	0.05	0.95	11.56**	0.17	2.93
Over-reactivity (PS)	3.32 (1.56)	2.50 (1.38)	2.41 (1.47)	2.57 (1.52)	3.50 (1.36)	3.48 (1.55)	3.60 (1.58)	3.56 (1.51)	9.81 (2.44, 319.24)***	0.07	0.99	21.43***	1.38	1.17
Hostility (PS)	1.77 (1.33)	1.43 (0.94)	1.44 (1.07)	1.53 (1.07)	1.84 (1.16)	1.79 (1.17)	1.75 (1.11)	1.68 (1.07)	1.37 (2.14, 280.70)					
Positive parenting (APQ)	42.19 (10.53)	47.52 (9.20)	47.64 (9.12)	47.07 (9.68)	40.75 (9.10)	39.58 (8.96)	41.31 (8.20)	41.70 (8.33)	12.78*** (1.70, 222.44)	0.09	0.99	23.22***	4.73**	3.52
Ineffective parenting (APQ)	7.96 (2.62)	6.30 (2.30)	6.55 (2.35)	6.51 (2.52)	8.01 (2.67)	8.12 (2.56)	8.10 (2.60)	8.04 (2.65)	10.93*** (2.44, 319.50)	0.08	1.00	20.17***	1.03	0
Poor monitoring (APQ)	5.37 (1.20)	5.45 (2.50)	5.51 (2.52)	5.43 (2.05)	6.03 (2.68)	6.09 (2.56)	6.42 (3.44)	6.78 (3.76)	1.05 (2.62, 342.50)					
Satisfaction with parental tasks (PSOC)	34.63 (6.59)	39.31 (5.55)	38.99 (7.35)	39.10 (6.24)	32.85 (7.54)	33.55 (7.33)	33.28 (7.79)	33.51 (8.01)	9.19*** (2.15, 281.77)	0.07	0.98	16.41***	0.02	0.04
Parental efficacy (PSOC)	32.01 (2.81)	33.31 (2.80)	33.70 (3.12)	33.54 (3.50)	31.93 (4.35)	31.60 (4.62)	31.46 (5.65)	31.31 (5.49)	6.33** (2.31, 302.65)	0.05	0.93	8.95**	0.83	0
Stress (DASS)	11.37 (8.23)	8.69 (8.55)	8.87 (8.23)	8.72 (8.25)	12.38 (8.97)	12.12 (10.66)	10.12 (8.57)	9.94 (8.23)	1.57 (2.43, 318.23)					
Parent-child dysfunctional interaction (PSI)	29.75 (11.45)	24.42 (6.69)	22.99 (7.26)	23.12 (6.89)	30.28 (11.35)	25.79 (7.02)	25.78 (7.02)	25.43 (6.67)	2.10 (1.95, 257.05)					
Social Support (MOS-SSS)	51.25 (15.82)	60.45 (17.59)	59.93 (17.14)	58.48 (17.94)	47.33 (12.97)	47.16 (15.10)	47.66 (13.90)	46.85 (17.94)	7.61*** (2.25, 294.82)	0.06	0.97	14.17***	0.29	0.38

Note. Covariate: Family's risk level. T1: baseline; T2: post-intervention, 3-months after baseline; T3: 6-months follow-up; T4: 12-months follow-up. * $p < .05$, ** $p < .01$, *** $p < .001$.

observed, power and partial eta square effect sizes were also reported. According to Cohen (1988), 0.01, 0.06, and 0.14 note small, medium, and large effect sizes, respectively.

Participants' dropout rate throughout the study was 19%. The number of dropouts, (15 in GTP and 11 in CAU, $t(132) = 0.87, p = .39$), and reasons reported (e.g., moving to a different city, emigration) was similar across conditions. An intention-to-treat approach was employed using the last observation carried forward (LOCF) method, using the last available measurement for each participant's missing observation (Gupta, 2011).

3. Results

Primary and secondary outcomes' descriptive statistics for each condition at each assessment time point, as well as the results of the

repeated measures ANOVAS and ANCOVAS are presented in Table 3 and Table 4, respectively.

3.1. Primary outcomes

Repeated measures ANOVA and ANCOVA on the SDQ subscales and total behavior difficulties revealed significant time × condition effects, with small to medium effect sizes, for emotional symptoms, hyperactivity symptoms, and total behavior difficulties. Tests of within-subject contrasts revealed improvements for the emotional and hyperactivity symptoms and total behavior difficulties reported by mothers in the GTP conditions, when compared with those in the CAU condition, immediately after the intervention (Fig. 2). These outcomes were found to remain stable from T2 to T3, and from T3 to T4.

Repeated measures ANCOVA on the PS, APQ, and PSOC subscales

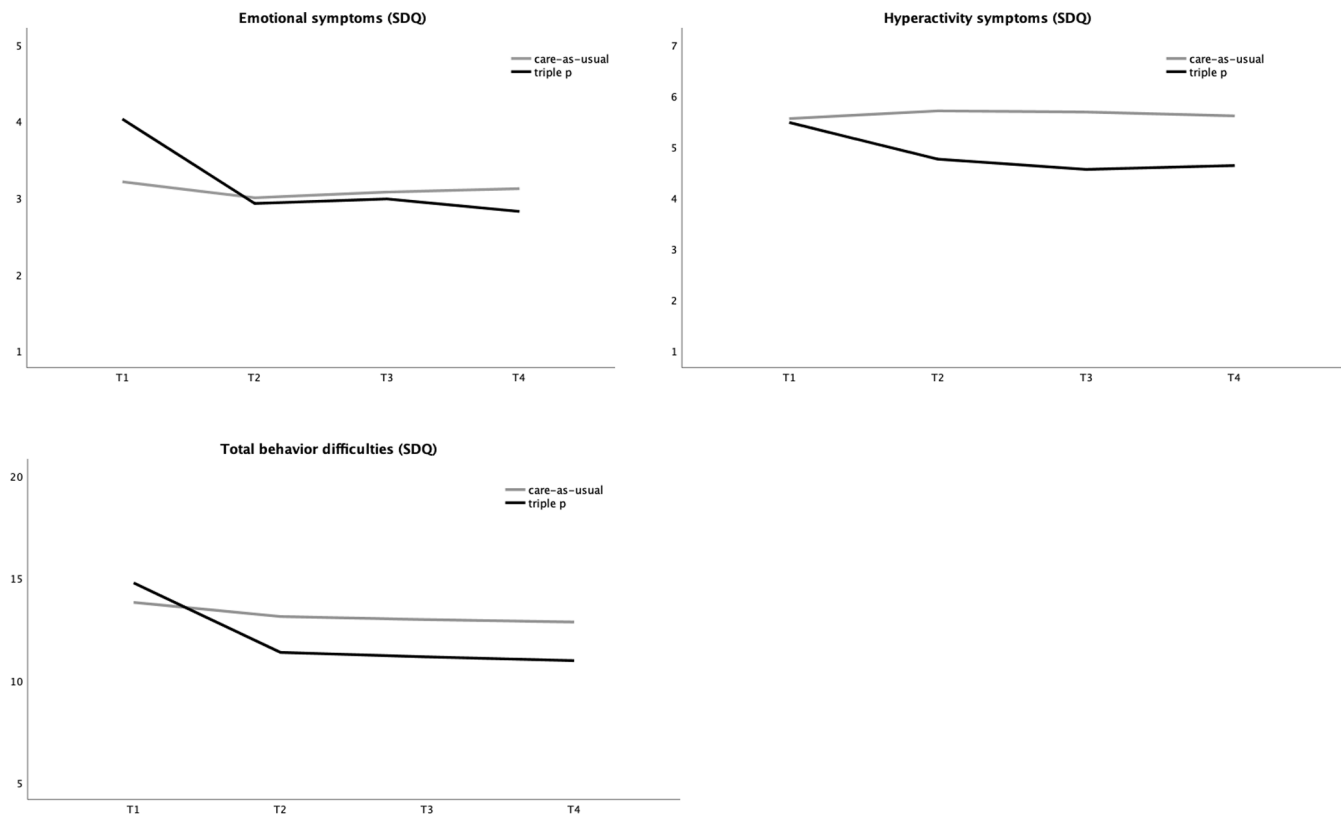


Fig. 2. Graphs depicting repeated measures ANOVA results for SDQ emotional symptoms subscale, and repeated measures ANCOVA (covariate: family's risk level) results for SDQ hyperactivity symptoms subscale and total behavior difficulties, comparing both conditions (GTP vs. CAU) over time.

revealed significant time \times condition effects, with small to medium effect sizes, for laxness, over-reactivity, ineffective parenting, positive parenting, satisfaction with parental tasks, and parental efficacy. Tests of within-subject contrasts revealed improvements in these outcomes, reported by mothers in the GTP conditions, when compared with the CAU condition, immediately after the intervention (Fig. 3). All outcomes were found to remain stable from T2 to T3, except positive parenting, which presented a slight increase only for the CAU condition. From T3 to T4, all outcomes were found to remain stable.

3.2. Secondary outcomes

Repeated measures ANOVA and ANCOVA on the DASS and PSI subscales did not reveal significant time \times condition effects, except for difficult child. However, this result will not be considered, given the small effect size, and observed power 58%, which suggest that these findings should be interpreted with caution. Moreover, tests of within-subject contrasts did not yield significant results.

Regarding the PSI subscales, results of the repeated measures ANOVA for the subscale parental distress, $F(1.95, 257.05) = 17.13, p < .001, \eta^2 = 0.12, \text{observed power} = 1$, and of the repeated measures ANCOVA for the subscale parent-child dysfunctional interaction, $F(1.29, 168.29) = 9.27, p < .001, \eta^2 = 0.07, \text{observed power} = 0.91$, revealed significant time effects, with medium effect sizes. According to tests of within-subject contrasts, from T1 to T2, the levels of parental distress, $F(1, 132) = 18.44, p < .001, \eta^2 = 0.12, \text{observed power} = 0.99$, and parent-child dysfunctional interaction, $F(1, 131) = 10.91, p < .001, \eta^2 = 0.08, \text{observed power} = 0.91$, decreased for mothers in both conditions.

Repeated measures ANCOVA on the MOS-SSS subscale revealed significant time \times condition effects, with a medium effect size, for social support. Tests of within-subject contrasts revealed improvements in the social support outcome reported by mothers in the GTP conditions, when compared with the CAU condition, immediately after the

intervention (Fig. 4). The social support outcome was found to remain stable from T2 to T3, and from T3 to T4.

4. Discussion

The current study aimed to assess the efficacy of GTP versus CAU intervention in the short and long run with families assisted by social services. The trial was implemented in a community setting with low-income families with a high prevalence of medium to high psychosocial risk. When compared to CAU, GTP intervention leads to significant improvements in mothers (i.e., more positive parenting strategies; lower laxness and over-reactivity behaviors, higher parental sense of competence), children's (i.e., decreased emotional and hyperactivity symptoms), and family outcomes (i.e., high social support network).

By the end of the intervention, GTP mothers showed lower levels of laxness (e.g., more clear rules) and over-reactive behaviors (e.g., less passive and aggressive behaviors) in daily interactions with their children. Likewise, they applied more positive parenting strategies (i.e., praising, showing affection and positive attention) and less ineffective strategies (i.e., corporal punishment, withdrawal of affection). In line with findings from other studies, the current study results indicate that GTP mothers learned useful disciplinary practices (e.g., rewards, consequences) and new skills (e.g., descriptive praise) which they chose to implement regularly instead of the previous ineffective strategies (García et al., 2018; Mejía et al., 2015). GTP mothers also improved their sense of competence (i.e., self-efficacy and satisfaction) regarding parental performance and management of their children's behaviour. All changes evidenced by GTP mothers were maintained over time, which is consistent with other Triple P research findings (Bodenmann et al., 2008; Matsumoto et al., 2007, 2010; Zhou et al 2017) and in line with the aims of the program.

According to mothers' perceptions, children showed less difficult behavior, especially with regard to emotional and hyperactivity

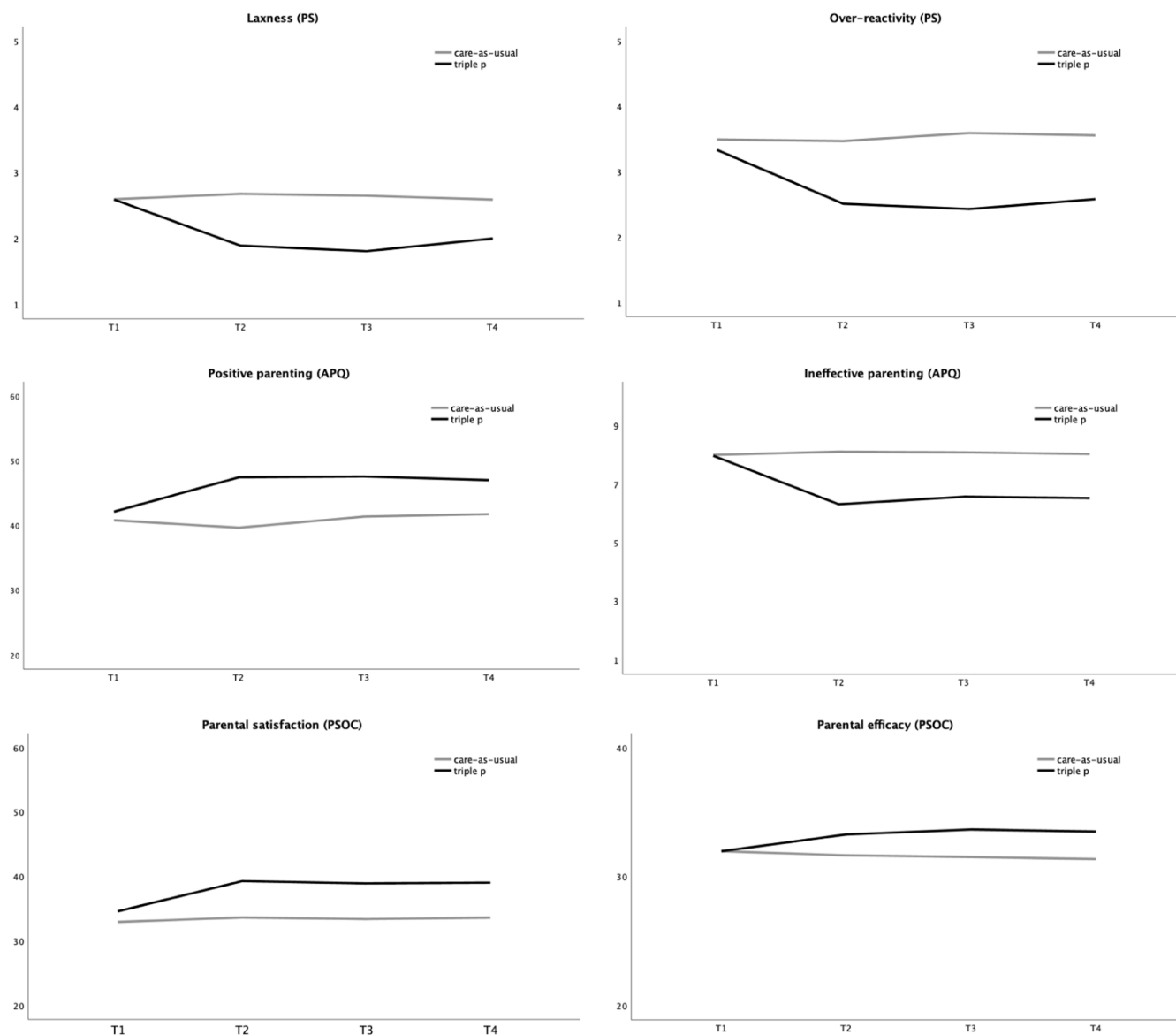


Fig. 3. Graphs depicting repeated measures ANCOVA (covariate: family's risk level) results for PS laxness and over-reactivity subscales, APQ positive parenting and ineffective parenting subscales, and PSOC satisfaction and parental efficacy subscales, comparing both conditions (GTP vs. CAU) over time.

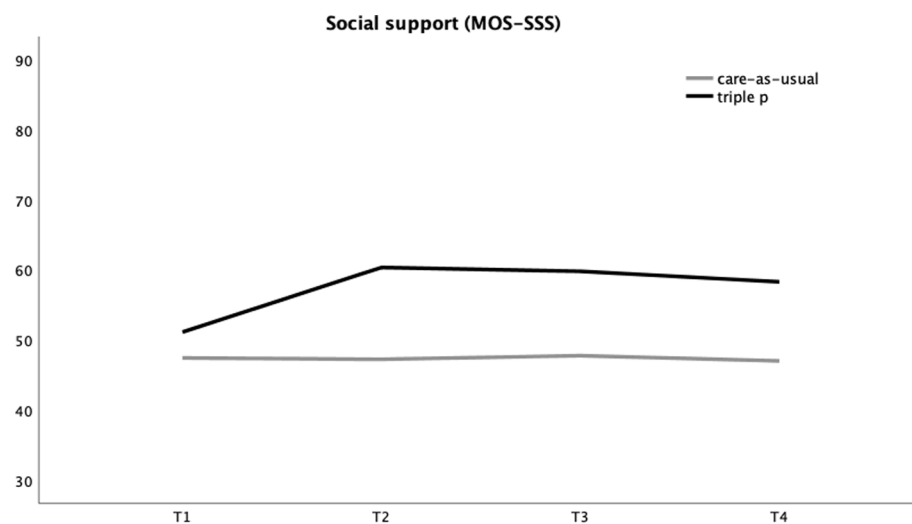


Fig. 4. Graph depicting repeated measures ANCOVA (covariate: family's risk level) results for social support, comparing both conditions (GTP vs. CAU) over time.

symptoms. Again, these results are consistent with findings from previous studies (Errázuriz et al., 2016; Sanders et al., 2014) and reaffirm the possibility that, after GTP intervention, parents are more focused on positive behaviors and tend to see their children's behavior as less problematic. Notwithstanding, it is also admissible that changes in parental behavior may lead to changes in child behavior, as intended by the program. The possibility that children perceive their parents as more positive and more consistent figures in their parenting role may also account for child behavior changes (Errázuriz et al., 2016; Sanders et al., 2014).

Regarding the secondary outcomes, both GTP and CAU mothers reduced their parental distress, and parent-child dysfunctional interaction levels immediately after the intervention. Both conditions improved mothers' well-being, which is in accordance with findings from Barlow et al (2012), who mention the positive effect of psycho-social interventions on parent's well-being.

The positive results of GTP extended to the development of the social support network of GTP mothers, when compared to CAU mothers. These positive effects remained at the six-months and 12-months follow-ups and find echo in previous research findings (Leung et al., 2003, 2013). When parenting interventions are conducted in group format, parents support each other by sharing their experiences in a safe and secure environment. Furthermore, GTP intervention intentionally promotes the development of social support networks among participants, which may also account for the results found.

The current research supports the efficacy of GTP with low-income families assisted by social services. This intervention may be particularly relevant and act as a protective factor for such families (Haslam & Burke, 2019). GTP reduced the perceived burden of parenting problems, decreased the perceived amount of child behavior problems, and improved the sense of parental competence and personal agency, thus empowering families towards dealing with and solving their own problems. Parents also became more efficient in regulating their emotions and behaviours as well as those of their children and appeared to believe in their own capacity for setting and achieving self-defined goals. These changes are expected according to the self-regulatory framework that underpins Triple P interventions. Globally, parents became more self-confident and autonomous in addressing child-rearing challenges and solving parenting related problems (Sanders et al., 2014).

Findings from this study have straightforward implications for practice and social welfare services. It is important to provide practitioners and family caseworkers with evidence-based programs that can guide their practice, saving precious time and energy. The relevance of implementation conditions, including the necessary balance between fidelity and flexibility should also be worthy of attention from those who deliver the program to low-income families. Findings from this study also concern policymakers and governmental organizations when planning for the development of parenting policies that may respond to the needs of communities, particularly concerning parenting interventions.

The present study also presents a few limitations, the first one being the reliance on mother's self-report measures without additional independent evaluations (e.g., fathers, teachers, or even children). A second limitation stems from the fact that all GTP groups were conducted by one sole provider, who was also a highly motivated member of the staff of the community center. Future research should address these limitations in order to support these findings.

5. Conclusion

Low-income families face uncountable challenges in parenting. Welfare social services need evidence-based parenting programs that guide their efforts to support parenting, and it is urgent to provide them with adequate tools. GTP proved to be a useful resource, by improving parental perception of children's behavior, positive parental practices,

self-efficacy, and parental satisfaction in the participating families, in the short and in the long run. Findings from this study may serve as base to the spreading of GTP to the Portuguese social welfare services, filling an outstanding gap in the training of practitioners towards their mission of providing vulnerable families with relevant, promising, and life-changing interventions.

Funding Sources

This study did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

CRedit authorship contribution statement

Sandra Nogueira: Conceptualization, Methodology, Formal analysis, Investigation, Writing - original draft. **Isabel Abreu-Lima:** Conceptualization, Methodology, Writing - review & editing, Supervision. **Catarina Canário:** Writing - review & editing, Formal analysis. **Orlinda Cruz:** Conceptualization, Methodology, Investigation, Writing - review & editing, Supervision.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper. The authors declared to be trained and accredited on several programs of the Triple P system.

Acknowledgments

The authors are grateful to Lindon Krasniqi for proofreading the manuscript.

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