

An Analysis of Training, Generalization, and Maintenance Effects of Primary Care Triple P for Parents of Preschool-Aged Children with Disruptive Behavior

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Abstract A brief primary care intervention for parents of preschool-aged children with disruptive behavior was assessed using a multiple probe design. Primary Care Triple P, a four session behavioral intervention was sequentially introduced within a multiple probe format to each of 9 families to a total of 10 children aged between 3 and 7 years (males = 4, females = 6). Independent observations of parent-child interaction in the home revealed that the intervention was associated with lower levels of child disruptive behavior both in a target training setting and in various generalization settings. Parent report data also confirmed there were significant reductions in intensity and frequency of disruptive behavior, an increase in task specific parental self-efficacy, improved scores on the Parent Experience Survey, and high levels of consumer satisfaction. All short-term intervention effects were maintained at four-month follow-up. Implications for the delivery of brief interventions to prevent conduct problems are discussed.

Keywords Primary care · Triple P · Single case · Parent training ·
Child problem behavior · Child disruptive behavior

Introduction

Although behavioral family intervention programs (BFIs) based on social learning models [1] are effective in reducing child behavioral and emotional problems [2–4] only a minority

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of parents who might benefit actually participate in evidence-based parenting interventions [5, 6]. Many service delivery systems that provide parenting assistance rely on parent education and family support programs that lack a credible evidence base and, consequently, parenting interventions have little impact on the prevalence of childhood behavioral and emotional problems [7, 8].

To improve access to evidence-based parenting programs, Sanders and colleagues developed a multilevel parenting and family support initiative known as the Triple P Positive Parenting Program [7]. The system of intervention, based on a social learning approach to family intervention, addresses known risk factors and aims to prevent behavioral, emotional, and developmental problems in children by enhancing the knowledge, skills, and confidence of parents in the task of raising their children. The system uses five different levels of intervention intensity, tailored to the differing levels of support parents require [9]. Level 1 is a universal parent information strategy that provides all interested parents with access to useful information about parenting. This is achieved through a coordinated promotional campaign using print and electronic media as well as user-friendly parenting tip sheets and videotapes that demonstrate specific parenting strategies. Level 2 is a brief, one to two-session primary health care intervention providing early anticipatory developmental guidance to parents of children with mild behavior difficulties or developmental issues. Level 3, a four-session intervention, targets children with mild to moderate behavior difficulties and includes active skills training for parents. Level 4 is an intensive eight to ten session individual, group or self-directed parent training program for children with more severe behavioral difficulties. Level 5 is an enhanced behavioral family intervention program for families where child behavior problems persist or where parenting difficulties are complicated by other sources of family distress (e.g., marital conflict, parental depression or high levels of stress). The rationale for this tiered strategy is that children have differing levels of dysfunction and behavioral disturbance, and parents also have differing preferences regarding the type, intensity, and mode of assistance they require. The system operates within a health-promotion framework and is designed to maximize efficiency by providing the minimum amount of assistance required to effect change at the earliest point of contact.

There is a substantial evidence base supporting the efficacy of the Triple P system of intervention. Four different meta-analyses have confirmed that children and parents demonstrate significant improvements in child behavior and parenting practices after participating in the intervention [10–13]. Whereas most studies have focused on the more intensive levels of intervention (i.e., levels 4 and 5), relatively fewer studies have examined the efficacy of brief parenting interventions designed for delivery within the primary care system.

Primary Care Triple P (PCTP) [14] is a brief, level 3 intervention, designed for use in a variety of primary care settings including general medical practices, community child health clinics, and home visiting services. These settings are potentially advantageous for detecting parent-child difficulties and providing early intervention for parents whose children are at risk for child and adolescent mental health problems [15]. Primary-care settings are potentially useful venues for delivering parenting programs because of the high prevalence of behavioral and emotional problems in children [16, 17], inadequate resourcing of specialist mental health services [6, 8], and resistance to attending mental health services due to perceived social stigma and lack of service availability [18].

However, evidence concerning the efficacy of Primary Care Triple P is limited. Turner and Sanders [14] conducted the only randomized trial of PCTP to date and found that parents reported significantly fewer conduct problems after intervention than parents in the

waitlist control condition. Although these findings are promising, further research is needed. The generalization effects of parenting interventions such as PCTP are important, but understudied. For example, children with conduct problems can display disruptive behaviors in multiple community and home settings, particularly where parents have competing demands and time constraints, or where parenting is under public scrutiny (e.g., shopping, visiting, getting ready to go out). If parents do not implement positive parenting and contingency management procedures predictably and successfully in diverse settings, children may discriminate the non-availability of reinforcers for prosocial behavior or the lack of accessible back-up consequences (e.g., timeout). As a result, children's behavior may deteriorate or remain unchanged from pre-intervention levels.

Although several studies in the early 1980s showed that parent training programs can result in reliable improvements in children's behavior in multiple settings [19–21], these studies typically used intensive home-based parenting interventions. Furthermore, these studies incorporated elements into the intervention designed to specifically promote the generalization of parent and child behavior changes across settings. Observational studies showed that when the parent training incorporated generalization enhancement procedures such as parental self-management training [20, 22], planned activities training [19, 22], and training sufficient exemplars [23–25], parents generalized their skills across multiple settings.

Primary Care Triple P, a brief four-session intervention also emphasizes the promotion of generalization by training parents in general behavior change principles, using sufficient exemplars through parenting tipsheets covering a range of problem behaviors and age-specific videos that demonstrate positive parenting principles and techniques, and the use of a self regulation framework that includes parental goal setting, self-monitoring, and self-evaluation.

The present study extends existing research on PCTP through the use of an intra-subject replication design, specifically a multiple probe across families design to explore the across setting generalization effects of the intervention. Parents of preschool-aged children with moderate severity conduct problems (the target group for the intervention) were sequentially introduced to PCTP in a multiple probe format. We predicted that families participating in PCTP would show: (1) decreased observed and parent-reported child behavior problems; (2) reduced observed and parent reported dysfunctional parenting practices; (3) increased parental self-efficacy; and (4) maintenance of intervention gains over time. Parental acceptability of PCTP and associated outcomes were also assessed.

Method

Participants

Participants were ten children from nine families residing in two southern US cities. All were cohabitating, married, two-parent families. Recruitment occurred via solicitation by local pediatricians, print media, flyers, and word of mouth. Three families responded to print media; the remaining families were recruited through the CDC parent list serve in Atlanta GA. Responding parents were asked to complete the eyberg child behavior inventory (ECBI) [26] and were interviewed about family details, child behavior, developmental history, child health status, child educational history, and family relationships and interactions. Inclusion criteria were that parents: (1) had to be the legal guardian and primary caregiver of a child whose ages were between 3- and 7-years; and (2) present with

concerns about behavior problems that occurred primarily in the home. Exclusion criteria for parent and/or child were: (1) intellectual disabilities; (2) chronic medical problems; (3) psychological and/or psychiatric problems; (4) drug-addiction problems; (5) non-English-speaking; and (6) children diagnosed with a conduct-related disorder. In total, nine families were selected to participate, including a total of ten children. All families were asked to sign consent forms for their participation. The nine families in the study were yoked for comparison in sets of either two or three families.

Family 1a was a 5-year-old boy, “JM” and his biological parents. JM had successfully completed a 2-year speech therapy program. His mother, age 43, was college educated and self-employed full-time. JM’s father, age 39, was employed part-time and enrolled in college courses. The training setting (TS) for Family 1a was dinnertime in the kitchen and the generalization setting (GS) was playtime and clean up in the living room. Family 1b was a 4.5-year-old boy, “DS,” his 2.5-year-old brother, and their biological parents. DS’s mother, age 33, and father, age 37, had completed college. DS’s mother was a stay-at-home parent and his father was employed full-time. The TS for Family 1b was playtime and clean up in the living room and the GS was preparation for community outings and occurred in the kitchen, yard, and garage.

Family 2a was a 4-year-old boy, “ZG,” his 2.5-year-old sister, and their biological parents. ZG’s mother, age 33, and father, age 35, had advanced degrees. His father was employed full-time and his mother was employed part-time. Family 2a’s TS was dinnertime in the kitchen and their GS was independent playtime with sibling in the playroom. Family 2b was a 6-year-old girl, “PW,” her 2-year-old sister, and their biological parents. Both parents had college degrees; father, age 37, was employed full-time and mother, age 33, was employed part-time. Family 2b’s TS was clean up in the child’s bedroom and their GS was dinnertime in the dining room.

Family 3a included a 3-year-old girl, “CB” (3a target child), her twin sister, “JB” (3a generalization child) and their biological parents. CB and JB’s parents, both 29, were college-educated and worked full-time. Their mother indicated that she had seen a mental health professional for “a few visits” in the last 6 months. Family 3a’s TS for both siblings was dinnertime and their GS was independent play with sibling in the living room. Family 3b was a 3-year-old girl, “JB,” her 1-year-old brother, and their biological parents. JB’s mother, age 34, and father, age 39, were college-educated, JB’s mother had an advanced degree. Both parents were employed full-time. Treatment for 3b initially targeted the dinnertime setting; however, some direct training occurred in the GS, which was bath time.

Family 4a was a 6-year-old girl, “DS,” her 6-month-old sister, 4-year-old brother, and their biological parents. DS’s mother, age 31, and father, age 33, had advanced degrees and worked full-time. Family 4a’s TS was setting the table in the dining room and their GS was playtime and clean up with sibling in the sibling’s bedroom. Family 4b was comprised of a 4-year-old boy, “AB,” his 7-year-old sister, and their biological parents. Both parents were 37, had advanced degrees and worked full-time. Family 4b’s TS was dinnertime in the kitchen and their GS was bath time in the bathroom. Family 4c was comprised of a 3-year-old girl, “LW,” her 11-month-old brother, and their biological parents. LW’s mother, age 33, and father, age 39, were college-educated; her mother had an advanced degree. Both parents were employed full-time. Family 4c’s TS was bedtime in the bathroom and bedroom and their GS was dinnertime in the dining room.

Triple P practitioners. PCTP was delivered by two accredited Triple P practitioners supervised by a clinical psychologist who was also an accredited Triple P practitioner.

Coder and videographer training and reliability. Two videographers followed written instructions that outlined: (a) the procedures for videotaping two settings (target and

generalization settings); (b) how to handle observation interruptions and cancellations; and (c) how to interact with parents. Videographers were trained and then calibrated for protocol fidelity before being deployed with families.

Materials

Observations were recorded using digital video equipment and then converted to DVDs for coding via Windows Media Player.

PCTP resource materials included: the *Practitioner's Manual and Consultation Flip Chart for Primary Care Triple P* [27, 28], *Positive Parenting booklet* [29], selections from the *Tip Sheet Series* [30, 31] on common problems such as noncompliance and tantrums encountered by parents with infants, toddlers, and preschoolers, and the *Every Parent's Survival Guide Video* [32].

Design

A multiple probe across participants design [33] assessed PCTP effects on parent and child behavior. This single-case design involved repeated (noncontiguous) assessments of a case or family, before, during, and after the intervention. In the multiple probe design, two or more participants, or in this case families, are yoked for comparison across experimental conditions.

The order and sequence of yoking was determined primarily by each family's availability. Within each set, one family was labeled 'Family A' and the other 'Family B'. Baseline measures were collected concurrently for the yoked families in a set. PCTP was introduced in Family A when the rate of targeted child behavior in Family A was either stable, showing a trend in a direction opposite of that desired, or not showing a stable downward trend. When an effect of the intervention was observed in Family A (i.e., the child's behavior change was in the desired direction), the intervention was introduced in Family B. If no behavior change in Family A's child was observed after the full four sessions of PCTP, up to two booster sessions were conducted. The reason for this was that we included families with more severe child disruptive behaviors than would normally be qualified for Primary care Triple P. By including families with more severe behavior problems, we were ensuring that we would have behaviors at baseline that were stable and that could show a definitive decrease after treatment. Thus, experimental control is demonstrated when the intervention is sequenced across time and when behavior change occurs after intervention is introduced. This sequence rules out the role of variables other than intervention when behavior change in the second family occurs after intervention commences.

Within each family, generalization was examined by assessing behavioral changes in a *sibling* with whom the family was not trained and/or a *setting* in which the family was not specifically trained. Family (3a) presented with two siblings with behavior problems. The sibling displaying higher rates of behavior was targeted for intervention with the parent. To determine if the parent generalized skill training from one sibling to another sibling, observations were conducted to examine changes in parent and child behavior with *both siblings*, to determine if the parent generalized skill training from one sibling to another. In all other families, one setting was targeted for intervention (e.g., dinnertime), while changes in parent and child behavior in another setting were assessed (e.g., bedtime).

Intervention

Session one was devoted to assessing the problem with an intake interview. Questions probed the history of the problem and discussion focused on developing a shared understanding of the problem behavior. Parents were asked to record the rate of problem behavior throughout the intervention using data collection forms provided by the Triple P educator. Between sessions one and two, parents were instructed to watch *Every Parent's Survival Guide Video*, which discusses causes of child behavior problems and demonstrates the core Triple P parenting strategies. In session two, the Triple P educator provided feedback to the parent on assessment results, worked with the parent to identify causes of their child's behavior problems based on their understanding of the video, set goals for parent and child behavior change, and helped the parent choose positive parenting and behavior management strategies for inclusion in their parenting plan. The menu of core parenting strategies included: spending brief quality time, talking with and showing affection towards children, descriptive praise, attention for desired behavior, providing engaging activities, teaching new skills and behaviors by modeling, incidental teaching, least to most methods of prompting, and using rewards with behavior charts. Parenting strategies used to prevent or address misbehavior included: ground rules, using directed discussion when a rule is broken, planned ignoring, delivery of clear, calm instructions, application of logical consequences for misbehavior, quiet time (i.e., inclusionary timeout), and timeout. Standard parenting routines were taught for noncompliance to instructions. The compliance routine addressed transitions that evoked noncompliance, such as stopping a preferred activity and starting a new one, and the behavior correction routine addressed stopping and applying consequences if the noncompliant behavior continued. Between sessions two and three, parents were expected to implement the parenting plan. In session three, the Triple P educator reviewed progress, refined and rehearsed parenting strategies, prompted the parent to problem solve obstacles to implementation, and addressed additional or new behavior problems. The Triple P educator followed-up with the family in session four to discuss progress, give suggestions for maintenance, address other implementation issues, and if necessary, discuss referral options with the parent. Each session finished with a succinct overview of topics covered, assignment of homework, an overview of the next session, questions, setting the next meeting time, and gratitude for participation. All families completed the intervention within the recommended timeframe.

Sessions one through three were scheduled to occur within three-weeks. Session four was scheduled to occur within one-to two-weeks of Session three. Families that did not show behavior change at post-treatment in the target or generalization settings were offered a booster session. Booster sessions covered content that needed review (as identified by the experimenter through examination of observations and session audiotapes) and/or content the parent requested.

Throughout sessions, the Triple P educator used the "parent participatory model" to guide parents through the information presented. The model involves encouraging parent choice, decision-making, and problem-solving throughout the process of assessing the problem, designing a parenting plan, and programming for maintenance and generalization. Parents were verbally prompted to use the parenting information to which they were exposed (e.g., "In what other situations might this strategy be helpful?"), to facilitate selection of parenting strategies perceived as socially acceptable for their family and that would have the greatest effect on their child's behavior. Parents completed homework assignments throughout the intervention such as monitoring the frequency, duration, and antecedents of problematic child behavior.

Measures

Videotaped Family Observations. Parents were instructed to handle misbehavior as they typically would. At post-treatment and follow-up, parents were instructed to implement the parenting strategies they learned during sessions.

Videotapes were coded in 10-second intervals for positive and aversive parent-child interactions using the coding scheme from the Revised Family Observation Schedule (FOS-R-III) [34]. Positive parent behavior was measured by calculating the percentage of intervals in which the parent displayed praise, physical contact, specific instructions, vague instructions, questions, attention, affection, and responsiveness to child interruptions. Parent aversive behavior was measured by calculating the percentage of intervals in which the parent displayed these same behaviors (except praise) with an angry or hostile voice volume, pitch, or facial expression/body posture. Child disruptive behavior was the percentage of intervals in which the child displayed noncompliance, complaints, aversive demands, interruptions, physical attacks on persons/objects, or oppositional behavior. An oppositional behavior code served as a catchall code for child disruptive behaviors not captured by other codes. Child disruptive behavior served as the dependent variable. Positive child behavior was measured by calculating the percentage of intervals in which the child displayed appropriate verbal or nonverbal interactions, or displayed affection towards parents or siblings.

Self-report measures. The ECBI [26], which assesses child problem behavior, was administered via telephone during initial screening and at follow-up. ECBI test-retest reliability (12-week interval, $r = .80$ and $.85$, respectively) is good and high internal consistency has been reported on ECBI intensity ($r = .95$) and problem scores ($r = .91$). The parenting tasks checklist (PTC) [35], which assesses parents' self-efficacy in performing common parenting tasks, was administered in person during the secondary screening, at the end of session four, and via telephone at follow-up. The PTC consists of two subscales, Behavioral and Setting Self-Efficacy both with excellent internal consistency ($\alpha = .97$ and $.91$, respectively).

The next three measures described were administered as part of Primary Care Triple P. The Family Background Questionnaire was adapted from the Western Australian Child Health Survey [36], and assesses biographical and demographic information. Parents completed this questionnaire between sessions one and two. Essential biographical data includes contact details, the child's details, parents' marital status, current employment and educational background. The parenting experience survey (PES) was adapted from the Living with Children Survey [5] and assesses perceptions of parenting skill and partner support in parenting. Parents completed the PES between sessions one and two and after session four. The Client Satisfaction Questionnaire (CSQ), adapted from the Therapy Attitude Inventory [37], was used to assess parents' satisfaction with the quality, ease of use, and appropriateness of Triple P. The CSQ was revised for this study to include 12 items regarding (1) satisfaction with the Triple P parent handouts and video; (2) participants' perceptions regarding cultural differences in parenting between themselves and the Australian actors in the Triple P parenting video; and, (3) the affect Australian accents and idioms had on the parent's ability to understand what was said in the video. This questionnaire was completed at the end of session four. The CSQ was completed at the end of session four. High internal consistency ($\alpha = .96$) was reported in a clinic sample receiving behavioral family interventions [38].

Fidelity Checks. In order to assess educator fidelity to Triple P intervention protocols, all Triple P sessions were audiotaped. The audiotapes were monitored as needed for

clinical supervision. Two sessions were reviewed by the experimenter from each family and coded for content using a checklist that detailed instructions from the practitioner's manual; one session was randomly chosen for coding. Session two was always coded as it contained the core of the intervention, the parenting plan. The experimenter listened to audiotaped sessions twice before scoring. The educator completed a session summary checklist that served as reliability for the experimenter's coding.

Results

Analyses of Observational Data

The results were subjected to visual inspection of individual families' graphical data within a multiple probe format across families, and supplemented by statistical analysis of group means. The statistical analysis consisted of a series of repeated measures ANOVAs and follow-up *t*-tests to examine phase differences in levels of observed child disruptive behavior, and parent aversive behavior. To test for the effects of setting, time, and setting by time interaction, a two-setting (target vs. generalization) X three time period (baseline vs. post-treatment vs. follow-up) repeated measures MANOVA was conducted.

Treatment Fidelity

Treatment fidelity were assessed by examining each family, practitioner, and session number. The scores for the South Carolina (SC) practitioner were 57 and 77% ($M = 67%$, $SD = .08$). Because these scores were low, a treatment fidelity score was calculated based on the portion of session two in which the parenting plan was specifically addressed. For SC families 1a and 2b, parenting plan treatment fidelity was 100 and 67%, respectively. The SC practitioner's Session Summary Checklists, which served as a self-report of the content covered in sessions, indicated that 100% of the content was covered in each session for both families. The treatment fidelity scores for the Atlanta, GA practitioner ranged from 48 to 85% across the 7 families treated ($M = 73%$, $SD = .10$). Parenting plan treatment fidelity ranged from 61 to 89% ($M = 75%$, $SD = .10$).

Inter-observer Reliability

Table 1 displays inter-observer reliability scores by family, coding method, and condition. Reliability scores were calculated for the FOS by dividing agreements by the total number of agreements and disagreements and multiplying by 100. Reliability scores were calculated for PMS using the same equation, however, only scored intervals were included in the calculation. Inter-observer reliability scores for FOS coding across families ranged from 81 to 96% in baseline, to 85 to 94% in posttreatment. Inter-observer reliability scores for PMS coding across families ranged from 82 to 97% in baseline, to 65 to 97% in posttreatment.

Changes in Child Disruptive Behavior (CDB)

Target setting (TS). Figure 1 presents the percentage of intervals for CDB across experimental conditions in the TS. CDB scores for Family 1a reduced from a mean of 53.92% at baseline to 12.05% at post-treatment and 27.83% at 6-week follow-up. Family 1a declined

Table 1 Inter-observer reliability scores for family observation scale (FOS) and parent management skill (PMS) coding by family and condition

Family	FOS baseline (%)	FOS PTX (%)	PMS baseline (%)	PMS PTX (%)
1a	96.01	87.08	95.0	91.6
1b	88.45	94.41	81.86 ^a	64.51 ^a
2a	85.07	87.3	91.84	90.48
2b	85.6	89.47	97.09	84.3 ^a
3a-TC	87.2	87.5	83.01 ^a	88.14
3a-GC	87.5	90.0	89.4	85.0
3b	88.89	84.85	94.12	89.58
4a	81.34	86.11	94.39	69.01 ^a
4b1	92.33	89.86	91.89	96.67
4b2	90.04	90.54	93.67	95.38

TC Target child, GC generalization child, PTX posttreatment

^a Below inter-observer reliability criterion, retraining occurred

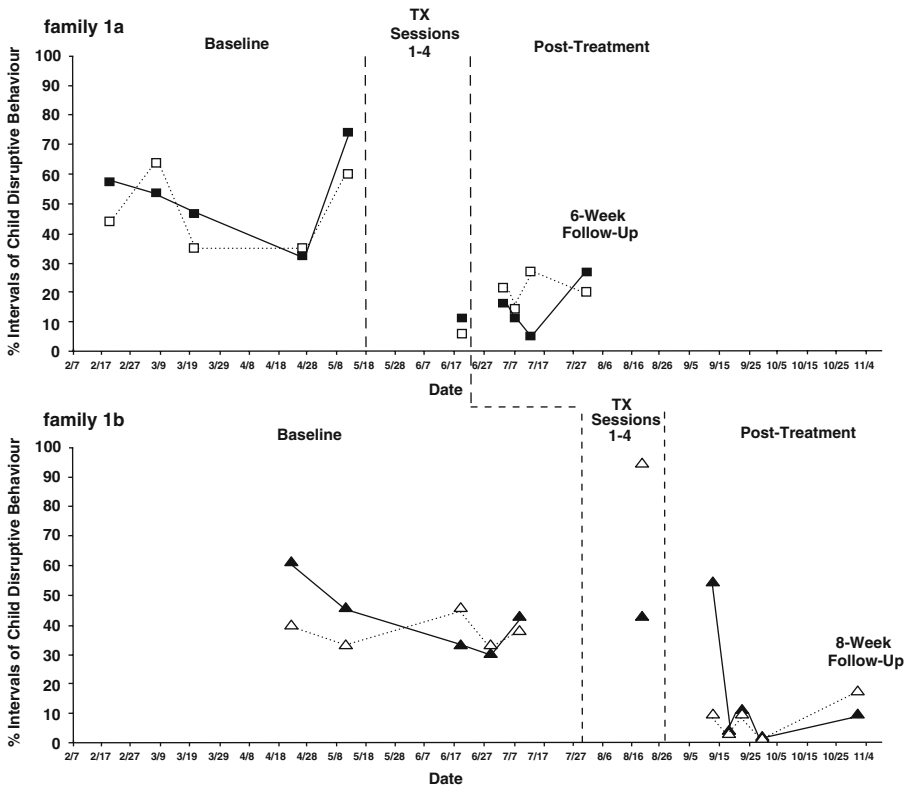


Fig. 1 Percentage intervals of child disruptive behavior for Families 1a and 1b across the training and generalisation settings

the offer of a booster session. CDB scores for Family 1b reduced from a mean of 46.57% at baseline to 25.26% at post-treatment, and then after a booster session to 12.20% at 8-week follow-up.

Figure 2 displays the percentage of CDB across experimental conditions for Family 2a and Family 2b in the TS. Family 2a CDB changed from a mean of 58.60% at baseline to 20.96% at post-treatment, and then despite a booster session, increased to 55.00% at 8-week follow-up. Family 2b CDB changed from a mean of 38.56% at baseline (with a decreasing trend) to 15.14% at post-treatment, and then to 4.92% at 7-week follow-up. The

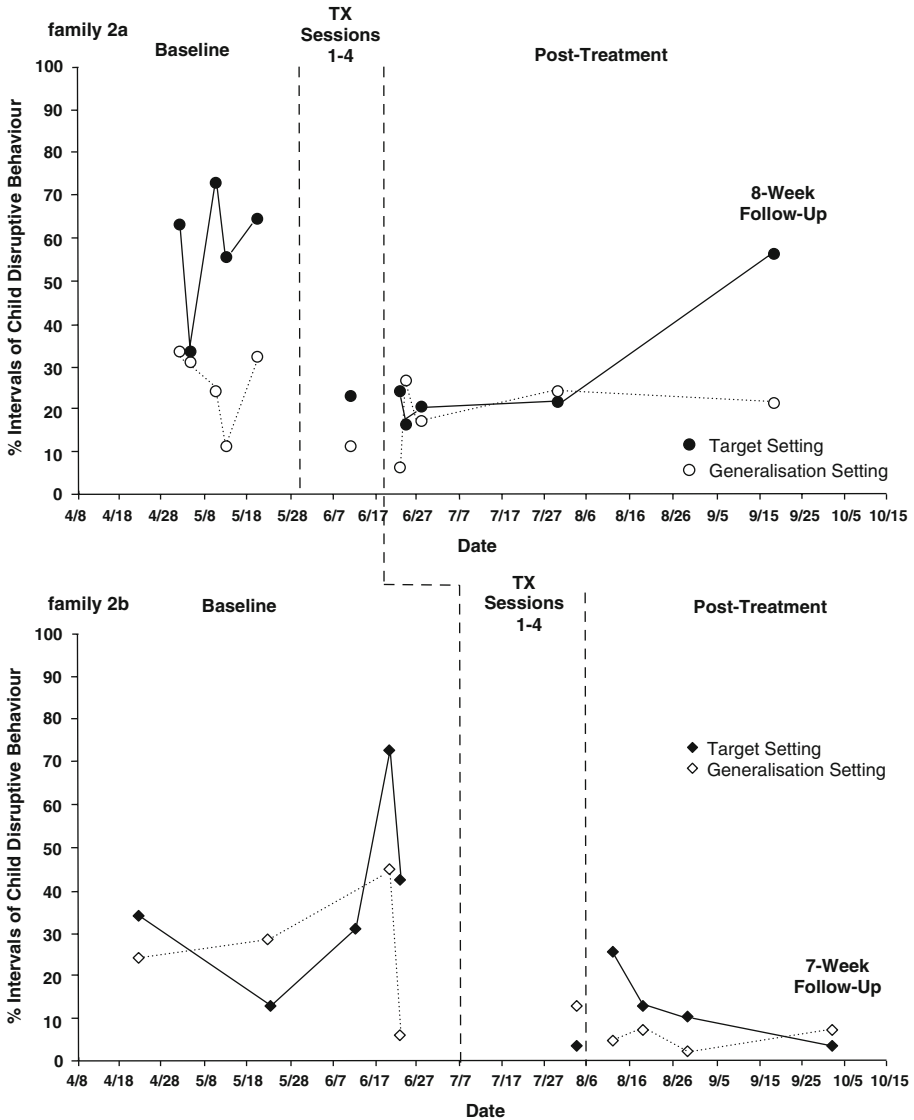


Fig. 2 Percentage intervals of child disruptive behavior for Families 2a and 2b across the training and generalisation settings

first post-treatment observation showed a decrease from baseline to 4.13%, yet the rate of CDB increased in the next post-treatment observation to 28.1%. Overall, however, post-treatment CDB rates showed a decreasing trend with a mean of 15.14%.

Figure 3 displays the percentage of CDB across experimental conditions for Family 3a (target child), Family 3a (generalization child) and Family 3a target child CDB baseline mean was 28.48%, with one observation of 9.17% creating a low ceiling. A decreasing trend occurred at post-treatment with a mean of 9.67%. A booster session occurred after post-treatment observation four. At 8-week follow-up, rate of CDB increased to 19.17%. Family 3a generalization child CDB baseline mean was 13.56%. Three baseline observations created a low ceiling. No change was observed during post-treatment (mean = 16.97%); hence, generalization from the target child to the generalization child did not occur in this setting. At 8-week follow-up, rate of CDB increased to a mean score of 28.57%.

Treatment for Family 3b targeted both target and generalization settings, though more emphasis was placed on the target setting. The baseline mean for the target setting was 51.25%, which decreased at post-treatment to a mean of 37.51%. At 7-week follow-up, this trend continued with CDB decreasing to a mean of 20.27%.

Figure 4 displays the CDB changes for Family 4a, Family 4b and Family 4c. Family 4a CDB scores changed from 29.55 to 17.73 to 5.74% for baseline, post-treatment, and 7-week follow-up respectively. Family 4b CDB scores changed from 28.16 to 6.43 to 2.75% for baseline, post-treatment and 4-week follow-up respectively. Family 4c CDB scores changed from 23.44 to 4.90 to 15.27% for baseline, post-treatment and 8-week follow-up respectively.

Generalization setting (GS). Figure 1 shows that Family 1a CDB mean scores in the GS changed from 49.30 to 18.26 to 20.34%, and Family 1b from 41.15 to 24.79 to 20.75%, for baseline, post-treatment, and follow-up respectively.

Figure 2 shows that Family 2a CDB mean score was 26.75% for baseline, not stable for post-treatment (ranging from 8.00 to 29.00% with a mean of 18.16%), and 20.83% at 8-week follow-up. Family 2b's CDB baseline mean was 25.65%, with one observation score of 7.00% creating a low ceiling. Post-treatment rates showed a decreasing trend ranging from 2.00 to 14.00%. The decreasing trend continued at 7-week follow-up with CDB in 8.94% of intervals.

Figure 3 shows that Family 3a (target child) continued the trend in the GS with a mean score of 12.91% at baseline. The first post-treatment observation showed no change in CDB. However, mean post-treatment scores showed a decreasing trend at 10.47%. At 8-week follow-up, the rate of CDB decreased further to 4.17%. Family 3a (generalization child) had a CDB baseline mean of 9.09%. During post-treatment, a downward trend was observed with a mean of 4.37%. At 8-week follow-up, the rate of CDB began to trend upward to 6.67% of intervals.

Treatment for 3b targeted both settings with less emphasis on the GS. In the GS, a baseline CDB mean of 33.17% decreased at post-treatment to 21.41%. At 7-week follow-up, the rate of CDB returned to baseline rates at 32.54% of intervals.

Family 4a's CDB decreased from baseline ($M = 16.55\%$), to post-treatment ($M = 7.85\%$), to 7-week follow up ($M = 4.35\%$). Family 4b reported a similar pattern to Family 4a's with CDB scores decreasing from baseline ($M = 32.46\%$), to post-treatment ($M = 18.64\%$), and to 4-week follow-up ($M = 5.45\%$). Family 4c's baseline CDB mean was 22.77%, which decreased to 7.55% at post-treatment. At 8-week follow-up, the rate of CDB returned to baseline rates at 18.56%.

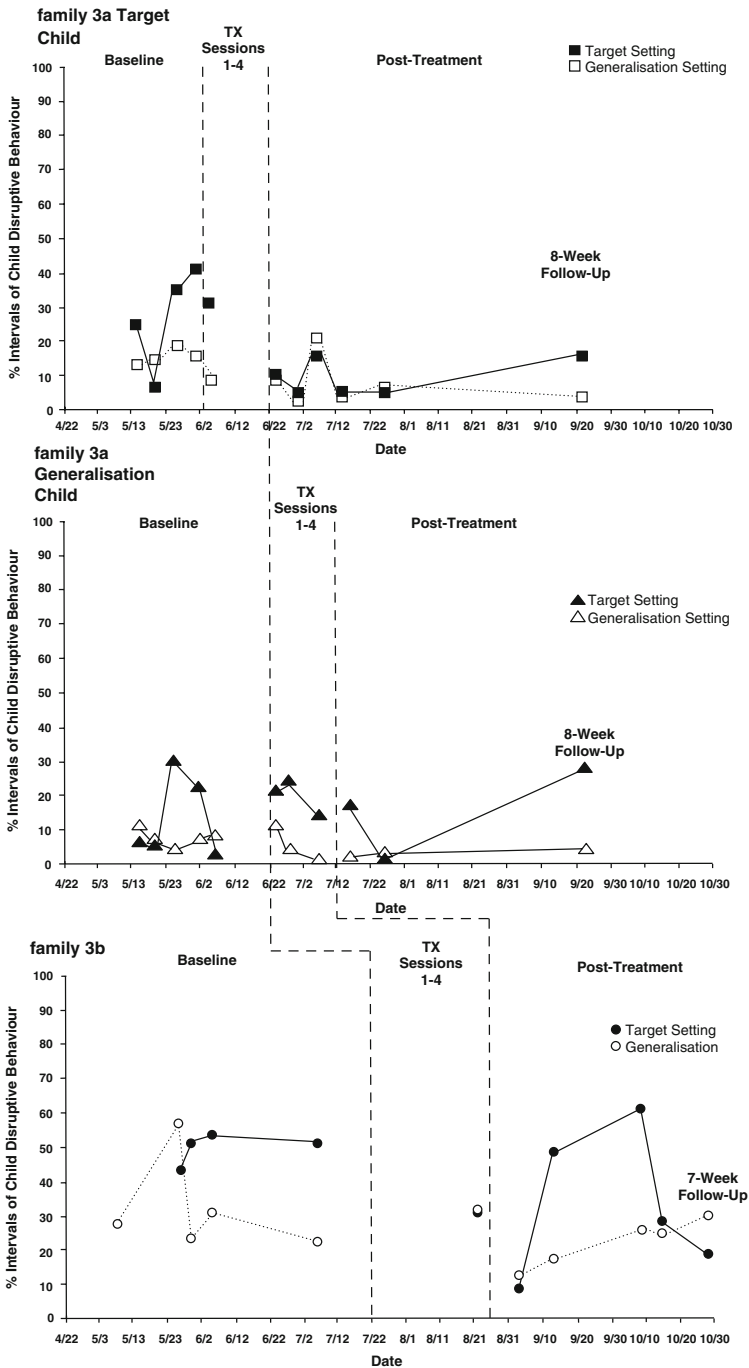


Fig. 3 Percentage intervals of child disruptive behavior for Families 3a (target child), 3a (generalisation child) and 3b across the training and generalisation settings

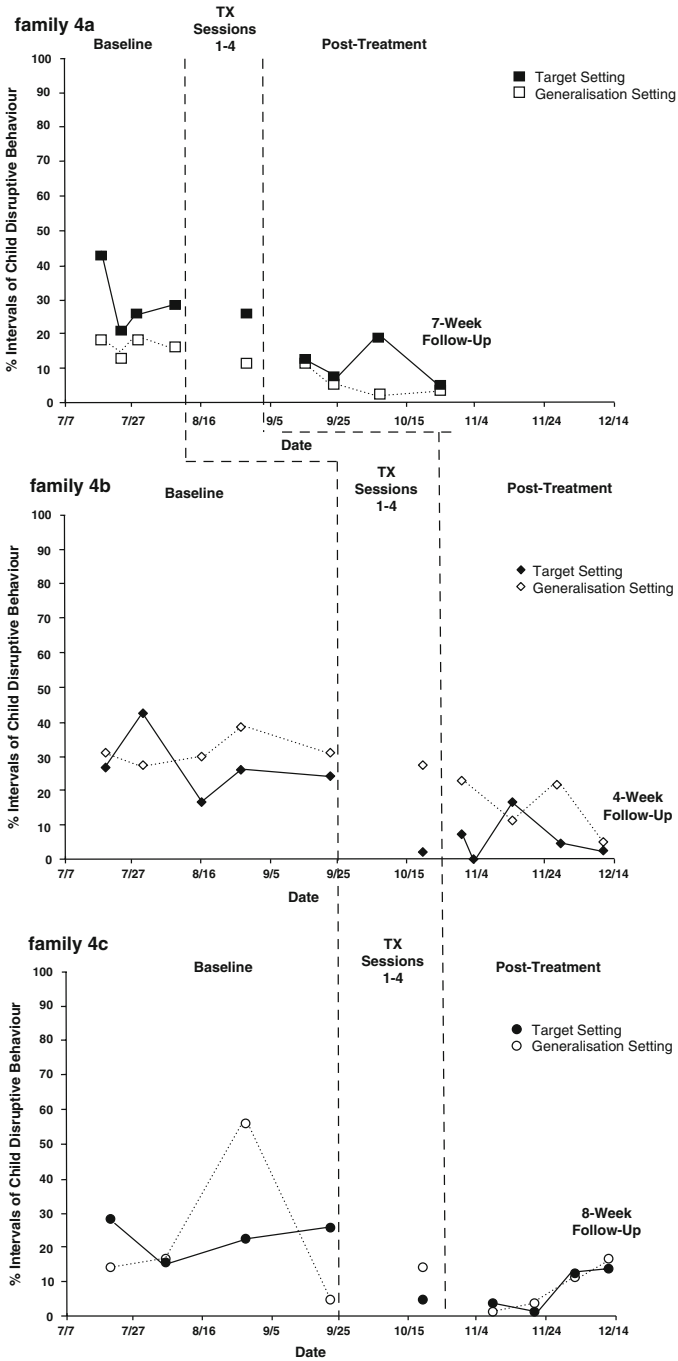


Fig. 4 Percentage intervals of child disruptive behavior for Families 4a, 4b and 4c across the training and generalisation settings

Table 2 Scores for all families on the measures of Child Disruptive Behavior (CDB), Parent Aversive Behavior (PAB), Eyberg Child Behavior Inventory (ECBI), Parenting Tasks Checklist (PTC), and Parenting Experience Survey (PES)

Measures	Pre		Post		Follow up		<i>F</i>	<i>p</i>	<i>d</i> ^a
	Mean	SD	Mean	SD	Mean	SD			
CDB target	37.21	14.87	16.66	9.68	19.17	15.51	10.99	.001	1.64
CDB generalization	26.98	12.53	13.94	7.07	14.26	9.65	14.80	.000	1.28
PAB	1.95	2.37	0.59	0.69	0.74	0.91	2.86	.106	0.78
ECBI intensity	137.30	27.85	na	na	83.50	17.30	59.35	.000	2.32
ECBI problem	17.10	4.12	na	na	6.90	3.45	181.47	.000	2.68
PTC	54.98	12.33	84.23	10.11	88.83	9.89	41.78	.000	2.59
PES	37.35	3.84	42.62	4.90	na	na	22.77	.000	1.20

na Families were not required to complete this measure at that time point

^a Effect size calculation based on pre- to post treatment. In the event post-treatment scores weren't taken, follow up scores were used

Statistical Analyses

Table 2 depicts the means and standard deviations across the 9 families on the measure of CDB. To confirm individual-level graphical analyses, CDB group data were subjected to a two-way ANOVA with repeated measures on both factors. A significant main effect for time was found, $F(2, 18) = 16.570, p < .001$; the main effects of setting, and the setting X time interaction were not significant, $F(1, 9) = 4.116, p = .073, F(2, 18) = 1.147, p = .340$, respectively. Tukey's LSD test, which combined target and generalization data, showed that CDB scores decreased significantly from baseline ($M = 32.59, SD = 13.34$, range = 11.33–51.61) to post-treatment ($M = 15.30; SD = 7.25$; range = 6.23–29.46; $p < .001$), and from baseline to follow-up ($M = 16.72; SD = 10.62$; range = 4.10–37.92; $p = .003$). Significant differences were not found from post-treatment to follow-up.

Parent Aversive Behavior (PAB). Table 2 also displays the means and standard deviations on the measure of PAB. There was a significant main effect for time, $F(2, 18) = 16.62, p < .001$. However, there were no significant effects for setting, $F(1, 9) = 5.02, p = .052$, or for the interaction of time X setting, $F(2, 18) = 1.58, p = .149$. Pairwise comparisons revealed that PAB scores decreased significantly from baseline to post-intervention, $t(18) = 3.68, p < .01$, as well as from baseline to follow-up, $t(18) = 3.37, p < .01$. No significant difference in scores was found between the post-intervention and follow-up measurements, $t(18) = .31, ns$.

Analyses of Parent-Report Measures

Table 2 also presents the means and standard deviations for the ECBI, PTC, PES and CSQ. There was a significant reduction in ECBI intensity scores, from pretest to follow-up, $t(9) = 7.704; p < .001$, and in ECBI problem scores from pretest to follow-up, $t(9) = 13.47; p < .001$.

There was also a significant increase in PTC scores between pretest and posttest, $t(6) = -7.105; p < .001$, and between pretest and follow-up, $t(8) = -8.188; p < .001$. There were no significant differences in PTC scores from posttest to follow-up, $t(7) = -1.567; p = .161$.

There was a significant increase in PES scores from pretest to posttest, $t(16) = 4.772$; $p < .001$, indicating that after program participation parents were more satisfied with their parenting experiences.

The mean CSQ score was 71.4 (SD = 9.99) (ranging from 13 to 91) indicating moderate to high satisfaction with the program. The mothers' mean program score ($M = 72.22$, SD = 10.2) was comparable to mothers' CSQ scores ($M = 72.89$, SD = 11.48) in the Turner and Sanders (2006) study.

Discussion

The present study provides support for the efficacy of PCTP as a brief parenting intervention to reduce child disruptive behavior in preschool aged children. The decreases in observed disruptive behavior in both the target and generalization settings for most families and on parent-report measures confirmed Hypothesis one. These findings showing positive effects on child conduct problems are consistent with a recent comprehensive meta-analysis of Triple P [12]. The findings extend prior work by showing large intervention effect sizes for both independent observation ($d = 1.0$) and parent report measures of disruptive behavior on the ECBI ($d = 2.32$; $d = 2.68$). In addition, observational measures confirm that changes occurred in both the target and generalization settings. These findings provide further support for the value of including a collection of specific generalization enhancement strategies in parenting interventions [24].

Hypothesis two, which predicted lower levels of observed dysfunctional parenting practices, was only partially confirmed. Observational measures did not show significant reductions in aversive parent behavior, although the trends were in the predicted direction. This pattern of results might be explained by floor effects due to low baseline levels rather than the potency of the intervention.

Hypothesis three that predicted an increase in parental self-efficacy as measured by the parenting tasks checklist was confirmed. Importantly, the observed increases in parental self-efficacy were observed for all parents across all settings, indicating a generalisation of effects. This observed increase in parental self-efficacy is encouraging and consistent with the theoretical basis of Triple P which argues for the central importance of improving parental self efficacy so that parents can parent more consistently and positively. The finding is also consistent with de Graaf et al.'s [11] meta-analysis that showed consistent changes in parents' sense of competence after participating in Triple P.

Hypothesis four that predicted intervention gains would be maintained over time was also supported. Both observed and parent reported changes measured at post intervention continued into the follow-up period, thus providing further support for the short-term durability of PCTP. In addition, the study showed that the intervention was broadly acceptable to the participating families. As this was one of the first clinical trials of Triple P with US parents, these findings are encouraging and support a large international body of evidence from Australia, various Asian, and European countries which collectively attest to the cross cultural robustness of Triple P.

Although the study contained several strengths, including the use of an intra-subject replication design, the use of independent observational measures, multi-informant assessment and measurement of follow-up, it was not without limitation. First, the measure of aversive parent behavior appeared to produce baseline floor effects suggesting the possibility of some reactivity effect in the measure of parent behavior. This restricted the capacity to attribute changes in child behavior directly to changes in parent behavior.

Second, further replication studies would benefit from using a more diverse population of parents with a greater representation of minority and low-income families. Also, for some families booster sessions may be useful in maintaining treatment gains. Finally, one potential limitation was that generalisation probes were not selected to test out of home settings. Although results from the PTC did show that parent self-efficacy remained across all settings, future observational studies on generalisation would be useful to establish whether changes occur in multiple out of home settings.

Despite these limitations, however, the current findings show that a brief, four session parenting intervention targeting discrete child problem behaviors can be effective with parents of young children with conduct problems.

As many existing evidence-based parenting programs are 8-to 12-sessions, the development of lighter touch interventions increases the range of cost effective interventions available to service providers delivering early intervention services for families. Future research could usefully examine whether variations of the Primary Care Triple P intervention could be effective with parents of older children and teenagers, or even parents of children with disabilities and special needs. The potential value of Primary Care Triple P as part of a more comprehensive public health intervention targeting parenting support was recently highlighted in a population trial of the Triple P System in the US. Prinz, Sanders, Shapiro, Whitaker and Lutzker [39] demonstrated that the implementation of all five levels of Triple P across the population resulted in significantly lower levels of child maltreatment, foster placements, and child injuries in those counties implementing Triple P compared to those counties receiving services as usual. Within that trial, approximately three quarters of all families accessing Triple P did so through brief primary care interventions.

Summary

The present study evaluated the efficacy of Primary Care Triple P as an intervention for parents of preschool-aged children with disruptive behavior using a multiple probe design. The present study extended upon existing research relating to PCTP by exploring the across setting generalization effects of the intervention. Observations of parent-child interaction in the home supported the efficacy of the intervention, with findings showing that the intervention was associated with lower levels of child disruptive behavior both in a target training setting and in various generalization settings. Parent data also revealed significant reductions in intensity and frequency of disruptive behavior, an increase in task specific parental self-efficacy, improved scores on the Parent Experience Survey, and high levels of satisfaction. All short-term intervention effects were maintained at four-month follow-up. The current findings make an important contribution to the existing body of research exploring primary care settings and generalisation effects as they relate to the successful delivery of parenting interventions. Indeed, the generalization effects of parenting interventions such as PCTP are important, but remain understudied, and future studies may provide further insight into the mechanisms which underpin generalisation effects.

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