



The Effectiveness of a Home-Based Delivery of Triple P in High-Risk Families in Rural Areas

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Abstract

Objectives Triple P is a positive parenting intervention designed to improve parenting practices and enhance childhood outcomes. Triple P has shown positive effects in various prior studies; however, to date, no studies have examined the potential benefits of home-based Triple P when conducted with rural families with parents at high risk for child abuse. The aim of this study was to use archival data to examine the effects of Triple P on dysfunctional discipline and parental anger as well as child emotional/behavioral difficulties. In addition, the study sought to investigate the potential moderating effect of race/ethnicity in these outcomes.

Methods Archival data were analyzed in this study. Data were originally collected using a pre- and post-treatment design. A racially and ethnically diverse sample of 171 caregivers was assessed using various self-report instruments before and immediately after receiving the manualized intervention.

Results A repeated-measures design, with ethnicity examined as a moderating variable, was used to assess the differences in dysfunctional discipline, parental anger, and child emotional/behavioral difficulties prior to and immediately following Triple P services. Overall, participants evidenced significant decreases in scores following treatment. Additionally, some effects were moderated by race/ethnicity.

Conclusion This study demonstrates the potential benefits of a home-based format of Triple P for decreasing dysfunctional parenting behaviors and problematic child behaviors in high-risk, rural families.

Keywords Triple P · Positive parenting · Rural · Maltreatment · Abuse

The quality of family interactions is fundamental to the well-being of children, and research has continuously demonstrated the significant psychological, physical, and social impact of parent-child relationships on children (Peterson and Zill 1986; Qu et al. 2015). Conversely, disturbances in family functioning, such as parental conflict, have been shown to have negative influences on children's

development (Barthassat 2014; Emery et al. 1992; Neece et al. 2012). Overall, the effects of harsh and abusive parenting and poor parenting skills on child outcomes are well documented (Gershoff et al. 2012; Hoeve et al. 2009; Knerr et al. 2013). Specifically, research indicates that these parenting behaviors can lead to aggression (Knox et al. 2011), poor academic and cognitive functioning (Rodriguez and Eden 2008), and conduct problems (Tichovolsky et al. 2013).

The Triple P Program, or Positive Parenting Program, was developed to better prepare parents in the child-rearing role (Sanders 1999). This program aims to prevent severe behavioral, emotional, and developmental problems in children by enhancing the knowledge, skills, and confidence of parents (Sanders 1999). While Triple P has been shown to be effective in reducing behavioral problems in children and enhancing parental skills, no research has examined the effectiveness of a home-based Triple P in high-risk, rural families from diverse backgrounds. Thus, the current study sought to investigate the potential benefits of Triple P in this high-need population and unique treatment delivery format.

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Overall, Triple P has shown positive effects in numerous prior studies (Fetcher et al. 2011; Graaf et al. 2008; Lindquist and Korey 2014; Nowak and Heinrichs 2008; Sanders et al. 2014). Indeed, a meta-analysis conducted by Thomas and Zimmer-Gembeck (2007) evaluated and compared the outcomes of the Parent-Child Interaction and Therapy program and Triple P-Positive Parenting Program. Overall, they found positive effects for both interventions as well as comparable effect sizes between Triple P and the Parent-Child Interaction and Therapy program; however, the results varied depending on several factors (i.e., intervention length, source of outcome data). In terms of Triple P specifically, they found that child behavior and parenting improved from pre- to post-treatment, including increased parental warmth, decreased parental hostility, increased parental self-efficacy, reduced parental stress, and reduced childhood aggression and extreme tantrums (Thomas and Zimmer-Gembeck 2007). Similarly, two meta-analyses conducted by Graaf et al. (2008) sought to examine the effectiveness of Triple P and reported that Triple P had large effects ($d = 0.88$) on the behavior problems of children post-intervention; at 6 and 12 months, large effect sizes were also found, $d = 1.07$ and $d = 0.84$, respectively. Further, Nowak and Heinrichs (2008) conducted a meta-analysis to identify variables that affect the program's effectiveness. They determined that more improvement was associated with more intensive formats (higher levels of Triple P intervention that target parents with more severe problems) and families who were initially more distressed. A meta-analysis by Fetcheri et al. (2011) found a large positive effect of Triple P, but they documented differences of Triple P's efficacy for mothers versus fathers such that Triple P had a larger positive effect on mothers' parenting than on father's parenting (Fetcher et al. 2011). Finally, Sanders et al. (2014) conducted a systematic review and meta-analysis that examined the effects of Triple P on a broad range of child, parent, and family outcomes; 116 studies from over a 33-year period were included in their analyses. They found numerous short-term effects, including for children's social, emotional and behavioral outcomes ($d = 0.47$), parenting practices ($d = 0.58$), and parenting satisfaction and efficacy ($d = 0.52$). Additionally, significant long-term effects were found for all outcomes ($d = 0.25$). Thus, Triple P has been found to be an effective intervention in reducing behavioral problems in children and enhancing parental skills.

Despite this ample previous research demonstrating the effectiveness of Triple P as an intervention for improving children's behavior as well as parenting techniques, little research exists on the potential benefits of a home-based Triple P or its use among families at high-risk for child abuse living in rural communities—the focus of the current study. Child abuse and maltreatment are significant

problems in rural communities. In fact, exposure to violence and incidents of child abuse and neglect are higher in rural communities as a whole (U.S. Department of Health and Human Services 2015). Per the Health Resources and Services Administration within the U.S. Department of Health and Human Services between 2011 and 2012, children in rural areas were more likely than their peers in urban areas to have had at least one adverse childhood experience, and 9.9% of children in small rural communities witnessed domestic violence versus 6.8% in an urban setting (U.S. Department of Health and Human Services 2015). Additionally, the Fourth National Incidence Study of Child Abuse and Neglect found that children in rural communities had higher rates of maltreatment in nearly every category of maltreatment and level of severity than children in urban communities (Sedlak et al. 2010). Despite the increased likelihood of child abuse or maltreatment, there are problems of accessibility, availability, and acceptability of mental health services in rural communities (Smalley et al. 2010). These problems may sustain child abuse or maltreatment in rural communities, even when families at high risk can be identified. Therefore, given the benefits associated with the Triple P program, the high-risk for child maltreatment among rural communities, and the lack of accessibility and availability of mental health services in rural communities, the effects of a home-based Triple P should be examined in this group as home-based care may serve as an effective strategy for reducing child maltreatment and improving parenting practices in rural communities (Pickering and Sanders 2016). Indeed, home-based programs make it easier for families in rural areas—who are currently underserved with regard to family intervention and youth mental health services (Smalley et al. 2010)—to access high quality services (Boydell et al. 2006; Hodgkinson et al. 2017). Further, home-based delivery of services allows for privacy and flexible meeting schedules (Beeber et al. 2014). Additionally, this delivery method is advantageous because parents do not have to arrange transportation, child care, or time off from work (Sweet and Appelbaum 2004), which may be particularly beneficial for rural or low-income communities. As it brings the intervention into the home, home-based methods provide the opportunity for more whole-family involvement, personalized service, individualized attention, and rapport building (Sweet and Appelbaum 2004).

Overall, Triple P has five different delivery formats including: individual face to-face sessions with a practitioner (standard format), group, self-directed, self-directed plus telephone support, and online (Sanders 2012; Sanders et al. 2014). Many of the published articles on the effects of Triple P are based on standard Triple P, group Triple P, or self-directed Triple P (Graaf et al. 2008; Thomas and Zimmer-Gembeck 2007). Research has found that self-directed Triple

P has been effective in lowering levels of child behavior problems, increasing levels of parenting competence, and lowering levels of dysfunctional parenting practices in families in rural or remote areas (Connell et al. 1997). However, research has also suggested that contact with a therapist or a clinician may provide greater benefit (Morawska and Sanders 2006). Indeed, in a systematic review and meta-analysis that examined the effects of Triple P on a broad range of outcomes, researchers found lower effect sizes on parenting practices for self-directed and online versions of Triple P compared to group and standard formats (Sanders et al. 2014). Thus, although self-directed Triple P has demonstrated utility without therapist intervention, there is strong data to support enhancement of effects when clinician support is also provided. Given the rates of child abuse and maltreatment in rural communities, the lack of studies examining Triple P in a rural context via home-based delivery (Sanders et al. 2014), and previous research suggesting that contact with a clinician provides greater improvement, a home-based delivery of Triple P should be examined for its potential benefits.

Likewise, certain cultural groups, who also experience disparities in access to mental health services, may benefit from home-based interventions. For instance, Latino/Latinx families put special value on keeping young children in the family, in care of extended adult members of the family, for as long as possible (Calzada 2010). More specifically, a study examining parent and child treatment outcomes for a home-based Parent-Child Therapy (PCT) program for children from families living in poverty found that Latinx parents demonstrated the highest aggregate score of clinician-rated play interactions (rated on parent leading play, child leading play, parent sensitivity, parent expectations, parent limit setting) with their child at pretest and posttest (Gresl et al. 2014). This finding may be consistent with cultural value of *familismo*, or the importance of family in Latinx culture; and *personalismo*, the Latinx emphasis on warm and trusting interpersonal relationships, as the mothers in this study provided high levels of nurturing to their children. Therefore, it is possible that a home-based delivery system is uniquely positioned to target or emphasize these unique cultural values (Gresl et al. 2014). Thus, home visiting programs may provide a better cultural fit for Latino/Latinx families, and, indeed, Latino/Latinx families accrue greater benefits from home visitation programs than other groups (Astuto and Allen 2009; Finno-Velasquez et al. 2014; Mann 2014).

The goal of this study was to assess the effects of home-based Triple P in high-risk, rural families from diverse backgrounds. Overall, the objectives for the intervention program included reducing parental anger, reducing dysfunctional discipline, and improving child outcomes. The aim of the current study was to assess these characteristics

in a pre- and post-intervention design, hypothesizing families will demonstrate decreased parental anger, improved parental discipline behaviors, decreased problem behaviors of children, and improved emotional symptoms among children over time. In addition, as parenting practices have been found to differ by ethnicity (Cooper et al. 2018; Pinderhughes et al. 2000), we sought to examine whether there were differences in these outcomes based on race/ethnicity, conducting exploratory moderation analyses in this regard. Although the effectiveness of a culturally tailored approach to Group Triple P has been found for Indigenous families (Turner et al. 2007); race/ethnicity has not been examined as a moderator of home-based Triple P program effectiveness (Sanders et al. 2014). The latter is a particularly important concern regarding rural families, where ethnic and racial diversity has drastically increased over the last 30 years (Sharp and Lee 2016). Overall, a better understanding of this special population and treatment delivery format is an important step towards assessing the potential benefits of Triple P more broadly and tailoring parenting interventions to special demographic groups.

Method

Participants

The sample included caregivers referred to a family services center. The families targeted for recruitment lived in a rural county, which was approximately 40 miles from a major metropolitan area in the Southwestern United States. Caregivers were randomly assigned, according to a 3:1 match, to the treatment group ($n = 171$) or the waitlist control group ($n = 60$). The current study includes only the 171 caregivers assigned to the treatment group. Of these caregivers, the majority were women (91.8%). Ethnic/racial breakdowns were as follows: 44.4% white, 15.8% African American, 36.8% Hispanic, and 2.9% did not reported their ethnicity/race. The primary languages spoken were English (85.2%) and Spanish (14.8%); this subset of participants completed assessments in Spanish and were assigned to a Spanish-speaking clinician). Thirty-three percent of the caregivers were born outside of the United States. Their mean age was 34.91 years old ($SD = 10.63$). Caregivers were identified as being the child's parent (86.5%), grandparent (8.2%), step-parent (2.3%), or aunt or uncle (2.3%); the rest identified as another relative or non-relative. Annual income of the caregivers ranged from less than \$5,000 (22.9%) to \$50,000 or more (13.9%); the remainder of the sample fell between these income levels (63.2%). Of the children enrolled in the program, over half were male (57.9%) and their ages ranged from 1 year to 14 years old ($M = 7.13$, $SD = 2.75$).

Procedure

Program staff received training and accreditation on the implementation of the Triple P program. Additional training was conducted by the Program Coordinator and the evaluation team regarding the eligibility criteria, referral process, completion and submission of forms, and the data collection protocol necessary for effective program implementation. An external, cross-site evaluation team assessed training in and fidelity to the home-based intervention (see Daro et al. 2012 for procedures and results).

Caregivers were referred to the study through a variety of means, including pediatrician's offices, family court, child welfare services, school personnel, and other community service organizations. Study staff assessed the presence of risk factors for maltreatment during a screening interview. In order for the family to be admitted to the study, they must have possessed at least one of the following child and family risk factors: child has been previously diagnosed with an emotional or disruptive behavioral disorder, parent/child conflict, parental aggression in the home, current involvement with child welfare services, inappropriate discipline practices, permitting maladaptive behavior, or developmentally inappropriate parenting expectations. Additionally, the caregiver must have possessed at least one of the following personal risk factors: discipline conflict between partner, parental distress, parental depression, or anger management difficulty. Caregivers were excluded from the study if they were currently using substances. Families who did not meet these inclusion criteria were provided with referral sources for other programs based on their determined needs; additionally, their data were not included in this study.

After families were referred to the program, the clinician who made the eligibility determination obtained written informed consent from the families. The families were then randomly assigned to the treatment group or a delayed-intervention control group (not included in the current study). A trained clinician (who spoke English and/or Spanish) worked directly with the caregivers (in their homes) to administer study questionnaires. In total, there were eleven different clinicians. All instruments used were also available in translated and previously evaluated Spanish versions so that they could be administered in the language of choice of the caregiver. Following completion of pre-test assessments, the treatment group received Triple P services in their home. Treatment included 12 visits per family (i.e., eight 90-min enhanced Triple P sessions and four assessment sessions), referrals and navigation to ancillary services provided by non-clinical staff over the phone (e.g., Medicaid, food subsidies or food banks, transportation, energy assistance, etc.) and up to \$200 in

emergency cash supports (e.g., overdue utility bills). Data from the external, cross-site evaluation team's report indicates that home visits for the Triple P intervention occurred overwhelmingly in participants' homes (99.2%) and that, on average, approximately 29.3% of each home visit was dedicated to "explaining or demonstrating a parenting strategy, principle, or procedure," 17.3% to "listening and processing parent's concerns and input," 11.5% to "providing feedback or prompting self-evaluation by the parent," 12.2% to "parental practice and implementation of strategies," and 25.1% to "assessment activities," (Daro et al. 2012). Following the Triple P services, the post-test assessments were conducted. Families received a \$50 incentive for completing each assessment session.

Measures

Demographics

Descriptive characteristics of the participants were collected at the beginning of the study from caregivers. Data collected included race, ethnicity, caregiver age, gender, and family characteristics.

Parental anger

The Parental Anger Inventory (PAI; Sedlar and Hansen 2001) was used to assess anger experienced by parents in response to child-related situations. Specifically, this scale measures anger experienced by parents of children 2 to 12 years old. Of note, two children enrolled in the study were over the age of 12. Parents rate 50 child-related situations (e.g., "Your child demands something immediately") as problematic or non-problematic and rate the degree of anger evoked by each situation on a 5-point scale (1: Not at All; 2: A Little Bit; 3: Somewhat; 4: Quite A Bit; 5: Extremely). This inventory yields both a problem score and an intensity score. The problem scale measures whether or not specific child-rearing situations are a problem for the caregiver, with higher scores indicating more problematic situations faced by the caregiver. The intensity scale measures the extent to which specific child-rearing situations make the parent angry, with higher scores indicating higher levels of parental anger. Initial psychometric data on the PAI indicated adequate test-retest reliability with correlation coefficients of 0.80 for the Problem Scale and 0.79 for the Anger Severity Scale as well as good convergent validity (Sedlar and Hansen 2001). Similarly, alpha coefficients for the Problem and Anger Intensity Scales were 0.96 and 0.81, indicating strong internal consistency (Sedlar and Hansen 2001). Cronbach's alpha in the present study was high for all subscales (Problem: $\alpha = 0.92$; Intensity: $\alpha = 0.97$).

Parental discipline

The Parenting Scale (PS; Arnold et al. 1993) is a 30-item measure of dysfunctional discipline practices in parents. This scale has been validated on parents of preschool-aged children (Arnold et al. 1993) and young adolescents (Irvine et al. 1999). The PS asks caregivers to gauge the likelihood that they would use particular discipline strategies. Each item lists an ineffective discipline strategy, such as “when I’m upset or under stress, I am picky and on my child’s back,” paired with its appropriate counterpart, such as “I am not more picky than usual”. Responses for each question can range from 1 to 7, in which an appropriate strategy is always listed as 1, and the ineffective strategy is always listed as 7. These individual items are summed and divided by the total number of items to generate either a total score or an individual ineffective parenting strategy score. Higher scores indicate more ineffective parenting behaviors. Three scale scores are calculated: laxness (permissive, inconsistent discipline), over-reactivity (harsh, emotional, authoritarian discipline and irritability), and hostility (use of verbal or physical force). The Parenting Scale has previously demonstrated high reliability and validity in a variety of community and clinical settings, as well as with different SES and racial/ethnic groups (Arnold et al. 1993; Rhoades and O’Leary 2007). Initial psychometric studies found adequate internal consistency, with coefficients alpha for the subscales as follows: Laxness, 0.83; Overreactivity, 0.82; Hostility, 0.63 (Arnold et al. 1993). Further, validity analyses found Parenting Scale scores were related to observed discipline mistakes and child misbehavior and discriminated between groups of clinical and non-clinical families (Arnold et al. 1993). However, in the Swedish context, only the laxness and overreactivity scales have been found to be reliable (Salari et al. 2012). More recently, a study examining the psychometric properties of the Parenting Scale using item response theory found that the Hostility scale had reliability near or above 0.8 and showed acceptable discrimination among highly hostile parents (Lorber et al. 2014). Cronbach’s alpha in the present study was acceptable for all analyses, including the total scale ($\alpha = 0.80$), and all subscales (Laxness: $\alpha = 0.74$; Overreactivity: $\alpha = 0.70$; Hostility: $\alpha = 0.66$).

Child problem behaviors

The Eyberg Child Behavior Inventory (ECBI; Eyberg and Pincuss 1999) is a measure of the caregiver’s perception of disruptive child behavior in children ages 2 through 16. The ECBI contains 36 disruptive behavior problems and provides two summary scores—an intensity score and a problem score. For the intensity score, parents indicate on a 7-point scale how often each behavior occurs; 1 (never), 2 and

3 (seldom), 4 (sometimes), 5 and 6 (often), and 7 (always), with higher scores indicating clinically significant disruptive behavior. For the problem score, the parent is asked to indicate whether the occurrence of the specific behavior is currently a problem by circling “yes” or “no” for each behavior, with higher scores indicating a greater problem. Scores of 131 or higher on the Intensity scale are considered to indicate a child with significant behavioral problems, and a score of 15 or higher in the Problem scale indicates that the parent is significantly distressed by the child’s behavior (Eyberg and Pincuss 1999). Previous studies of the ECBI have found acceptable test-retest reliability with correlation coefficients 0.75 for both the intensity and problem scales as well as adequate convergent and discriminant validity (Eyberg and Pincuss 1999; Funderburk et al. 2003). In addition, internal consistency has been found to be high, $\alpha = 0.94$ for the Intensity subscale and $\alpha = 0.93$ for the Problem subscale (Funderburk et al. 2003). Cronbach’s alpha in the present study was high for the Intensity subscale ($\alpha = 0.93$) and the Problem subscale ($\alpha = 0.92$).

Emotional/behavior symptoms among children

The Strengths and Difficulties Questionnaire (SDQ; Goodman 1999) measures the caregiver’s perception of prosocial and difficult behaviors in children ages 4 to 16. The SDQ consists of 25 items describing positive and negative attributes of children and adolescents that are rated on a 3-point scale; 0 = ‘not true’, 1 = ‘somewhat true’, and 2 = ‘certainly true’. Five scales are developed from the items and each consists of 5 items: the emotional symptoms subscale, the conduct problems subscale, the hyperactivity-inattention subscale, the peer problems subscale, and the prosocial behavior subscale. Higher scores on the prosocial behavior subscale reflect strengths, whereas higher scores on the other four subscales reflect difficulties. A total difficulties score is also calculated by summing the scores on the emotional symptoms, conduct problems, hyperactivity-inattention, and peer problems subscales. For the total difficulties score, higher scores indicate greater difficulties. The current study used only the total difficulties score. Previous studies have found that the SDQ Total difficulties scale has adequate internal consistency, $\alpha = 0.77$ – 0.88 , as well as adequate concurrent and divergent validity (Mieloo et al. 2012; Palmieri and Smith 2007). Cronbach’s alpha in the present study was acceptable ($\alpha = 0.76$).

Data Analyses

To analyze if Triple P treatment predicted changes in parenting, dysfunctional discipline, and child outcomes, several repeated measures general linear models were conducted with the specific outcome measure as the within-subjects

factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the between-subjects factor. Results are based on a subset of the initial 171 participants; participants were excluded if they did not complete both the baseline and follow-up assessment. For the PAI, a total of 78 participants completed baseline and follow-up assessments (45.6% of total participants; 54.4% missing). For the remaining measures, 97 participants completed baseline and follow-up (56.7% of total participants; 43.3% missing). Of these 97 participants, 93.8% were female and the ethnic/racial breakdown was as follows: 45.3% White of Caucasian, 37.9% Hispanic, 16.8% Black or African American. The mean age was 34.74 years old. Of the children enrolled in the program, over half were male (56.7%) and their ages ranged from 2 to 14 years old ($M = 7.56$). See Table 1 for a breakdown of demographic information of participants by race/ethnicity. See Table 2 for descriptive data on each study measure at each time point. Given the number of models run, a Bonferroni correction of ($\alpha_{\text{altered}} = 0.01/8$) = 0.0013 was used.

Results

To analyze if Triple P treatment predicted changes in anger experienced by parents, two repeated measures general linear models were conducted. In the first model, the PAI Intensity scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) served as the between-subjects factor. The results indicated that there was a main effect of time, $F(1, 75) = 29.85$, $p < 0.001$, $\eta_p^2 = 0.29$, suggesting that there were a significant changes in parental anger intensity (anger decreased) between time 1 and time 2. However, there was no significant interaction between time and ethnic/racial membership, $F(2, 75) = 1.31$, $p = 0.28$.

In the second model, the PAI Problem scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the between-subjects factor. The results indicated that there was a main effect of time, $F(1, 75) = 69.29$, $p < 0.001$, $\eta_p^2 = 0.48$, suggesting that there were a significant decreases in parental anger problems between time 1 and time 2. However, there was no significant interaction between time and ethnic/racial membership, $F(2, 75) = 1.47$, $p = 0.24$.

To analyze if Triple P treatment predicted changes in dysfunctional discipline practices in parents, three repeated measures general linear models were conducted. In the first model, the PS Laxness scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the

between-subjects factor. The results indicated that there was a main effect of time, $F(1, 94) = 28.99$, $p < 0.001$, $\eta_p^2 = 0.24$, suggesting that there were a significant decreases in parental laxness between time 1 and time 2. However, there was no significant interaction between time and ethnic/racial membership, $F(2, 94) = 2.66$, $p = 0.08$.

In the second model, the PS Over-reactivity scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the between-subjects factor. The results indicated that there was a main effect of time, $F(1, 94) = 23.52$, $p < 0.001$, $\eta_p^2 = 0.20$ suggesting that there were a significant decreases in parental over-reactivity between time 1 and time 2. Additionally, there was a significant interaction between time and ethnic/racial membership, $F(2, 94) = 4.41$, $p = 0.02$, $\eta_p^2 = 0.09$. Specifically, there was a significant change in parental over-reactivity between time 1 and time 2 for White caregivers, $F(1, 44) = 38.39$, $p < 0.001$, $\eta_p^2 = 0.47$, and Hispanic caregivers, $F(1, 35) = 17.35$, $p < 0.001$, $\eta_p^2 = 0.33$, but not for Black caregivers, $F(1, 15) = 0.00$, $p = 1.00$.

In the third model, the PS Hostility scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the between-subjects factor. The results indicated that there was a main effect of time, $F(1, 94) = 25.91$, $p < 0.001$, $\eta_p^2 = 0.22$ suggesting that there were a significant decreases in parental hostility between time 1 and time 2. However, there was no significant interaction between time and ethnic/racial membership, $F(2, 94) = 2.54$, $p = 0.09$.

To analyze if Triple P treatment predicted changes in parents' perception of disruptive behavior in children, two repeated measures general linear models were conducted. In the first model, the ECBI Intensity scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the between-subjects factor. The results indicated that there was a main effect of time, $F(1, 94) = 119.37$, $p < 0.001$, $\eta_p^2 = 0.56$ suggesting that there were significant decreases in parents' perception of child's disruptive behavior intensity between time 1 and time 2. However, there was no significant interaction between time and ethnic/racial membership, $F(2, 94) = 1.58$, $p = 0.21$.

In the second model, the ECBI Problem scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the between-subjects factor. The results indicated that there was a main effect of time, $F(1, 94) = 103.98$, $p < 0.001$, $\eta_p^2 = 0.53$, suggesting that there were a significant decreases in parents' perception of child's problem behavior between time 1 and time 2. However, there

Table 1 Demographic information of caregivers

Category	Frequency		Range	<i>M (SD)</i>
	<i>n</i>	%		
Black/African American				
Age	–		21–60	34.06 (10.67)
Caregiver Gender				
Male	0	0%		–
Female	16	100%		
Annual Income				
Less than \$5,000	6	37.5%		–
\$5,000–\$9,999	2	12.5%		–
\$10,000–\$14,999	1	6.3%		–
\$15,000–\$19,999	1	6.3%		–
\$20,000–\$24,999	1	6.3%		–
\$25,000–\$29,999	2	12.5%		–
\$30,000–\$39,999	2	12.5%		–
\$40,000–\$49,999	0	0%		–
\$50,000 or more	1	6.3%		–
# of Children <18	–		1–6	2.69 (1.66)
Child Age	–		4–13	8.06 (3.15)
Child Gender				
Male		7	43.8%	–
Female		9	56.3%	
White/Caucasian				
Age	–		21–67	35.02 (11.02)
Caregiver Gender				
Male	1	2.2%		–
Female	44	97.8%		
Annual Income				
Less than \$5,000	2	4.4%		–
\$5,000–\$9,999	5	11.1%		–
\$10,000–\$14,999	9	20%		–
\$15,000–\$19,999	3	6.7%		–
\$20,000–\$24,999	5	11.1%		–
\$25,000–\$29,999	4	8.9%		–
\$30,000–\$39,999	7	15.6%		–
\$40,000–\$49,999	3	6.7%		–
\$50,000 or more	7	15.6%		–
# of Children <18	–		1–22	2.88 (3.41)
Child Age	–		2–12	7.12 (2.81)
Child Gender				
Male	25	55.6%		–
Female	20	44.4%		
Hispanic				
Age	–		23–74	34.78 (10.51)
Caregiver Gender				
Male	4	11.1%		–
Female	32	88.9%		
Annual Income				
Less than \$5,000	7	20.6%		–
\$5,000–\$9,999	3	8.8%		–
\$10,000–\$14,999	4	11.8%		–
\$15,000–\$19,999	2	5.9%		–
\$20,000–\$24,999	4	11.8%		–
\$25,000–\$29,999	3	8.8%		–
\$30,000–\$39,999	5	14.7%		–
\$40,000–\$49,999	2	5.9%		–
\$50,000 or more	7	11.8%		–
# of Children <18	–		1–7	2.80 (1.62)
Child Age	–		5–14	7.83 (2.16)
Child Gender				
Male	23	63.9%	–	
Female	13	36.1%		

was no significant interaction between time and ethnic/racial membership, $F(2, 94) = 1.49, p = 0.23$.

To analyze if Triple P treatment predicted changes in caregivers' perception of difficult behaviors in children, one repeated measures general linear model was conducted. In the model, the SDQ Total Difficulties scale served as the within-subjects factor (2 levels: pretest and posttest) and ethnic/racial group membership (3 levels: White, Black, or Hispanic) as the between-subjects factor. The results indicated that there was a main effect of time, $F(1, 92) = 82.86, p < 0.001, \eta_p^2 = 0.47$ suggesting that there were significant decreases in parents' perception of emotional/behavioral symptoms in children between time 1 and time 2. However, there was no significant interaction between time and ethnic/racial membership, $F(2, 92) = 1.32, p = 0.27$.

Discussion

Overall, the aim of the current study was to assess the potential benefits of home-based Triple P in high-risk, rural families from ethnically diverse backgrounds. Specifically, the current study sought to examine whether families enrolled in the program demonstrated decreased parental anger, reduced the use of ineffective parenting behaviors, and decreased problem behaviors and emotional difficulties of children. Based on the existing literature of the efficacy of Triple P programs (Fetcher et al. 2011; Graaf et al. 2008; Nowak and Heinrichs 2008; Sanders et al. 2014; Thomas and Zimmer-Gembeck 2007), it was predicted that home-based Triple P would impact parenting by reducing parental anger and dysfunctional discipline and improve child outcomes post-treatment. Our results supported our hypotheses; significant treatment benefit was evidenced utilizing all outcome variables.

The current findings linking Triple P with the reduction of dysfunctional discipline and child behavioral/emotional difficulties are echoed in existing literature, which indicates Triple P has been effective in increasing parental warmth, decreasing parental hostility, increasing parental self-efficacy, increasing parenting skills, reducing parental stress, and reducing negative child behaviors (Fetcher et al. 2011; Graaf et al. 2008; Nowak and Heinrichs 2008; Sanders et al. 2014; Thomas and Zimmer-Gembeck 2007), even long-term (Graaf et al. 2008; Sanders et al. 2014). However, the current study is the first to examine the potential benefits specifically of home-based Triple P in high-risk, rural families and results indicate that the benefits of Triple P extend to this treatment delivery format and unique, high-needs sample. Building upon prior work, the current study found that a home-based format of Triple P improved outcomes among high-risk, rural families.

Table 2 Mean (standard deviation) of caregivers at each time point

Scale	Pre-test	Post-test
PAI Anger Intensity Scale		
Black or African American	147.27 (58.90), N = 11	120.91 (51.17), N = 11
White or Caucasian	139.89 (40.29), N = 38	112.95 (34.06), N = 38
Hispanic	159.03 (38.12), N = 29	114.86 (39.52), N = 29
Total	148.05 (42.87), N = 78	114.78 (38.37), N = 78
PAI Problem Scale		
Black or African American	24.36 (12.99), N = 11	15.18 (11.23), N = 11
White or Caucasian	25.11 (10.98), N = 38	15.55 (9.09), N = 38
Hispanic	27.24 (8.92), N = 29	13.79 (8.57), N = 29
Total	25.79 (10.49), N = 78	14.85 (9.14), N = 78
PS Laxness Scale		
Black or African American	2.61 (1.18), N = 16	2.23 (1.04), N = 16
White or Caucasian	3.26 (1.44), N = 45	2.43 (0.88), N = 45
Hispanic	3.48 (1.30), N = 36	2.17 (1.01), N = 36
Total	3.24 (1.37), N = 97	2.30 (0.95), N = 97
PS Over-Reactivity Scale		
Black or African American	2.64 (1.32), N = 16	2.64 (1.40), N = 16
White or Caucasian	3.88 (1.22), N = 45	2.79 (1.02), N = 45
Hispanic	3.83 (1.33), N = 36	2.69 (1.13), N = 36
Total	3.66 (1.34), N = 97	2.73 (1.11), N = 97
PS Hostility Scale		
Black or African American	2.08 (1.00), N = 16	1.83 (0.88), N = 16
White or Caucasian	2.58 (1.10), N = 45	1.88 (0.81), N = 45
Hispanic	2.81 (1.45), N = 36	1.80 (0.86), N = 36
Total	2.58 (1.24), N = 97	1.84 (0.83), N = 97
ECBI Intensity Scale		
Black or African American	133.94 (44.06), N = 16	105.50 (42.52), N = 16
White or Caucasian	149.56 (37.50), N = 45	111.22 (27.02), N = 45
Hispanic	142.25 (39.38), N = 36	97.69 (25.60), N = 36
Total	144.27 (39.31), N = 97	105.26 (29.90), N = 97
ECBI Problem Scale		
Black or African American	20.13 (10.73), N = 16	13.38 (10.20), N = 16
White or Caucasian	20.16 (8.79), N = 45	9.93 (8.12), N = 45
Hispanic	22.92 (7.71), N = 36	12.06 (8.26), N = 36
Total	21.18 (8.77), N = 97	11.29 (8.55), N = 97
SDQ Total Difficulties		
Black or African American	18.00 (9.88), N = 16	13.94 (8.15), N = 16
White or Caucasian	19.21 (6.12), N = 45	13.53 (5.79), N = 45
Hispanic	17.31 (7.27), N = 36	13.11 (6.20), N = 36
Total	18.28 (7.26), N = 97	13.44 (6.32), N = 97

Limitations and Future Research

The current study found that a home-based format of Triple P improved outcomes among children of those families. Specifically, caregivers reported a decrease in children's emotional and behavioral problems following the receipt of Triple P services. For instance, on the SDQ, a measure of behavioral/emotional difficulties of children, the average

score prior to receiving Triple P services was in the "high" range ($M = 18.28$). Children in the "high" range may be at risk for developing psychopathology (Goodman et al. 2000). However, following Triple P services, the average decreased to the "close to average" range ($M = 13.44$; Goodman et al. 2000). Therefore, following Triple P services, children were at a lower risk for developing a mental health disorder. Similarly, prior to receiving Triple P

services, the average score on the ECBI Intensity subscale ($M = 144.27$) and the ECBI Problem subscale ($M = 21.18$), were clinically significant. However, following the receipt of Triple P services, these scores decreased to below a clinically significant level (105.26 and 11.29, respectively). Thus, these findings highlight the substantial impact of Triple P services on children's emotional and behavioral difficulties and the clinical significance of Triple P services.

A second important, albeit preliminary and exploratory finding in the current study was that results differed little based on race/ethnicity. Broadly, findings pointed to comparable treatment effects regardless of race/ethnicity (i.e., significant evidence of moderation by race/ethnicity was rarely noted). However, one significant test of moderation suggested that Black or African American caregivers did not display a change in parental over-reactivity over time the same way that White or Hispanic caregivers did. The absence of such a change is possibly attributable to the fact that over-reactivity was low in Black or African American caregivers prior to the intervention. To our knowledge, the current study is the first to examine the moderating effects of race/ethnicity in this context (Sanders et al. 2014), thus expanding upon prior research by determining that race/ethnicity may play a role in the parent and child domains that the Triple P program targets. The findings of our research, while requiring replication with a larger sample of participants and considering other ethnic backgrounds as well, suggest that cultural tailoring may be beneficial in this context. For instance, if over-reactivity is not a typical problem in Black or African American households, interventions that target these behaviors may be of little or no benefit and may be omitted or replaced with other content. The value of culturally tailored approaches has been mirrored in other Triple P research—for instance, the effectiveness of a culturally tailored approach to Group Triple P has been found for Indigenous families (Turner et al. 2007)—though this work has not been extended to other groups to date. Still, our findings largely failed to document moderated effects by race/ethnicity, suggesting that home-based Triple P is a promising treatment for a diverse array of families in rural communities.

Several limitations must be noted with regard to the results reported in the present study and represent important areas for future research. First, all of the measures were obtained using self-report. As with all self-report measures, accuracy can be called into question due to the potential for response bias. Further, self-report measures were completed by some families in English and by some in Spanish. Future research with a larger sample size may benefit from considering whether language of response played a significant role in results. Second, the Parental Anger Inventory has only been validated on parents with children between the ages of 2 and 12. Our study included

two children over the age of 12, and thus, the validity of that measure with those participants is unknown. Next, while the current study provides support for the potential benefits of a home-based Triple P program, it does not prove that a home-based delivery format specifically influenced the outcome. For instance, outcomes could be attributed to the other influences such as referrals and navigation to ancillary services, emergency cash supports, or simply clinical attention over time. Thus, future research should compare home-based Triple P to standard Triple P or to another clinic-based intervention. Fourth, the current study does not provide evidence for the lasting effects of the home-based Triple P program months after treatment because significant attrition rates impacted our ability to examine follow-up data (collected 4- and 6-months post-treatment). Likewise, the 43–54% missing data resulted in a major loss of statistical power for a sample that was already moderate in size. Indeed, the results reported in this manuscript may have been underpowered. Given variability in the household income, it is possible that the monetary incentive contributed to participation, retention rates, and treatment outcomes. Similarly, the income scale was limited such that participants could only indicate a maximum income of \$50,000 or more. Thus, some individuals may have had a significantly higher income and would not be considered “low income.” Finally, the current report uses archival data that were collected beginning in 2008 by a community mental health agency which, while providing data on the potential benefit of Triple P from a naturalistic setting, compromises the control researchers exerted on study design. Thus, some procedural information is lacking, including use of standardized methods in the referral process, missing information on the reasons for attrition, and missing information regarding how self-report measures were collected or how participants engaged in therapy. Overall, while the results of this study are promising, the results are exploratory and future research is needed to further assess the potential benefits of a home-based Triple-P program in rural families of diverse outcomes.

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Author Contributions A.A.: conducted the literature review and wrote the introduction and discussion. R.M.: conducted the analyses. L.T.: reviewed manuscript and added to the discussion. L.V.: reviewed the manuscript and added to the results and discussion. A.V.: conceptualized study, added to the introduction and discussion, led editing of the final manuscript.

Compliance with Ethical Standards

Conflict of Interest The authors declare that they have no conflict of interest.

Ethical Approval All procedures performed were conducted in accordance with the ethical standards of the Depelchin Children's Center Institutional Review Board and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed Consent Informed consent was obtained from all individual participants included in the study.

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