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# 2 What are the effects of Triple P on parenting?\*

## Abstract

Triple P is a parenting program intended to prevent and to provide treatment for severe behavioral, emotional, and developmental problems in children. The aim of this meta-analysis was to assess the effectiveness of Triple P Level 4 interventions on parenting styles and parental competency. Level 4 is an intensive training program of 8 – 10 sessions for parents of children with more severe behavioral difficulties. The results indicated that the Triple P Level 4 interventions reduced dysfunctional parenting styles in parents and also improved parental competency. These effects were maintained well through time and appear to support the widespread adoption and implementation of Triple P Level 4 interventions that is taking place in an increasing number of countries around the world.

## 2.1 Introduction

Family processes have a great influence on children's psychological, physical, social, and economic welfare. Many significant mental health, social, and economic problems are linked to disturbances in family functioning (Chamberlain & Patterson, 1995; Patterson, 1982; Sanders, Markie-Dadds, & Turner, 2003), and epidemiological studies have indicated that poor parenting strongly influences how children develop (e.g., Cummings & Davies, 1994; Dryfoos, 1990). The lack of a warm positive relationship with parents; insecure attachment; harsh, inflexible, rigid, or inconsistent discipline practices; and inadequate supervision of and involvement with children are specific factors that increase the risk that children will develop major behavioral and emotional problems, including substance abuse, antisocial behavior, and juvenile crime (e.g., Loeber & Farrington, 1998; Sanders et al., 2003); this implies that the strengthening of parenting competences and improvements in dysfunctional parenting styles should have a positive impact on child well-being and lead to a decrease in their behavioral problems. Behavioral family interventions (BFI) that are based on social learning principles are the most extensively evaluated form of psychosocial intervention for children and are effective in reducing family risk factors associated with child behavior problems (Kazdin, 1991; Patterson, Reid, & Dishion, 1992; Webster-Stratton & Hammond, 1997). In fact, studies demonstrating the efficacy of parenting interventions have shown improvements in parental perceptions and parenting skills, improve-

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ments in children's social skills and school adjustment, and reductions in behavioral and attention problems (Barlow & Stewart-Brown, 2000; Taylor & Biglan, 1998). One widely used parenting intervention is the Triple P—Positive Parenting Program, which aims to equip parents more effectively for their child-rearing role. The purpose of the present study was to provide a meta-analytic review of the research literature on the effectiveness of one level of intervention of the Triple P parenting program in improving parenting styles and parents' competences.

## 2.2 The Triple P Positive Parenting Program

Triple P, which designates a "positive parenting program," is a multilevel program designed to prevent and offer treatment for severe behavioral, emotional, and developmental problems in children from birth to the age of 16 years, by means of enhancing the knowledge, skills, and confidence of their parents. The program was developed by Sanders and colleagues at the Parenting and Family Support Center of the School of Psychology at the University of Queensland (Sanders, Markie-Dadds, Tully, & Bor, 2000). Triple P incorporates five levels of interventions on a continuum of increasing intensity of behavioral and emotional problems in children. Level 1 is a form of universal prevention that delivers psycho educational information on parenting skills to interested parents. Level 2 is a brief intervention consisting of one or two sessions for parents of children with mild behavioral problems. Level 3 is a four session intervention that targets children with mild to moderate behavioral difficulties and includes active skills training for parents. Level 4 is described below. Level 5, finally, is an enhanced BFI program for families where parenting difficulties are complicated by other sources of family distress (Sanders et al., 2003).

### Theoretical Basis of Triple P

Triple P aims to enhance family protective factors and reduce risk factors associated with severe behavioral and emotional problems in children and adolescents by using social learning models of parent-child interaction that highlight the reciprocal and bidirectional nature of these interactions (e.g., Patterson, 1982) and identify learning mechanisms that maintain coercive and dysfunctional antisocial behavior in children (Patterson et al., 1992). As a result, the program teaches positive child management skills to parents as an alternative to coercive, inadequate, or ineffective parenting practices. These dysfunctional parenting styles were the focus of our interest in conducting this meta-analysis. According to these models, effective parents monitor their child's behavior; recognize deviant acts; and consistently use rewards, punishment, and positive role model behaviors (Patterson, 1982, 1992). This approach to the treatment and prevention of childhood disorders has the strongest empirical support of any intervention with children, particularly those with conduct problems (Kazdin, 1987; Taylor & Biglan, 1998; Webster-Stratton & Hammond, 1997). Triple P is a form of BFI, which has clearly been shown to be beneficial in children with disrupt-

tive behavior disorders (Forehand & Long, 1988). Furthermore, the Triple P program is based on research in child and family behavior therapy that has developed many useful behavior change strategies, particularly research that focuses on rearranging antecedents of problem behavior by designing more positive, engaging environments for children (Risley, Clark, & Cataldo, 1976). Congruent with the developmental research on parenting in everyday contexts, Triple P teaches parents to use naturally occurring daily interactions to teach children language, social skills, developmental competences, and problem-solving skills in an emotionally supportive context. The important role of parental cognitions, such as attributions, expectancies, and beliefs as factors that contribute to parental self-efficacy, decisionmaking, and behavioral intentions, is highlighted by social information processing models (e.g., Bandura, 1977, 1995). A central element in the program is the development of parents' capacity for self-regulation, which involves teaching skills to parents that enable them to become independent problem solvers. Self-regulation is a process whereby individuals are taught skills to modify their own behavior (Sanders et al., 2003). In this study, we were interested in parental self-efficacy, which is part of the self-regulatory framework.

### **Characteristics of Triple P**

Our focus here was on Level 4 interventions because most of the relevant Triple P studies have encompassed this particular level of the Triple P system. The Level 4 intervention can be considered the core intervention of Triple P. Research into this system of BFI began with research into Level 4 interventions, which target individual parents of children at risk, or an entire population, in order to identify individual children at risk. Parents are taught a variety of child management skills, including providing brief, contingent attention following desirable behavior; how to arrange engaging activities in high-risk situations; and how to use clear calm instructions, logical consequences for misbehavior, planned ignoring, quiet time (non exclusionary time-out), and time-out (Sanders et al., 2003). The Level 4 interventions in Triple P can be delivered in a variety of formats, including individual face-to-face, group, telephone-assisted, self-directed programs or a combination of these. Standard Triple P is a face-to-face 10-session program for parents and incorporates sessions dealing with the causes of children's behavior problems, strategies for encouraging children's development, and strategies for managing misbehavior; sessions last up to 90 min each. Group Triple P is an eight-session program ideally conducted in groups of 10 – 12 parents, which is appropriate as a universal (available to all parents) or selective (available to targeted groups of parents) preventive parenting support strategy. The program consists of four 2-hour group sessions, which provide opportunities for parents to learn through observation, discussion, practice, and feedback. Self-Directed Triple P is ideal for families where access to clinical services is poor and consists of a 10-week Self-Help program for parents, which may be augmented by weekly 15- to 30-min telephone consultations.

## Previous Evaluations of the Triple P Program

The intervention methods of Triple P have been subjected since 1978 to a series of controlled evaluations using both intrasubject replication designs and traditional randomized control group designs, and there is evidence that Triple P is an effective parenting strategy (Sanders et al., 2003). Several studies have shown that the parenting skills training used in Triple P produced a predictable decline in child behavior problems and that this decline was generally maintained through time (Sanders et al., 2003). Furthermore, clinically meaningful and statistically reliable outcomes for both children and their parents have been demonstrated for the standard, self-directed, telephone-assisted group, and enhanced interventions. The program has also been successfully used for several different family types, including two-parent families, single parents, stepfamilies, maternally depressed families, and martially discordant families (Sanders et al., 2003).

## Hypotheses

We hypothesized in these meta-analyses that dysfunctional parenting styles would improve and that parents' competences would increase after participating in Triple P Level 4 intervention—measured directly after the intervention and at the follow-up 3 – 12 months later. The second hypothesis was that the efficacy of Triple P depended on whether the intervention was delivered to individual parents or groups or in a Self-Help format. Program modality might, in fact, have had an impact on the effects of parenting because of the difference in the intensity of the intervention (self-help vs. face to face) or the degree of personal attention from the therapist (individual or group). Third, we hypothesized that the Triple P Level 4 intervention was more effective for parents of children with higher scores on behavior problems because of the greater responsiveness of severely distressed parents who are coping with difficulties in managing children. One study (Chamberlain et al., 2007) found that specific parenting practices mediated reductions in child behavior problems, especially when high-risk children were involved. The effects on parenting were most evident in families where children had relatively high levels of initial behavior problems. Our hypothesis, as a consequence, was that the Triple P Level 4 intervention was more effective in children with higher initial scores on behavior problems, which led to the further hypothesis that Triple P was more effective when the interventions were given to parents of young children (age 2 – 4) and to parents of boys. The reason for this was that empirical studies have shown that physically aggressive behavior occurs in children of 1 year old, increases in the second life year, and then tends to decline from the third birthday onward (Alink et al., 2006; Tremblay et al., 2004); furthermore, it is also evident that boys exhibit more externalizing problems than girls at the age of 2 and 3 years (Alink et al., 2006). We conducted two meta-analyses. The first meta-analysis assessed the effectiveness of Triple P on parenting styles or competences of parents in the experimental group compared with the control group, as measured immediately at the end of the intervention. The second meta-analysis assessed the degree to which postintervention effects were maintained through time in the intervention group.

## 2.3 Meta-Analysis of Level 4 Interventions

### Pertinent Studies

In this meta-analysis, we examined the effectiveness of Triple P interventions on parenting by pooling the evidence from the pertinent studies. The greater number of participants in a meta-analysis means that the results of a large and diverse body of studies can be summarized, interpreted, and more readily generalized to an entire population (Rosnow & Rosenthal, 2002). This present meta-analysis also calculated an overall effect size for Level 4 Triple P interventions worldwide. It was decided to restrict the meta-analysis exclusively to Level 4 of the Triple P system because most of the relevant Triple P studies that had been identified related to Level 4 because of the fact that initial research focused on this core intervention of Triple P. An important reason for conducting a meta-analysis was to summarize research findings in order to process information from a large number of study findings, and we analyzed the Level 4 intervention as a consequence. Furthermore, the set of findings included in a meta-analysis must result from comparable interventions. Table 1 summarizes the studies included in this analysis.

### Inclusion Criteria

We used three different search methods to identify literature for the meta-analysis. First of all, we searched for literature in two electronic databases, Medline 1975 – February 2006 and Psychinfo 1975 – February 2006. The keywords used were “Triple P” and “parent,” so that words like parenting or parental were also included in the search. Second, we searched all reference lists of studies compiled by the Parenting and Family Support Centre at the University of Queensland in Australia. Third, we asked researchers who had conducted Triple P studies whether they had other relevant unpublished material. Studies had to meet the following inclusion criteria: (a) the study had to have examined the effects on a Triple P Level 4 intervention, which is an intensive parent training program for parents who have children with more severe behavioral difficulties; (b) the effectiveness of Triple P had to have been assessed using a questionnaire for the parents to evaluate parenting styles and parental competences; and (c) sufficient empirical data had to have been reported to enable the calculation of standardized effect sizes. Because we conducted two meta-analyses, studies had to have reported posttest data on the intervention group and on the control group for the purposes of the first meta-analysis and predate and follow-up data had to be reported separately for the intervention group for the purposes of the second meta-analysis.

### Selected Studies

We found 48 effect studies in which all levels of Triple P were used and 25 studies that focused on the Level 4 intervention. Nineteen studies met the inclusion criteria; three studies were excluded from the first meta-analysis because they had no control group, and three other studies were excluded because they had not examined the

effects on a Triple P Level 4 intervention. The studies were independently coded by two researchers on design and sample characteristics, delivery format of the Level 4 intervention of Triple P, reliability and validity of the measures, characteristics of the parents and children, the children's initial problems, and the length of follow-up times. Differences in the coding by the two researchers were resolved by recalculation and consensus. Selected characteristics of these 19 studies are included in Table 1.

### **Sample Characteristics**

Group Triple P was used as the intervention in 10 studies, Standard Triple P in four studies, and Self-Directed Triple P in five studies. One study (Sanders et al., 2000) compared two versions of Triple P, the Self-Directed intervention and the Standard Triple intervention, with a wait-list control group, and we analyzed both interventions in the case of this study. Working parents were the target group of the intervention in one study, 18 studies were randomized clinical trials, and one study was a nonrandom, two-group, concurrent, prospective, observation design (Zubrick et al., 2005). The Triple P Level 4 interventions, Standard, Group, or Self-Directed interventions can be offered differently. The interventions sometimes targeted parents of high-risk children, and the intervention was subject to strict entry criteria. In other cases, however, Group Level 4 was administered as a universal program targeting a high-risk area or a geographical catchment area rather than to parents of high-risk children themselves, with the consequence that samples were often a mixture of parents of high-risk and low-risk children. This meta-analysis also included five studies in which parents rated their children as being within the clinical range on the Eyberg Child Behavior Checklist (ECBI; Eyberg & Ross, 1978), and one study involving parents of children with attention deficit hyperactivity disorder diagnosed by a pediatrician or mental health professional. The clinical cutoff score for the ECBI Intensity Scale was 127 and was 11 for the ECBI Problem Scale (Eyberg & Ross). In the remaining 13 studies, children were not rated as being in the clinical range of behavior problems; the children in two of these studies had a developmental disability, the parents in eight studies reported concerns about their child's behavior, and the targeted populations in three studies were all the families in a high-risk area. It should be noted in this context that self-regulation is an important concept in Triple P, which means that parents play an important role in deciding the level of intervention they wish to participate in and no rigid inclusion or exclusion criteria are applied. In 10 of the studies selected for this meta-analysis, parents reported their child's behavior as being in the clinically elevated range at preassessment; in nine of the studies, the children's behavior was reported as being in the nonclinical range. Children were in the clinical range at pretest in one universally offered intervention, which was a study among indigenous people (Turner, Richards, & Sanders, 2007). Higher problem scores in children at preassessment probably result in a higher positive change in behavioral problems at postassessment. One study was conducted in Germany, one in Hong Kong, and one in Switzerland; 16 studies were conducted in Australia. The percentage of boys was 68.3% averaged across all studies, and we divided the

studies into those with less than 68.3% boys and those with more than 68.3% boys, in order to have two comparable groups. Boys were overrepresented in all studies, and the studies would have been heterogeneous if we had divided the groups into 50% boys and 50% girls. The children were younger than 4 years old in six studies. A total of 17 studies that were based on the Parenting Scale (PS; Arnold, O'Leary, Wolff, & Acker, 1993) and eight studies that were based on the Parenting Sense Of Competence Scale (PSOC; Gibaud-Wallston & Wandersman, 1978) were selected for the meta-analyses; both measurements were used in eight studies. Seventeen studies that were based on the PS were selected for the first meta-analysis and nine studies that were based on the PSOC. Sixteen PS-based studies were selected for the second meta-analysis and eight PSOC-based studies. Follow-up data were presented in 17 studies, and follow-up measurements were taken at both 6 and 12 months in one study (Bodenmann, Cina, Ledermann, & Sanders, 2008).

### **Sample Size**

The size of the samples used for experimental and control groups varied widely between 9 and 774 in the 19 studies reviewed. Of the 43 samples reported (i.e., 24 experimental groups, 19 control groups), 61% of them can be categorized as being relatively small in size (e.g.,  $n = 1 - 29$ ), 16% as being moderate in size (e.g.,  $n = 30 - 59$ ), and the remaining 23% as being large in size (e.g.,  $n = 60 - 774$ ). These numbers are the reported sample sizes, when the studies began. The percentage of dropout at postmeasurement or follow-up time was 5 – 44%.

### **Measurement of Outcomes**

The PS or the PSOC was used to assess the parenting styles and competences of the parents. The PS is a 30-item measure of parental perceptions of dysfunctional discipline styles in parents, which yields a total score that is based on three factors: laxness, overreactivity, and verbosity. The items on laxness describe ways in which parents give in, allow rules to go unenforced, or provide positive consequences for misbehavior; the items on overreactivity reflect parental mistakes such as displays of anger, meanness, and irritability; the items on verbosity reflect lengthy verbal responses and a reliance on talking, even when talking is ineffective. Statements were rated on 7-point Likert scales, with higher scores indicating higher levels of parental dysfunction. The scale had adequate internal consistency for the total score ( $\alpha = .84$ ), laxness ( $\alpha = .83$ ), overreactivity ( $\alpha = .82$ ), and verbosity ( $\alpha = .63$ ) scales and had good test-retest reliability ( $r = .84, .83, .82$ , and  $.79$ , respectively; Arnold et al., 1993). The PSOC is a 16-item questionnaire used to assess parents' views of their competence as parents on two dimensions: (a) satisfaction with their parenting role, which reflects the extent of parental frustration, anxiety, and motivation and (b) feelings of efficacy as a parent, which reflect competence, problem-solving ability, and capability in the parenting role. Parents are asked to respond to a series of statements about parenting

**Table 1. Selected Characteristics of Studies examining the Effects of Triple P level 4 intervention on Parenting Styles and Parents' Competency**

Study	Conditions: N	Target population	Measurement	
Bodenmann et al. (2008)	Group: 51; No Treatment: 41; Couples Coping Enhancement Tr.: -	Universally offered sample in rural areas; parents reported beh. pr. in their children; Switzerland	Pre-Post; 6 months - 12 months; PS - PSOC	
Connell, Sanders and Markie-Dadds (1997)	Self-Directed: 12; Waitlist: 11	Children rated in the clinical range on the ECBI; Australia	Pre-Post; 4 months PS - PSOC	
Gallart and Matthey (2005)	Group: 33; Waitlist: 16	Universally offered sample; parents reported beh. pr. in their children; Australia	Pre-Post; PS	
Heinrichs et al. (2005)	Group: 129; Waitlist: 94	Universally offered sample, all families in childcare in catchment area; Germany	Pre-Post; 12 months; PS	
Hoath and Sanders (2002)	Group: 9; Waitlist: 11	Families with a child with a clinical diagnosis of attention deficit hyperactivity disorder; Australia	Pre-Post; 3 months; PS	
Ireland, Sanders, and Markie-Dadds (2003)	Group: 16; Enhanced Group: 16	Universally offered sample, parents reported beh. pr. in their children; Australia	Pre-Post; 3 months; PS	
Leung, Sanders, Leung, Mak and Lau (2003)	Group: 33; Waitlist: 36	Universally offered sample; parents reported beh. pr. in their children; Hong Kong	Pre-Post; PS – PSOC	
Markie-Dadds and Sanders (2006a)	Self-Directed: 21; Waitlist: 22	Children rated in the clinical range on the ECBI: Australia	Pre-Post; 6 months; PS – PSOC	
Markie-Dadds, and Sanders (2006b)	Self-Directed: 28; Waitlist: 12	Children rated in the clinical range on the ECBI: Australia	Pre-Post; 6 months; PS – PSOC	
McTaggart et al., 2005	Group: 79; Waitlist: 244	Universally offered sample, all families living in a high-risk area; Australia	Pre-Post; 6 months; PS – PSOC	
Morawska and Sanders (2006)	Self-Directed: 73; Waitlist: 37	Universally offered sample; parents reported beh. pr. in their children; Australia	Pre-Post; 6 months; PS	

	<b>% DO</b>	<b>Age Child (M)</b>	<b>% boys</b>	<b>Child beh. pr.</b>
	12 at FU	6.60 ( <i>SD</i> = 2.83)	55	Nonclinical
	-	4.27 ( <i>SD</i> = 1.05)	43	Clinical
	-	5.40 ( <i>SD</i> = 1.5)	75	Nonclinical
	-	4.00 ( <i>SD</i> = 0.98)	54	Nonclinical
	5 at post; 23 at FU	7.70 ( <i>SD</i> = 1.33)	-	Clinical
	28 at FU	3.53 ( <i>SD</i> = 1.12)	58	Nonclinical
	24 at post	4.23 ( <i>SD</i> = 1.06)	64	Clinical
	-	3.59 ( <i>SD</i> = 0.76)	64	Clinical
	0 at post; 4 at FU	3.89 ( <i>SD</i> = 0,96)	64	Clinical
	14 at post	-	57	Nonclinical
	11 at post	2.18 ( <i>SD</i> = 0.42)	51	Nonclinical

Study	Conditions: N	Target population	Measurement	
Plant and Sanders, (2007)	Stepping Stones: 24; Stepping Stones: -; Enhanced: 26; Waitlist: 24	Parents of children with diagnosed developmental disability; Australia	Pre-Post; 12 months; PS – PSOC	
Roberts, Mazzucchelli, Studman, and Sanders (2006)	Stepping Stones: 17; Waitlist: 15	Parents of children with a diagnosed developmental disability: Australia	Pre-Post; 6 months; PS	
Sanders et al. (2000) <sup>a</sup>	Standard: 65; Self-Directed: 61; Enhanced: 58; Waitlist: 71	Children rated in the clinical range on the ECBI: Australia	Pre-Post; 12 months; PS - PSOC	
Sanders and McFarland (2000)	Behavioral Family Intervention: 24; Cognitive Behavioral Intervention: 23	Children rated in the clinical range on the ECBI, mothers with major depression: Australia	Pre-Post; 6 months; PSOC	
Stallman. Ralph, and Sanders (2005)	Self-Directed + Tel.: 17; Self-Directed: 18; Waitlist: 16	Universally offered sample; parents reported beh. pr. in their children: Australia	Pre-Post; 3 months; PS	
Turner et al. (2007)	Group: 18; Waitlist: 18	Universally offered sample of indigenous families; parents reported beh. pr. in their children; Australia	Pre-Post; 6 months; PS	
Yuki, Matsumoto, sofronoff, and Sanders (2007)	Group: 23; Waitlist: 25	Universally offered sample; Japanese parents reported beh. pr. in their children; Australia	Pre-Post; 3 months; PS	
Zubrick et al. (2005)	Group: 691; Control region: 774	Universally offered sample, all families in high-risk area; Australia	Pre-Post; 12 months - 24 months; PS	

*ECBI = Eyberg Child Behavior Checklist; Age Child (M) = average age; beh.pr. = behavior problems; DO = percentage of drop-out; FU = Follow Up; PS = Parenting Scale; PSOC = Parenting Sense of Competency Scale; <sup>a</sup> analyses were conducted for both Standard Triple P and Self-Help Triple P in this study.*

by indicating their agreement or disagreement and each item is measured on a 7-point Likert scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The total score (16 items), Satisfaction factor (nine items), and Efficacy factor (seven items) showed a satisfactory level of internal consistency ( $\alpha = .79, .75, \text{ and } .76$  respectively; Johnston & Mash, 1989).

	% DO	Age Child (M)	% boys	Child beh. pr.
	0 at post; 5.5 at FU	4.56 ( <i>SD</i> = 1.13)	76	Clinical
	33 at post; 44 at FU	4.30 ( <i>SD</i> = 1)	57	Clinical
	14 at post	3.40 ( <i>SD</i> = 0.30)	68	Clinical
	21 at post	4.39 ( <i>SD</i> not reported)	74	Clinical
	11.8 at post; 23.5 at FU	12.3 0 ( <i>SD</i> = 0.54)	59	Nonclinical
	22 at post; 26 at FU	5.72 ( <i>SD</i> = 3.19)	67	Clinical
	0 at post; 4 at FU	4.90 ( <i>SD</i> not reported)	54	Nonclinical
	12 at post; 13 at 12 months; 21 at 24 months	3.73 ( <i>SD</i> = 1.17)	57	Nonclinical

## Methodological Analysis

An effect size (i.e., the standardized difference between the means of two groups; Cohen's *d*) was calculated for each study. In the first meta-analysis, we were interested in the differences between mean scores in the experimental group and in the control group at postmeasurement. The standardized effect size, *d*, was calculated as, where  $M_E$  and  $M_C$  were the means of the experimental and control groups at postintervention and postmeasurement, respectively, and  $SD_C$  was the standard deviation of the control group. These standardized effect sizes, *d*, indicated how many

standard units (z scores) the experimental group had progressed at postmeasurement as compared with the control group. In the second meta-analysis, we also calculated the standardized mean difference as  $d = (M_p - M_f) / SD_p$ , where  $M_p$  and  $M_f$  were the means of the experimental group at baseline and follow-up, respectively, and  $SD_p$  was the standard deviation at baseline of the experimental group. This in-group effect size thus indicated the number of standard units by which the recipients of the intervention had improved over time relative to their own baseline scores and can be interpreted, therefore, as a standardized health gain score. For example, an effect size of  $d = 0.5$  indicated that the mean of the experimental group at follow-up assessment was half a standard deviation larger than the mean of the experimental group at baseline. The study by Zubrick et al (2005) was not a randomized clinical trial and so we calculated the standardized pre-post change score for the experimental group ( $d_E$ ) and did the same for the control group ( $d_C$ ). We subsequently calculated the difference using the following formula:  $\Delta (d) = d_E - d_C$ .

The meta-analyses were conducted using Meta-Analysis, version 5.3 (Schwarzer, 1989), which is based on the statistical techniques outlined by Hedges and Olkin (1985); the results are shown in Tables 2 and 3. An effect size in the range of  $d = 0.56 - 1.2$  may be interpreted as a large effect from a clinical perspective, whereas effect sizes of  $0.33 - 0.55$  are moderate and effect sizes of  $0.00 - 0.32$  are considered small (Lipsey & Wilson, 1993). We also conducted the Q test for homogeneity, in order to ascertain whether the various effect sizes that were averaged into the pooled d values all estimated the same population effect size (Rosenthal & Rubin, 1982), followed by an outlier analysis whenever the Q test for homogeneity was significant. In order to identify outliers, we conducted cluster analyses (Schwarzer), conducted another meta-analysis without the outlier, and then ascertained whether we had obtained a more homogeneous set of primary studies in which the Q test was no longer significant. We also formed subgroups on the basis of the characteristics of the intervention. This was done in order to ascertain whether a Self-Help version of Triple P was inferior (or superior) to a therapist-assisted version. This contrast was considered to be statistically significant when the 95% confidence intervals (CI) of the respective effect sizes d were not overlapping.

## 2.4 Results on Parenting Styles and Parental Competences

*Parenting styles.* The overall mean effect size for the 17 studies of parenting styles was 0.68 at postmeasurement, with a 95% CI of 0.48 – 0.87 (Table 2), which is a large effect according to Cohen's criteria and is statistically significant ( $Z = 6.73$ ,  $p < .001$ ). However, the Q test for the hypothesis of homogeneity across effect sizes had to be rejected, indicating that there was a substantial amount of unexplained variance in the total set of studies that might be attributable to the systematic effects of covariates. Random sample error caused 48.9% of the variance, leaving 51.1% remaining, which may have systematically covaried with (unknown) covariates. The

number of studies with a zero effect that would have to be found in order to reduce the effect size to 0.20 was 40.5.

The overall mean effect size relating to the longterm measurement of parenting styles was  $d = 0.80$ , with a 95% CI of  $0.51 - 1.10$ , which is a large and statistically significant effect ( $Z = 5.40$ ,  $p < .001$ ). Again, the Q test for the hypothesis of homogeneity across effect sizes had to be rejected, random sample error having caused 33.6% of the variance. The number of studies with a zero effect that would have to be found in order to reduce the effect size to 0.20 is 51.4.

An outlier analysis was conducted for the set of 17 PS-based studies in which a pre-post design was adopted and four clusters were found at a 5% confidence level. When the question of why four studies in three clusters differed from the other 13 studies was examined, very large effect sizes were found in two studies, the third study was the first study of Self-Help Triple P, and the fourth study was a mixture of Standard and Enhanced Stepping Stones, which is an adaptation of Triple P for families of children with developmental disabilities. An analysis was made of one cluster that included five studies of Self-Help, seven of Group Triple P, and one study of Stepping Stones Triple P (13 studies). An overall mean effect size of 0.54 was found, which is a moderate effect (95% CI:  $0.46 - 0.62$ ,  $Z = 13.44$ ,  $p < .001$ ); the Q test indicated that this was a homogeneous set of studies. The same outliers were also excluded from the follow-up meta-analysis, which found an overall mean effect size of 0.51, which is a moderate effect (95% CI:  $0.43 - 0.59$ ,  $Z = 12.55$ ,  $p < .001$ ); again, the Q test indicated that this was a homogeneous set of studies. In summary, the moderate effect sizes for a homogeneous set of studies demonstrated that parenting styles of parents who followed a Level 4 intervention of Triple P had improved at postmeasurement and follow-up measurement.

*Parental competences.* The overall mean effect size for the eight studies of the parenting competences was 0.65 at postmeasurement with a CI of  $0.36 - 0.94$  (Table 2), which is a large effect according to Cohen's criteria and statistically significant ( $Z = 4.32$ ,  $p < .001$ ). The Q test for the hypothesis of homogeneity across effect sizes had to be rejected, 41.85% of the variance having been caused by random sample error. The number of studies with a zero effect that would have to be found in order to reduce the effect size to 0.20 was 18.1. The overall mean effect size on long-term measurement of parenting competences was  $d = 0.67$  with a 95% CI of  $0.43 - 0.89$ , which is a large and statistically significant effect ( $Z = 5.76$ ,  $p < .001$ ). The Q test indicated that this was a homogeneous set of studies. Follow-up at 6 months found an overall mean effect size of  $d = 0.74$ , but the result was significantly heterogeneous. A meta-analysis of the three studies with a 12-month follow-up discovered an overall mean effect size of  $d = 0.58$ , and the Q test indicated that this was a homogeneous set of studies. In summary, the findings for a homogenous set of studies indicated that Parental competences had improved at postassessment (moderate effects), had improved further at follow-up assessment (large effect), and had been maintained 1 year later (moderate effect).

**Table 2: Results of meta-analyses examining the effects of the Triple P level 4 on the Parenting Scale (PS) and the Parenting Sense of Competency Scale (PSOC)**

Effects at post-measurement	$N_{ES}$	$N$	$D$	95% CI	$Q$ (df)	%SE	F/S-K
<i>PS</i>							
All studies	17	2.881	0.68	0.48-0.87	40.63 (16)**	48.9 %	40.5
Outliers excluded (nos. 2, 7, 13, 18, table 1)	13	2.712	0.54	0.46-0.62	12.79 (12)	100%	22
<i>PSOC</i>							
All studies	8	857	0.65	0.36-0.94	31.32 (7)***	41.85	18.1
Outliers excluded (nos. 8, 12, table 1)	6	460	0.57	0.38-0.77	7.76 (5)	100	11.2
Effects after 3 - 12 months							
<i>PS</i>							
All studies (3-12 months)	17	2.564	0.80	0.51-1.10	43.71 (16)**	33.6	51.4
All studies, outliers excluded (nos. 2, 13, 18, table 1)	14	2.480	0.51	0.43-0.59	12.09 (13)	100	21.9
4-6 months	12	652	0.96	0.57-1.35	26.57 (11)**	36.05	45.6
4-6 months outliers excluded (nos. 2, 13, 18, table 1)	9	568	0.67	0.50-0.84	2.18 (8)	100	21.3
Effects after 12 months	5	1.912	0.47	0.38-0.56	5.5 (4)	100%	6.7
<i>PSOC</i>							
All studies (3-12 months)	8	794	0.67	0.43-0.89	12.47 (7)	53.42%	18.7
6 months	5	398	0.74	0.38-1.10	10.77 (4)*	44.23%	13.5
12 months	3	396	0.58	0.38-0.79	1.36 (2)	100%	5.8

$NE_S$  = Number of effect sizes;  $N$  = number of subjects in the studies;  $D$  = overall effect size; % SE = percentage of the variance accounted for by random sample error;  $Q$  = Homogeneity  $Q$ ; F/S-K = Orwin's Fail-safe  $N$ . \*  $p < 0.05$ . \*\*  $p < 0.01$ . \*\*\*  $p < 0.001$ .

Outlier analyses were also conducted for the PSOC-based studies. One study with a very large effect size was again excluded at postassessment, as was a study with a very low effect size. An overall effect size of 0.57 was found, which is a moderate effect (95% CI: 0.38 – 0.77,  $Z = 5.84$ ,  $p = .00$ ) and the  $Q$  test indicated that this was a homogeneous set of studies. We conducted several additional meta-analyses in order to examine whether effects were moderated by the age of the children (i.e., younger vs. older than 4 years), the gender of the children (more or less than

68.3% boys), self-directed versus practitioner-assisted intervention, and the behavior problems scores of the children on the ECBI, the Strengths and Difficulties Questionnaire, or the Child Behavior Checklist (scoring problems at pretest in clinical range vs. nonclinical range). The outliers were excluded once more by cluster analyses using the computer program (Schwarzer, 1989), and the results are summarized in Table 3. Studies with more than 68.3% boys were found to show significantly greater long-term effects on parenting styles and parental competency measured with the PSOC ( $d = 0.50$ ; 95% CI 0.31 – 0.69 vs.  $d = 1.20$ ; CI 0.76 – 1.63). None of the other moderator variables were significant.

**Table 3: Results of meta-analyses of Triple P across modalities on the Parenting Scale (PS) and the Parenting Sense of Competency Scale (PSOC), at Follow-up Assessment**

	$N_{ES}$	$N$	$D$	95% CI	$Q$	%SE	F/S-K
<i>Parenting Scale</i>							
Age < 4 years	5	1732	0.50	0.41-0.60	9.02	100%	7.62
Age > 4 years	9	749	0.53	0.39-0.68	2.98	100%	14.99
< 68.3 % boys	9	2312	0.50	0.42-0.58	10.07	100%	13.45
> 68.3 % boys	5	168	0.72	0.40-1.03	0.24	100%	13.01
Initial non-clinical behavior problems	8	2096	0.47	0.39-0.56	6.89	100%	11.00
Initial clinical behavior problems	6	384	0.73	0.52-0.94	0.24	100%	15.91
Self-Directed	6	354	0.88	0.28-1.49	6.67	32.25%	20.49
Therapist-assisted	10	2140	0.48	0.40-0.57	9.61	100%	14.19
<i>PSOC</i>							
All studies < 4 years	3	296	0.64	0.41-0.88	1.55	100%	6.64
All studies > 4 years	3	256	0.72	0.06-1.38	10.00**	16.34%	7.79
< 68.3 % boys	4	434	0.50	0.31-0.69	0.75	100%	6.01
> 68.3 % boys	2	118	1.20	0.76-1.63	1.20	83.54%	9.96
Initial non-clinical behavior problems	2	192	0.41	0.12-0.69	0.01	100%	2.08
Initial clinical behavior problems	4	380	0.67	0.47-0.88	1.85	100%	9.47
Self-Directed	3	180	0.58	0.28-0.88	2.56	100%	5.76
Therapist-assisted	4	372	0.72	0.26-1.18	10.31*	22.50%	10.39

$N_{ES}$  = Number of effect sizes;  $N$ : number of subjects in the studies;  $D$  = overall effect size; CI = confidence interval;  $Q$  = homogeneity  $Q$ ; % SE = percentage of the variance accounted for by random sample error; F/S-K = Orwin's Fail/Safe  $N$ . \* $p < 0.05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < 0.001$ .

## 2.5 Summary and Discussion

Although family relationships are important, parents generally receive little preparation for their parenting role and most of them learn “on the job,” by trial and error (Risley et al., 1976; Sanders et al., 2000). The importance of parenting programs in improving parenting skills with the objective of reducing family risk factors associated with child behavior problems led us to conduct a meta-analysis to summarize the findings for Level 4 interventions of the widely used Triple P parenting program. We will now return to the hypotheses set out at the beginning of this article and highlight some implications for research, policy, and practice.

### ***Did the Parenting Styles of Parents Improve After Participating in a Triple P Level 4 Intervention?***

Improving parenting styles can have a positive impact on reducing childhood disorders. We concluded that dysfunctional parenting styles (laxness, overreactivity, and verbosity) decreased significantly immediately after the Triple P Level 4 intervention and that these results were maintained for 3 – 12 months. The lack of extended follow-up research unfortunately meant that less could be concluded about longer term effects.

### ***Did the Parental Competences Improve After Participating in a Triple P Level 4 Intervention?***

The educative approach to promoting parental competence in Triple P views the development of a parent's capacity for self-regulation as a central skill. This meta-analysis found positive effects on parental satisfaction with their parenting role and feelings of efficacy as a parent directly after the Triple P Level 4 intervention, and that these effects were maintained for 3 – 12 months. These results indicate that parents had more positive expectations about the possibility of change, and we hypothesized that the more self-sufficient parents become, the more likely they are to be resilient in coping with adversity, seeking appropriate support, and advocating for their children (Sanders et al., 2003). The lack of extended follow-up research again meant that less can be concluded about longer term effects.

### ***Are Some Modalities of the Triple P Level 4 Interventions More Effective on Parenting Styles and Parental Competences Than Others?***

The effects of the Triple P Level 4 interventions were independent of whether the intervention was delivered in an Individual, Group, or Self-Help format; self-directed and therapist-assisted intervention were equally effective. Parents may have different needs and preferences regarding the type and mode of assistance they require, denoting a flexibility that enables practitioners to determine the scope of the intervention within their own service priorities and funding (Sanders et al., 2003). Furthermore, self-directed support may lessen the need for many parents to consult with practitioners (Rosen, 1976), thereby reducing social service dependency.

### ***What Is the Impact of Child Variables on the Effects on Parenting Styles and Parental Competences?***

The Triple P Level 4 intervention was not found to be more effective on parenting styles and parental competences in parents of children with behavior problems rated in the clinical range as compared with children with problems rated as nonclinical. This meant that the Triple P Level 4 intervention was effective across a diverse set of families with concerns about their child's disruptive behavior. Studies with a higher proportion of boys (68.3%) showed greater long-term effect sizes on parental competences than studies with fewer boys, which means that the intervention was more effective for parents of boys than for parents of girls; this is possibly because of a higher level of problem behavior in boys. More parents of boys than parents of girls were included in the studies selected for this meta-analysis, and the impact of gender on parental competences therefore has to be clarified in future studies by including more parents of girls. In addition, the age of the children had no impact on parenting styles and parental competences. These results indicate that the Triple P Level 4 interventions are appropriate for parents of children of different ages.

## **Implications**

### ***Implications for Research***

The present meta-analysis has several limitations. First of all, the number of participants was small in several studies (fewer than 50 respondents were included in 52.6% of the randomized studies). Second, different studies were sometimes used in the long-term analysis than were used in the postintervention analysis; therefore, a longitudinal comparison of those effect sizes must be conducted with caution. Third, we took the child as the unit of analysis in this meta-analysis because mothers and fathers report about the same child; it would be interesting, however, to analyze both parents separately to find out whether they report differently. Fourth, nine effect studies were not included in this meta-analysis because strict methodological criteria for inclusion were applied. This meta-analysis guarantees that the synthesis was based on the best evidence alone, but its results may summarize only a narrow research domain. The limitations explained above mean that further research is necessary. It may be useful to conduct more meta-analyses on all instruments and data in the studies of Triple P to provide us with more insight into the effects of Triple P on differences between mothers and fathers or into the impact of Triple P on parental mental health. We are also interested in the differences in effect sizes for the different delivery formats, and it would be worthwhile to conduct meta-analyses of the other levels of Triple P as well. A second direction for future research is to conduct more in-depth analyses on the influences of the child moderators, such as the age and gender of the children. It would be interesting to analyze studies that included more girls, in order to find out what the effects are on parents of girls. Third, we recommend conducting meta-analyses with parent moderators, such as the parents' age, gender, or education, if the data are available. A fourth recommendation for future research is to focus more on parents with children with

emotional problems rather than behavioral problems. Finally, it would be interesting to examine whether the maintained effects observed up to 12 months postintervention occur over a longer period carrying over into the children's adolescence.

### ***Implications for Policy and Practice***

The positive results in the meta-analyses and the need for evidence-based programs worldwide imply that it would be interesting for policymakers in other countries to adopt the Triple P Level 4 interventions. The fact that parents are so vital to the development of children within the family is currently placing increasing emphasis on providing support, guidance, and treatment services to adults who face parenting problems. This study found moderate to large effects for the Self-Help Triple P intervention. Self-Help interventions have become more prevalent in the past two decades (Glasgow & Rosen, 1978), and written materials have several advantages over traditional clinical services—they are convenient, they enable users to repeat lessons, and they can be disseminated to many people (Starker, 1990). With the future in mind, parents might be able to follow the Self-Help program while receiving telephone or e-mail support from a practitioner. Parents are not always content with their contacts with practitioners, and may, therefore, prefer to try a Self-Help course, which provides telephone or e-mail support; however, it is important for parents to be able to continue using services within an agency if they need these after completing Self-Help Triple P. Preconditions for given access to the program are that parents must not be intellectually disabled and must report that they can read fluently.

The analyses involved both universal prevention samples and high-risk samples, and the effect sizes were consequently very large for a public health intervention that is universally offered. This means that the interventions are applicable in the prevention departments of public health institutions or youth care departments, or both, and can be offered by a range of different professionals, such as pediatricians, teachers, social workers, psychologists, and psychiatrists.

## **2.6 Conclusions**

This meta-analysis was conducted to assess the effectiveness of Level 4 of the Triple P multilevel intervention system on parenting styles and parental competences across different target groups and intervention modalities. We were interested in the pooled effect size of the measurements of parenting directly after the intervention and between 3 and 12 months later. Research findings from Triple P Level 4 interventions were summarized in this meta-analysis so that the results could be more readily generalized for a larger population. Statistical tests for homogeneity were carried out to determine whether a grouping of effect sizes from different studies showed more variation than would be expected from sampling error alone; this procedure provided an empirical test of whether or not it is plausible to presume that studies, which showed such disparate results, are comparable. In addition, the systematic coding

of study characteristics, which is a standard feature of a meta-analysis, permitted an analytically precise examination of the relationships between study findings and study features of this kind. Our study examined whether effects were moderated by the age and gender of children, the different modalities, and the initial behavior problem scores of the children, but few significant moderators were found, indicating that Triple P can be used with success in a diverse range of families. The results showed that the Triple P Level 4 interventions improved the parenting styles and the competences of parents, as self-reported by the parents. Improvements were sustained over time and even seem to have increased somewhat in the long term. The positive effects of Triple P as shown in this study seem to support the adoption and implementation of the Triple P Level 4 interventions presently being used in an increasing number of diverse cultural contexts around the world.

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