

## ***Case Study 1: An Evidence-Based Practice Review Report***

### ***How effective is Triple P (Positive Parenting Program) in reducing problem behaviours in children with Autism Spectrum Disorder?***

#### **Summary**

This systematic literature review examined the effectiveness of Triple P (Positive Parenting Program) (Sanders, Turner & Markie-Dadds, 2001) in reducing problem behaviours in children with a diagnosis of Autism Spectrum Disorder (ASD). Triple P is a parenting programme designed to train parents in using skills and strategies to manage their child's behaviour. There are a range of different versions of Triple P to suit the age and identified needs of a child; those which were included in the current review are specifically designed for parents or caregivers of a child with a disability.

A comprehensive literature search found five studies which met the inclusion criteria of the review. These five studies were then reviewed using Harden and Gough's (2012) Weight of Evidence Framework, whilst incorporating an adapted version of Kratochwill's (2003) Coding Protocol which was used to evaluate the methodological quality of these studies. The findings from all five studies suggest that Triple P training for parents can significantly reduce problem behaviours in children with ASD, with medium to large effect sizes reported. Strengths and limitations of the evidence, and recommendations for future research, have been considered.

## Introduction

### ***What is Triple P and how is it used?***

Triple P is a family intervention system which was originally developed by Sanders, Turner and Markie-Dadds (2001) for parents or caregivers of children up to 12-years-old. Other variations of Triple P have since been developed, including Stepping Stones Triple P (Sanders, Mazzucchelli & Studman, 2004) and Building Bridges Triple P (Sanders & Kirby, 2018), for children and adolescents with a disability.

The aim of Triple P is to prevent children from experiencing behavioural and emotional problems, by teaching parents the skills and strategies to appropriately manage these issues (Sanders, Turner & Markie-Dadds, 2001). It is a multi-level system which increases in intensity as problem behaviours become more complex; this system is described in a paper by Sanders, Turner and Markie-Dadds (2002):

- Level 1: “*Universal Triple P media-based parenting information campaign*” (general information for parents about child development and parenting skills, encouraging the normalisation of parenting programmes).
- Level 2: “*Selected Triple P information and advice for a specific parenting concern*” (advice for parents with specific concerns about their child’s minor behaviour problems).
- Level 3: “*Primary Care Triple P narrow focus parenting skills training*” (a 4-session programme, run in an individual format, for parents wanting to

focus on one or two specific problem behaviours that their child is displaying).

- Level 4: “*Standard Triple P group, Triple P self-directed, Triple P broad-focus parenting skills training*” (a programme up to 12-sessions long, run in an individual and/or group format, for parents requiring intensive training to manage multiple problem behaviours that their child is displaying).
- Level 5: “*Enhanced Triple P behavioural family intervention*” (a programme up to 11-sessions long, run in an individual format, for families experiencing dysfunction and parents requiring support in managing more severe problem behaviours that their child is experiencing).

Table 1  
*Variations of Triple P Included in the Current Review*

Intervention	Who is it for?	What is involved?
Stepping Stones Triple P (SSTP) (Level 4)	Parents or caregivers of a child (up to 12-years-old) with a disability.	- 8 week programme (one, hour-long session per week). - Group format or partial group format (some group sessions, some individual sessions).
Primary Care Stepping Stones Triple P (PCSSTP) (Level 3)	Parents or caregivers of a child (up to 12-years-old) with a disability.	- Brief programme: 4 sessions (typically 15- to 30-minutes long each, although timing is flexible). - Individual format. - Targeting one or two specific problem behaviours.
Building Bridges Triple P (BBTP) (Level 4)	Parents or caregivers of an adolescent with a disability.	- 8 week (11.5 hours total) programme. - Five 120-minute group sessions and three 30-min telephone sessions (although this format is flexible). - Draws from parts of Teen Triple P (for parents of typically-developing adolescents) and Stepping Stones Triple P.

*Note.* Information is collated from the five studies included in this review: Lake (2010); Mazzucchelli, Jenkins & Sofronoff (2018); Tellegen & Sanders (2014); Whittingham, Sofronoff, Sheffield & Sanders (2009); and Zand et al. (2017).

As the purpose of this review is to consider the effectiveness of Triple P in reducing problem behaviours in children with ASD, the variations of Triple P which were included in this review are those which were designed for children with a disability (see Table 1). The structure and content of these programmes vary slightly and have been described in Table 2.

Table 2

*Programme Overview for Stepping Stones Triple P (SSTP), Primary Care Stepping Stones Triple P (PCSSTP), and Building Bridges Triple P (BBTP)*

Intervention	Week	Format	Topic
	1		
SSTP	Introduction	Group	Introduction of positive parenting principles and monitoring child behaviour.
PCSSTP	Introduction	Individual	Parents taught to identify and monitor problem behaviours.
BBTP	Positive parenting	Group	Positive parenting, factors affecting teenage behaviour and tracking behaviour, and goals.
	2		
SSTP	Developing positive relationships with children <i>OR</i> Observation and feedback	Group <i>OR</i> Individual	Parents taught to develop positive relationships and encourage desired behaviour. <i>OR</i> Parent-child interaction is observed and feedback is given.
PCSSTP	Parenting plan developed and practised	Individual	Practitioners help parents to develop and evaluate a practical parenting plan (by selecting 1-2 techniques from a list of 25 evidence-based strategies). Parents practice using these for homework between sessions 2-3.
BBTP	Encouraging appropriate behaviour	Individual	Positive parent-child relationships, increasing desirable behaviour, and family meetings.

Intervention	Week	Format	Topic
	3		
SSTP	Teaching new skills and behaviours <i>OR</i> Promoting children's development	Group	Strategies taught to help children develop new skills (including the use of social stories). <i>OR</i> Parents taught to develop positive relationships and encourage desired behaviour.
PCSSTP	Review and adapt parenting plan	Individual	Homework is discussed and parenting plan is adapted.
BBTP	Managing problem behaviour and parenting routines	Group	Family rules, non-compliance, emotional behaviour, and behaviour contracts.
	4		
SSTP	Managing misbehaviour	Group	Parents taught behaviour management strategies.
PCSSTP	Generalisation	Individual	Generalisation-enhancement strategies are discussed.
BBTP	Getting teenagers connected and teaching survival skills	Group	Risky situations and behaviour, including family survival tips.

Intervention	Week	Format	Topic
	5		
SSTP	Managing misbehaviour (part 2) and planning for high risk situations <i>OR</i> Practice	Group  <i>OR</i> Individual	Planning for situations where child problem behaviours are likely.  <i>OR</i> Parents set goals and practice certain strategies at home, with feedback.
BBTP	Implementing parenting routines 1	Individual	Update on progress and other issues.
	6		
SSTP	Practice	Individual	Parents set goals and practice certain strategies at home, with feedback.
BBTP	Implementing parenting routines 2	Individual	Update on progress and other issues.
	7		
SSTP	Practice  <i>OR</i> Planned activities training	Individual  <i>OR</i> Group	Parents set goals and practice certain strategies at home, with feedback.  <i>OR</i> Planning for situations where child problem behaviours are likely (including comic strip conversations and social stories).
BBTP	Implementing parenting routines 3	Individual	Update on progress and other issues.

Intervention	Week	Format	Topic
	8		
SSTP	Problem solving for the future and programme closure <i>OR</i> (8/9) Implementing planned activities training/Closure	Group  <i>OR</i> Individual/ Group	Phasing out strategies and maintaining change.  <i>OR</i> Practice planned activities with high risk visit / maintaining change.
BBTP	Closure	Group	Maintaining changes and problem solving for the future.

*Note.* This overview is a combination of details provided from the following papers in this review - Lake (2010, p. 83); Whittingham, Sofronoff, Sheffield & Sanders (2009, p. 478); Tellegen & Sanders (2014, p. 1194); Zand et al. (2017, p. 6); and Mazzucchelli, Jenkins & Sofronoff (2018, p. 50).

### ***What are the psychological underpinnings of Triple P?***

Triple P has a strong psychological basis, drawing from a range of different psychological theories and principles; Sanders, Turner and Markie-Dadds (2002, p. 174-176) cite:

- 1) **Coercion Theory** (Patterson, 1982) – Coercion Theory is a social learning model which explains a process whereby parents unintentionally reinforce their child's problem behaviours. Problem behaviours may begin with a child becoming angry or refusing to follow a parent's instructions; this often creates negativity from the parent towards the child, which then reinforces their child's problem behaviours. This can be a continuous cycle which is difficult to break and can be generalised to interactions with others. Triple P highlights the importance of positive parent-child interactions and family relationships, as a way of helping children to learn positive behaviours.
- 2) **Behavioural Family Intervention** (Sanders, 1996) – Behavioural Family Intervention is a therapeutic process used to improve children's problem behaviours. This is done through making changes to the child's wider environment, including an increase in positive parent-child interactions. As mentioned above, Triple P acknowledges the impact of negative parent-child interactions on children's behaviour, and therefore attempts to increase positive interactions.
- 3) **Language Development Research** - Hart and Risley (1995) have shown that children's early language experiences differ broadly, including: the vocabulary they're exposed to; the tone in which they are spoken to; the proportion of language used around them which

focuses on events versus objects; the amount that children are asked (rather than told) what to do; and the amount of control children have over interactions with others. These differences have been shown to impact on children's later intelligence, as well as their own social and language development. Triple P emphasises the importance of positive, quality, parent-child interactions to encourage an increase in positive child behaviours.

- 4) **Developmental Psychopathology Research** – Emery (1982) reviewed the literature on “marital turmoil”, including conflict between parents and divorce, and found that this was significantly linked to children's problem behaviours. Rutter (1985) demonstrated that children's problem behaviours are linked to many family and school factors including: “parental criminality, family discord, weak family relationships, ineffective discipline, and peer group influences” (p. 1). Triple P considers the risk and protective factors related to positive child development and behaviour, and helps to mediate these throughout the programme.
- 5) **Social Learning and Self-Efficacy** – Bandura's (1977) Social Learning Theory states that behaviours are learnt through observation and imitation of those around us. Bandura (1989, 1995) has also shown that our perceptions and beliefs about our capabilities have an impact on our performance. Triple P extends this idea by emphasising the impact that parent's own attitudes and beliefs can have on how confident they feel as a parent and about the effectiveness of the parenting decisions that they make.

- 6) **Health Research** – Effective parenting is a protective factor which reduces the risk of child mental health difficulties (Becker et al., 1992). Triple P encourages positive parenting as a protective factor to prevent children from developing emotional and behavioural problems.

***What is the importance of Triple P in Educational Psychology practice?***

Whilst recent systematic reviews have evaluated the effectiveness of Triple P programmes in reducing child problem behaviours (e.g. Tellegen & Sanders, 2013; Sanders, Kirby, Tellegen & Day, 2014), no review has yet looked specifically at the impact on children with ASD; therefore, this was the purpose of the current review.

Children with ASD are an important population to research as they are more likely, than their typically-developing peers, to develop emotional and behavioural problems; this includes: anxiety, depression, withdrawal, aggression, and social/attention difficulties (e.g. Skokauskas & Gallagher, 2012; Hartley, Sikora & McCoy, 2008). This research has also recommended that behavioural management strategies should be used when working with children with ASD, in order to increase their social engagement and attention, whilst decreasing any aggressive behaviours.

It is also important to consider the impact these difficulties can have on the families of children with ASD. Parents of children with ASD have greater difficulties coping with their child's behaviour, compared to parents of children without ASD (Sivberg, 2002). Parents of children with ASD also report that having a child with ASD affects their family in the following ways: increased

stress; negative impact on parents' own well-being, work and marriage; family dysfunction; and increased social isolation (Myers, Mackintosh & Goin-Kochel, 2009; Rao & Beidel, 2009). These difficulties are often more prominent for parents of adolescents with ASD as there are additional pressures involved, such as planning and facilitating for transitions. Subsequently, managing behavioural problems during these periods of change leads to higher levels of parental stress (Hamilton, Mazzucchelli & Sanders, 2014; Rao & Beidel, 2009).

It is estimated that 700,000 people in the UK have ASD (Brugha et al., 2012); hence, support for this large population is crucial. The emotional and behavioural problems which children with ASD experience are also linked to increased levels of school suspension (Reid, 2011) and mental health difficulties (Rosenblatt, 2008), compared to their typically-developing peers, due to a lack of support.

To summarise, children with ASD and their families are often negatively affected by the emotional and behavioural problems these children experience. Consequently, it is the role of Educational Psychologists and other helping professionals to provide the appropriate support to these families, such as training in Triple P, to enable parents with the skills, strategies and confidence to effectively manage these problem behaviours.

As the author of this review is based in the United Kingdom, the findings have been considered in relation to the UK population, with a particular focus on the generalisability of the studies included in the review and the potential benefits of implementing Triple P in the UK.

**Review Question:** How effective is Triple P (Positive Parenting Program) in reducing problem behaviours in children with Autism Spectrum Disorder?

## **Critical Review of the Evidence Base**

### **Literature search**

On 6<sup>th</sup> December 2018, a literature search was carried out using PsycINFO, ERIC, Web of Science, SCOPUS, and PsycEXTRA databases in order to access articles related to Psychology, Education and Health. The following search terms were used (*Note.* \* indicates wildcard):

("Triple P" OR "Positive Parenting Program\*")

AND

(child\* behav\*)

AND

(ASD OR autism OR "autis\* spectrum disorder\*")

The search returned 76 text results (PsycINFO, 9; ERIC, 5; Web of Science, 46; SCOPUS, 15; PsycEXTRA, 1), including 24 duplicates (see Appendix A). The titles and abstracts of the remaining 52 results were reviewed against the inclusion and exclusion criteria (see Table 3). 11 studies were then full-text reviewed; six studies did not meet the inclusion criteria, leaving five studies which were appropriate to the review (see Appendix B). This process is detailed in Diagram 1.

Diagram 1

*Flow Diagram of the Literature Search Process*

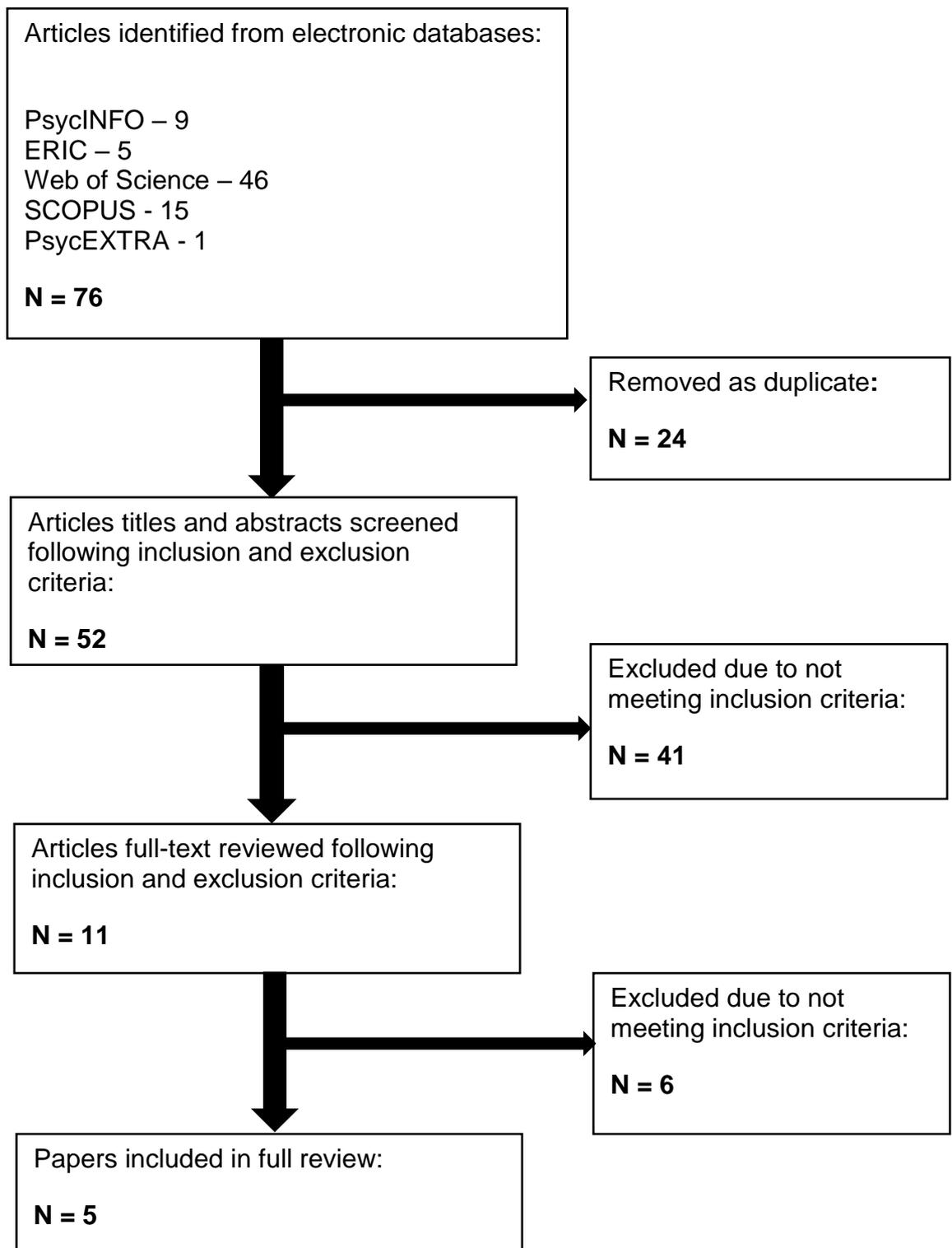


Table 3

*Exclusion and Inclusion Criteria*

No.	Factor	Inclusion Criteria	Exclusion Criteria	Rationale
1	Participants	Sample must only include parents or caregivers of children aged between 0-18 years.	Sample includes those other than parents or caregivers of children aged between 0-18 years.	Triple P was developed for parents or caregivers of children.
2	Diagnosis	Sample must only include parents or caregivers of children with a diagnosis of ASD.	Sample includes parents or caregivers of children with a diagnosis other than ASD (e.g. ADHD).	This review is looking at outcomes for children with a diagnosis of ASD.
3	Type of intervention	Variations of Triple P.	Interventions other than Triple P.	This review is specifically looking at the effectiveness of Triple P.
4	Methodology	Quantitative methodology.	Qualitative methodology.	This review is looking to explore the effectiveness of Triple P and quantitative methodology is most appropriate for this purpose.
5	Country	Intervention ran in an OECD member country.	Intervention not ran in an OECD member country.	The generalisability of the findings to the UK population is of interest to the author.
6	Language	Written in English.	Not written in English.	The author is monolingual and cost/time restraints do not allow for translation.

No.	Factor	Inclusion Criteria	Exclusion Criteria	Rationale
7	Research	Papers presenting a single study.	Papers which do not present a single study (e.g. discussion or evaluation of multiple studies).	This review is looking at studies which provide evidence for/against the effectiveness of Triple P.
8	Outcomes	Child behaviour outcomes are reported.	Child behaviour outcomes are not reported (e.g. focus on parent outcomes).	The review question is considering the effectiveness of Triple P on child behaviour.

Table 4  
*Studies Included Within the Review*

No.	Reference
1	Lake, J. (2010). An evaluation of the Stepping Stones Triple P Parenting Program and an investigation of parental perceptions of children recently diagnosed with autism: A focus group and pilot study. <i>Unpublished doctoral thesis</i> , The University of Queensland, Brisbane, Australia.
2	Mazzucchelli, T. G., Jenkins, M., & Sofronoff, K. (2018). Building Bridges Triple P: Pilot study of a behavioural family intervention for adolescents with autism spectrum disorder. <i>Research in Developmental Disabilities</i> , 76, 46–55.
3	Tellegen, C. L., & Sanders, M. R. (2014). A randomized controlled trial evaluating a brief parenting program with children with autism spectrum disorders. <i>Journal of Consulting and Clinical Psychology</i> , 82(6), 1193-1200.
4	Whittingham, K., Sofronoff, K., Sheffield, J., & Sanders, M. R. (2009). Stepping stones triple P: An RCT of a parenting program with parents of a child diagnosed with an autism spectrum disorder. <i>Journal of Abnormal Child Psychology</i> , 37(4), 469-480.
5	Zand, D. H., Bultas, M. W., McMillin, S. E., Halloran, D., White, T., McNamara, D., & Pierce, K. J. (2017). A Pilot of a Brief Positive Parenting Program on Children Newly Diagnosed with Autism Spectrum Disorder. <i>Family process</i> , 57(4), 901-914.

## ***Weight of Evidence***

The five studies in this review were evaluated using Harden and Gough's (2012) Weight of Evidence (WoE) Framework. These studies were all judged for their: methodological quality (WoE A), relevance of methodology (WoE B), and relevance to the review question (WoE C).

An adapted version of Kratochwill's (2003) Group-Based Design Coding Protocol was used to assess the methodological quality of these studies (see Table 15, Appendix G). The protocol is designed typically for studies which have two conditions: an experimental group and a comparison group, such as Tellegen and Sanders (2014); Whittingham, Sofronoff, Sheffield and Sanders (2009); and Zand et al. (2017). However, Appendix D of the protocol provides some 'Supplemental Coding Options for Quasi-Experimental Group-Based Designs Without Control Groups', such as Lake (2010) and Mazzucchelli, Jenkins and Sofronoff (2018). Therefore, this one coding protocol was adapted and used for all five studies to allow consistency and ease of comparisons.

Different dimensions were given a numerical score between 0-3 and the mean of these scores were found to produce each WoE rating. The mean of these three WoE ratings were then found to produce an overall rating (WoE D) (see Table 5). Details of the criteria and rationale for each WoE rating are provided in Appendix C.

Table 5  
*Weight of Evidence*

Study	WoE A: Quality of Methodology	WoE B: Relevance of Methodology	WoE C: Relevance of Evidence to the Review Question	WoE D: Overall Weight of Evidence
Lake (2010)	2 (medium)	2 (medium)	2.5 (high)	2.17 (medium)
Mazzucchelli, Jenkins & Sofronoff (2018)	2 (medium)	2 (medium)	2 (medium)	2 (medium)
Tellegen & Sanders (2014)	2.5 (high)	3 (high)	2.5 (high)	2.67 (high)
Whittingham, Sofronoff, Sheffield & Sanders (2009)	2 (medium)	3 (high)	2.5 (high)	2.5 (high)
Zand et al. (2017)	1.5 (low)	3 (high)	2.25 (medium)	2.25 (medium)

*Note.* Ratings between 1 – 1.6 are “low”, 1.7 – 2.3 are “medium”, and 2.4 – 3 are “high”.

### Measurement

As part of the WoE A rating, the measurement methods of all five studies were considered and scored. It is important to note that whilst Zand et al. (2017) did use a mixed-methods design, the qualitative information this study gathered (parents’ and practitioners’ views of the programme) was disregarded in this review as it did not relate to the review question, nor did it provide any additional information about the outcome measure of interest. This qualitative information also did not triangulate information gathered through the quantitative measures used, rather it looked at a separate topic to their main

study aim. Therefore, it did not increase the validity of the study's findings and so did not impact on the WoE A rating.

Apart from Tellegen and Sanders (2014), all four other studies received a score of 1. Whilst these studies all had reliable and validated outcome measures, they only used one method (self-report questionnaires) and one source (parents) to gather data; therefore, they were unable to score higher on Kratochwill's (2003) Coding Protocol. Tellegen and Sanders (2014) received a score of 3, as they used more than one method (self-report questionnaires and observations) and more than one source (parents and practitioners) to gather data, as well as having reliable and validated outcome measures.

#### Comparison Group

As part of the WoE A rating, the use of comparison groups for all five studies was considered and scored. Lake (2010) and Mazzucchelli, Jenkins and Sofronoff (2018) were single-group designs without comparison groups; therefore, this section of the Coding Protocol was not applicable to these studies. The other three studies all received a score of 2 as they had wait list/delayed intervention comparison groups, random assignment to conditions, and attrition which was less than 20% for post and 30% for follow-up (where relevant). As none of these three studies counter-balanced the change agent (i.e. the practitioner for each condition was not counter-balanced), they were unable to receive a score of 3.

### Implementation Fidelity

As part of the WoE A rating, the implementation fidelity of all five studies was considered and scored. All five studies received a score of 3 as the practitioners delivering the Triple P intervention had all received formal training and were accredited in Triple P. They also all received supervision throughout the programme delivery to ensure that the programme was properly implemented.

### Follow-up Assessment

As part of the WoE A rating, the use of follow-up assessments for all five studies was considered and scored. Apart from Zand et al. (2017), all four other studies received a score of 2, as they carried out follow-up assessments either 3- or 6-months post-intervention, using the same assessment methods that were used at pre- and post-intervention. These studies were unable to receive a score of 3 as they did not complete multiple follow-up assessments. Zand et al. (2017) received a score of 0 as this study only collected pre- and post-intervention data, with no follow-up data.

### Methodology

As part of the WoE B rating, the relevance of the methodology for all five studies was considered and scored. Apart from systematic reviews and meta-analyses, Petticrew and Roberts (2003) suggest that Randomised Controlled Trials are the best design for research questions about “effectiveness”. Therefore, Tellegen and Sanders (2014); Whittingham, Sofronoff, Sheffield and Sanders (2009); and Zand et al. (2017) all received a score of 3. Petticrew and Roberts (2003) also suggest that Quasi-experimental designs are one of

the next most appropriate designs; therefore, Lake (2010) and Zand et al. (2017) both received a score of 2.

### Country

As part of the WoE C rating, the country that the study was delivered in was considered and scored for all five studies. It was of interest to the author of this review that the findings, and therefore the recommendations which followed, were generalisable and applicable to the UK education system. All five studies received a rating of 3, as they were all carried out in OECD countries with a similar education system to the UK (i.e. Australia, Canada and the USA).

### Age of Participants

As part of the WoE C rating, the age of the participants (in this case, the age of the parents' children) was considered and scored for all five studies. In the UK, there is a movement towards early intervention, particularly when trying to prevent the development of, or an increase in, emotional and behavioural problems (Lindsay & Strand, 2013). Therefore, studies working with parents of younger children are more desirable and so were given a higher weighting. Lake (2010); Tellegen and Sanders (2014); and Whittingham, Sofronoff, Sheffield and Sanders (2009) all received a score of 3, as the participants were parents of children who were up to 9-years-old. Zand et al. (2017) was given a score of 2, as the participants were parents of children up to 12-years-old. Mazzucchelli, Jenkins and Sofronoff (2018) received a rating of 1, as the participants were parents of children who were aged 12-16 years old.

### Length of Programme

As part of the WoE C rating, the length of the programme was considered and scored for all five studies. Triple P programmes which are shorter require less practitioner time; as a result, more parents should have the opportunity to access the training. Shorter programmes were therefore given a higher weighting due to their potential to have a wider impact. Tellegen and Sanders (2014) and Zand et al. (2017) both used Primary Care Stepping Stones Triple P, which is 4-sessions long; therefore, these studies received a rating of 3. Lake (2010) and Whittingham, Sofronoff, Sheffield and Sanders (2009) used Stepping Stones Triple P, which is 8-sessions long; therefore, these studies received a rating of 2. Mazzucchelli, Jenkins and Sofronoff (2018) used Building Bridges Triple P, which is also 8-sessions long; therefore, this study received a rating of 2.

#### *Programme Format*

As part of the WoE C rating, the programme format was considered and scored for all five studies. It is likely that programmes which make greater use of a group format, rather than individual format, will reach a wider number of parents. Therefore, those studies which used a group format were given a higher rating due to the wider impact they should have. Lake (2010); Mazzucchelli, Jenkins and Sofronoff (2018); and Whittingham, Sofronoff, Sheffield and Sanders (2009) used a mixture of individual and group format, and therefore received a rating of 2. Tellegen and Sanders (2014) and Zand et al. (2017) used an individual format only, and therefore received a rating of 1.

## Findings

The outcome measure focused on for the purpose of this review was child problem behaviours. Lake (2010) measured child problem behaviours using the Developmental Behaviour Checklist (DBC-P) (Einfeld & Tonge, 1992, 2002). This is a parent self-report questionnaire which measures a range of child behaviours, including emotional and behavioural problems. These behaviours are grouped into six sub-scales, two of which are reported together in this study: 'Disruptive/Antisocial behaviour'. These joint sub-scales were focused on for this review, as this was the most appropriate measure for the review question.

Mazzucchelli, Jenkins and Sofronoff (2018) measured child problem behaviours using the Child Adjustment and Parent Efficacy Scale – Developmental Disability (CAPES-DD) (Mazzucchelli, Sanders & Morawska, 2011). This is also a parent self-report questionnaire which measures: child emotional and behavioural problems, child pro-social behaviour, and parent's self-efficacy in managing their child's problem behaviours. The sub-scale that was focused on for this review was 'Behaviour Problems', as this was the most appropriate measure for the review question.

Tellegen and Sanders (2014); Whittingham, Sofronoff, Sheffield and Sanders (2009); and Zand et al. (2017) all measured child problem behaviours using the Eyberg Child Behaviour Inventory (ECBI) (Eyberg & Pincus, 1999). This is also a parent self-report questionnaire which measures: 'Intensity' (the frequency of child problem behaviours) and 'Problem' (whether these behaviours are a problem for the parents). The sub-scale that was focused on

for this review was 'Intensity', as this was the most appropriate measure for the review question.

The results which were analysed in this review were the difference in scores pre-intervention to post-intervention (i.e. Time 1 – Time 2). Follow-up results were not focused on explicitly as: not all studies reported follow-up data, the follow-up data was collected at different time points after the intervention, and the interest for this review is whether Triple P had an immediate impact on reducing problem behaviours for children with ASD.

Effect sizes can be used to quantify the magnitude of a difference between two groups, and are therefore helpful when considering the effectiveness of an intervention (Coe, 2002). Lake (2010) was the only study which did not report an effect size for the outcome measure of interest, 'Disruptive/Antisocial behaviour', as there was no overall significant change for this measure. However, there was a significant reduction in these behaviours from pre-intervention (Time 1) to post-intervention (Time 2), but no significant change from post-intervention (Time 2) to follow-up (Time 3). Insufficient data was provided for an effect size to be calculated for the change seen pre- to post-intervention.

The other four studies reported medium to large effect sizes (see Table 6) for changes measured pre- to post-intervention. The studies reported effect sizes in different formats so these were all transformed, using an online effect size transformation tool (Lenhard & Lenhard, 2017), into Cohen's *d* to make it easier to compare the studies.

When analysing these studies, it is important to consider the impact that sample size may have had on the results. Cohen (1992) states that a sample size of 26 is needed to find a large effect and a sample size of 64 is needed to find a medium effect, at a significance level of  $p \leq .05$ . Tellegen and Sanders (2014) had 64 participants and Whittingham, Sofronoff, Sheffield and Sanders (2009) had 59 participants; therefore, these studies had suitably large sample sizes. On the other hand, Lake (2010) had 24 participants, Mazzucchelli, Jenkins and Sofronoff (2018) had 9 participants, and Zand et al. (2017) had 21 participants; therefore, these studies did not have large enough sample sizes. Studies with a small sample size are more likely to find a larger effect size, as the effect size can become inflated (Slavin & Smith, 2009); therefore, these studies need to be interpreted cautiously.

To conclude, all five studies found that Triple P training for parents significantly reduced problem behaviours in children with ASD (pre- to post-intervention). Whilst every study received an overall WoE D rating of 'medium' or 'high', the limitations should be kept in mind when considering whether Triple P is an appropriate intervention to use and potential avenues for future research.

Table 6

*Descriptive Statistics and Effect Sizes*

Authors	Outcome measure (pre- to post- intervention)	N	$\alpha$	Intervention condition				Control condition				F	Sig.	Effect size (reported)	Effect size strength ***	WoE D
				Pre- intervention		Post- intervention		Pre- intervention		Post- intervention						
				M	SD	M	SD	M	SD	M	SD					
Lake (2010)	DBC-P Disruptive/ Anti-social behaviour	24**	.94	16.41	6.72	14.18	6.7	-	-	-	-	2.49	$p < .05^*$ [ $t(19) = 2.38$ ]	-	-	2.17 (medium)
Mazzucchelli , Jenkins & Sofronoff (2018)	CAPES-DD Behaviour Problems	9	.79	16.83	4.86	10.16	3.6	-	-	-	-	19.11	$p < .001^*$ [ $t(24) = 4.82$ ]	$d = 0.96$	Large	2 (medium)
Tellegen & Sanders (2014)	ECBI – Intensity	64	.91	153.36	30.14	134.24	29.39	142.98	30.11	136.18	27.03	5.29	$p = .025^*$	$d = 0.4$	Medium	2.67 (high)
Whittingham, Sofronoff, Sheffield & Sanders (2009)	ECBI – Intensity	59	.91	144.14	31.32	121.40	25.28	142.19	31.73	148.63	30.33	19.81	$p < .001^*$	$d = 1.19$  ( $r^2 = 0.26$ )	Large	2.5 (high)

Authors	Outcome measure (pre- to post- intervention)	N	$\alpha$	Intervention condition				Control condition				<i>F</i>	Sig.	Effect size (reported)	Effect size strength ***	WoE D
				Pre- intervention		Post- intervention		Pre- intervention		Post- intervention						
				<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>					
Zand et al. (2017)	ECBI – Intensity	21	.91	150.50	28.81	115.8	24.30	148.1	17.37	139.9	22.5	6.75	$p < .02^*$	$d = 1.19$  ( $n^2_p = 0.26$ )	Large	2.25 (medium)

\*Significant at  $p \leq .05$

\*\* Note. Only 20 included in analyses.

\*\*\* Note.  $d \geq 0.2$  is a small effect,  $d \geq 0.5$  is a medium effect, and  $d \geq 0.8$  is a large effect.

## **Conclusions and Recommendations**

All five studies in this review found that Triple P training for parents significantly reduced problem behaviours in children with ASD, pre- to post-intervention. Thus, Triple P appears to be a suitable intervention for parents of children with ASD who require support in managing their child's emotional and behavioural problems.

Follow-up data from Mazzucchelli, Jenkins and Sofronoff (2018) and Whittingham, Sofronoff, Sheffield and Sanders (2009) suggests that these changes were maintained at follow-up. However, follow-up data from Lake (2010) and Tellegen and Sanders (2014) suggests that these improvements were not maintained at follow-up. Therefore, whilst Triple P appears to improve child problem behaviours immediately post-intervention, it is still unclear whether these improvements are maintained long-term and therefore this is an area for further research.

Overall, the evidence suggests that parents of children with ASD who display behavioural problems would benefit from enrolling in Triple P in order to develop their skills in managing these behaviours. One parent/caregiver attending the training is sufficient to see improvements in these behaviours; although, potentially it would be useful for all parents/caregivers to attend this training in order for behaviour management methods to be consistently used.

Whilst three of the studies used experimental and comparison groups, Lake (2010) and Mazzucchelli, Jenkins and Sofronoff (2018) used a single-group design. This means that it is not possible to say whether the behaviour improvements that were found in these studies were due to Triple P or whether there were extraneous variables which caused these changes. The studies which did use comparison groups all used wait-list/delayed intervention comparison groups. Kratochwill's (2003, p. 29) Coding

Protocol suggests that “active” comparison groups are the best form of comparison group (e.g. “typical intervention, attention placebo, intervention element placebo, alternative intervention, pharmacotherapy”). Future research should therefore attempt to use “active” comparison groups where possible, to improve the conclusions that can be drawn from this research.

Apart from Tellegen and Sanders (2014), who used practitioner observations, a limitation of the other four studies is that their data was only collected using one source (parents) and one method (self-report questionnaires). It is important that data is triangulated, as this helps to ensure that the conclusions made from the findings are valid. Future research should consider the benefits of using other methods of data collection, alongside questionnaires. Considerations should also be made about other potential sources data could be collected from. For example, teachers could provide information about children’s behaviour at school, in order to see whether any improvements made have been generalised outside of the home.

Finally, a limitation of Lake (2010); Mazzucchelli, Jenkins and Sofronoff (2018); and Zand et al. (2017) is that they were pilot studies and therefore had small sample sizes. It is important that this is kept in mind when drawing conclusions from their findings. Future research would have greater generalisability to the wider population if larger sample sizes were used.

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Newly Diagnosed with Autism Spectrum Disorder. *Family process*, 57(4), 901-914.

## Appendices

### Appendix A: References and Rationale for Excluded Studies

Table 7  
References and Rationale for Excluded Studies

	Excluded studies	Exclusion Criteria	Rationale
1	Sanders, M. R., & Mazzucchelli, T. G. (Eds.). (2017). <i>The Power of Positive Parenting: Transforming the Lives of Children, Parents, and Communities Using the Triple P System</i> . Oxford University Press.	7	Book chapter not a study.
2	Roux, G., Sofronoff, K., & Sanders, M. (2013). A randomized controlled trial of group stepping stones triple P: A mixed-disability trial. <i>Family Process</i> , 52(3), 411-424.	2	Not just ASD children.
3	Hodgetts, S., Savage, A., & McConnell, D. (2013). Experience and outcomes of stepping stones triple P for families of children with autism. <i>Research in Developmental Disabilities</i> , 34(9), 2572-2585.	8	Only reports parent outcomes.
4	Hastings, R. P., Robertson, J., & Yasamy, M. T. (2012). Interventions for children with pervasive developmental disorders in low and middle income countries. <i>Journal of Applied Research in Intellectual Disabilities</i> , 25(2), 119-134.	2	Not a focus on ASD children
5	Whittingham, K., Sofronoff, K., Sheffield, J., & Sanders, M. R. (2009). Do parental attributions affect treatment outcome in a parenting program? An exploration of the effects of parental attributions in an RCT of stepping stones triple P for the ASD population. <i>Research in Autism Spectrum Disorders</i> , 3(1), 129-144.	4	Exploratory study linked to an RCT.

Excluded studies	Exclusion Criteria	Rationale
6 Whittingham, K., Sofronoff, K., & Sheffield, J. K. (2006). Stepping stones triple P: A pilot study to evaluate acceptability of the program by parents of a child diagnosed with an autism spectrum disorder. <i>Research in Developmental Disabilities: A Multidisciplinary Journal</i> , 27(4), 364-380.	8	Gathering parents' views of Triple P only.
7 VanVoorhis, R. W., Miller, K. L., Miller, S. M., & Stull, J. C. (2015). Impact of stepping stones triple P on parents with a child diagnosed with autism spectrum disorder: Implications for school psychologists. <i>School Psychology Forum</i> , 9(2), 121-142.	8	Focuses on parent outcomes, not child behaviour.
8 Whittingham, K., Sofronoff, K., Sheffield, J., & Sanders, M. R. (2009). Behavioural family intervention with parents of children with ASD: What do they find useful in the parenting program stepping stones triple P? <i>Research in Autism Spectrum Disorders</i> , 3(3), 702-713.	4/8	Qual. data – parents' views of Triple P.
9 Nowak, C., & Heinrichs, N. (2008). A comprehensive meta-analysis of Triple P-Positive Parenting Program using hierarchical linear modeling: Effectiveness and moderating variables. <i>Clinical child and family psychology review</i> , 11(3), 114.	7	Meta-analysis not a study.
10 Sanders, M. R. (2012). Development, evaluation, and multinational dissemination of the Triple P-Positive Parenting Program. <i>Annual review of clinical psychology</i> , 8, 345-379.	7	Review, not a study.
11 Kaslow, N. J., Broth, M. R., Smith, C. O., & Collins, M. H. (2012). Family-based interventions for child and adolescent disorders. <i>Journal of Marital and Family Therapy</i> , 38(1), 82-100.	3	Not Triple P explicitly.
12 Oono, I. P., Honey, E. J., & McConachie, H. (2013). Parent-mediated early intervention for young children with autism spectrum disorders (ASD). <i>Evidence-Based Child Health: A Cochrane Review Journal</i> , 8(6), 2380-2479.	7	Review, not a study.
13 Sofronoff, K., Jahnel, D., & Sanders, M. (2011). Stepping stones triple P seminars for parents of a child with a disability: A randomized controlled trial. <i>Research in Developmental Disabilities</i> , 32(6), 2253-2262.	2	No specific results for ASD children.

Excluded studies	Exclusion Criteria	Rationale
14 Zaidman-Zait, A., Mirenda, P., Duku, E., Szatmari, P., Georgiades, S., Volden, J., ... & Fombonne, E. (2014). Examination of bidirectional relationships between parent stress and two types of problem behavior in children with autism spectrum disorder. <i>Journal of Autism and Developmental Disorders</i> , 44(8), 1908-1917.	3	Not about Triple P specifically.
15 Mytton, J., Ingram, J., Manns, S., & Thomas, J. (2014). Facilitators and barriers to engagement in parenting programs: a qualitative systematic review. <i>Health Education &amp; Behavior</i> , 41(2), 127-137.	4/7	Qualitative and a systematic review.
16 Mazzucchelli, T. (2011). Preventing behavioural and emotional problems in children who have a developmental disability: A public health approach. <i>Research in Developmental Disabilities</i> . 32(6), 2148-2156.	7	Discussion of research, not a study.
17 Whittingham, K., Wee, D., Sanders, M., & Boyd, R. (2011). Responding to the challenges of parenting a child with cerebral palsy: a focus group. <i>Disability and rehabilitation</i> , 33(17-18), 1557-1567.	2	Children with cerebral palsy not ASD.
18 Dykens, E. M. (2015). Family adjustment and interventions in neurodevelopmental disorders. <i>Current opinion in psychiatry</i> , 28(2), 121.	7	Review, not a study.
19 Totsika, V., Hastings, R. P., Vagenas, D., & Emerson, E. (2014). Parenting and the behavior problems of young children with an intellectual disability: Concurrent and longitudinal relationships in a population-based study. <i>American journal on intellectual and developmental disabilities</i> , 119(5), 422-435.	3	Not about Triple P explicitly
20 Poustka, L., Rothermel, B., Banaschewski, T., & Kamp-Becker, I. (2012). Intensive verhaltenstherapeutische Interventionsprogramme bei Autismus-Spektrum-Störungen. <i>Kindheit und Entwicklung</i> .	3/6	Not in English and not about Triple P.
21 Nankervis, K. L., Rosewarne, A. C., & Vassos, M. V. (2011). Respite and parental relinquishment of care: A comprehensive review of the available literature. <i>Journal of Policy and Practice in Intellectual Disabilities</i> , 8(3), 150-162.	7/2/3	Review of care, not about ASD or Triple P explicitly.

Excluded studies	Exclusion Criteria	Rationale
22 Kuhaneck, H. M., Madonna, S., Novak, A., & Pearson, E. (2015). Effectiveness of interventions for children with autism spectrum disorder and their parents: A systematic review of family outcomes. <i>American Journal of Occupational Therapy</i> , 69(5).	7	Systematic review, not a study.
23 Skotarczak, L., & Lee, G. K. (2015). Effects of parent management training programs on disruptive behavior for children with a developmental disability: A meta-analysis. <i>Research in developmental disabilities</i> , 38, 272-287.	7	Meta-analysis, not a study.
24 Shapiro, C. J., Kilburn, J., & Hardin, J. W. (2014). Prevention of behavior problems in a selected population: Stepping Stones Triple P for parents of young children with disabilities. <i>Research in developmental disabilities</i> , 35(11), 2958-2975.	2	Not about ASD specifically.
25 Stuttard, L., Beresford, B., Clarke, S., Beecham, J., Todd, S., & Bromley, J. (2014). Riding the Rapids: Living with autism or disability—An evaluation of a parenting support intervention for parents of disabled children. <i>Research in Developmental Disabilities</i> , 35(10), 2371-2383.	3	Not focused on Triple P.
26 Choi, K. Y., & Kovshoff, H. (2013). Do maternal attributions play a role in the acceptability of behavioural interventions for problem behaviour in children with autism spectrum disorders? <i>Research in Autism Spectrum Disorders</i> , 7(8), 984-996.	3	Behavioural interventions in general, not Triple P.
27 McIntyre, L. L. (2013). Parent training interventions to reduce challenging behavior in children with intellectual and developmental disabilities. In <i>International Review of Research in Developmental Disabilities</i> , 44, 245-279. Academic Press.	7/2	Review not a study, and not focused on ASD.
28 Sprenger, L., Becker, K., Heinzl-Gutenbrunner, M., Mingebach, T., Otterbach, S., Peters, M., & Kamp-Becker, I. (2014). Ist das „Stepping-Stones/Triple P“-Elterntaining eine sinnvolle, ergänzende Intervention in der Behandlung von Kindern mit Autismus-Spektrum-Störungen?. <i>Kindheit und Entwicklung</i> .	6	Not in English.

Excluded studies	Exclusion Criteria	Rationale
29 Lancaster, R. L., Balling, K., Hastings, R., & Lloyd, T. J. (2014). Attributions, criticism and warmth in mothers of children with intellectual disability and challenging behaviour: a pilot study. <i>Journal of Intellectual Disability Research</i> , 58(11), 1060-1071.	2	No focus on ASD.
30 Maughan, A. L., & Weiss, J. A. (2017). Parental outcomes following participation in cognitive behavior therapy for children with autism spectrum disorder. <i>Journal of autism and developmental disorders</i> , 47(10), 3166-3179.	3	About CBT, not Triple P.
31 Magaña, S., Lopez, K., de Sayu, R. P., & Miranda, E. (2014). Use of promotoras de salud in interventions with Latino families of children with IDD. <i>International Review of Research in Developmental Disabilities</i> , 47, 39-75. Academic Press.	2	About intellectual disabilities, not ASD.
32 Bezzina, L. A., Rice, L. J., Howlin, P., Tonge, B. J., & Einfeld, S. L. (2017). Syndrome specific modules to enhance the stepping stones triple P public health intervention. <i>Journal of Intellectual Disability Research</i> , 61(9), 836-842.	2	No focus on ASD.
33 Frantzen, K. K., Lauritsen, M. B., Jørgensen, M., Tanggaard, L., Fethers, M. D., Aikens, J. E., & Bjerrum, M. (2016). Parental self-perception in the autism spectrum disorder literature: a systematic mixed studies review. <i>Review Journal of Autism and Developmental Disorders</i> , 3(1), 18-36.	7	Review, not a study.
34 Hasmann, R., Hasmann, S. E., Holl, R. W., & Karpinski, N. (2015). Psychological care of families with developmentally retarded or disabled children. Comparison between routine treatment with or without Stepping Stones Triple P parenting group training. <i>Monatsschrift Kinderheilkunde.</i> , 163(11), 1160-1166.	6	Not available in English.
35 Hohlfeld, A. S., Harty, M., & Engel, M. E. (2018). Parents of children with disabilities: A systematic review of parenting interventions and self-efficacy. <i>African journal of disability</i> , 7.	7/2	Systematic review and no focus on ASD.

Excluded studies	Exclusion Criteria	Rationale
36 Yoo, A., Kim, M., Ross, M. M., Vaughn-Lee, A., & Butler, B. (2018). Engaging Caregivers in the Treatment of Youth with Complex Developmental and Mental Health Needs. <i>The journal of behavioral health services &amp; research</i> , 45(3), 440-453.	2	About MH needs, not ASD.
37 Burton, R. S., Zwahr-Castro, J., Magrane, C. L., Hernandez, H., Farley, L. G., & Amodei, N. (2018). The Nurturing Program: An Intervention for Parents of Children with Special Needs. <i>Journal of Child and Family Studies</i> , 27(4), 1137-1149.	3	The Nurturing Programme, not Triple P.
38 Frantz, R., Hansen, S. G., & Machalicek, W. (2018). Interventions to promote well-being in parents of children with autism: a systematic review. <i>Review Journal of Autism and Developmental Disorders</i> , 5(1), 58-77.	7/3	Systematic review and not just Triple P.
39 Kong, M. M. Y., & Au, T. K. F. (2018). The Incredible Years Parent Program for Chinese Preschoolers With Developmental Disabilities. <i>Early Education and Development</i> , 29(4), 494-514.	3	Incredible Years intervention, not Triple P.
40 Hieneman, M., & Fefer, S. A. (2017). Employing the principles of positive behavior support to enhance family education and intervention. <i>Journal of Child and Family Studies</i> , 26(10), 2655-2668.	3	'Positive Behaviour Support' approach, not Triple P.
41 Klein-Tasman, B. P., & Lee, K. (2017). Problem behaviour and psychosocial functioning in young children with Williams syndrome: parent and teacher perspectives. <i>Journal of intellectual disability research</i> , 61(9), 853-865.	2	Williams Syndrome, not ASD.
42 Sofronoff, K., Silva, J., & Beaumont, R. (2017). The Secret Agent Society social-emotional skills program for children with a high-functioning autism Spectrum disorder: A parent-directed trial. <i>Focus on Autism and Other Developmental Disabilities</i> , 32(1), 55-70.	3	Social-emotional skills programme, not Triple P.
43 Stern, K., & González, M. L. (2017). Brief Behavioral Knowledge Questionnaire: Measuring Change in Caregiver's Knowledge Following Participation in a Brief Behavioral Training. <i>Behavioral Interventions</i> , 32(1), 35-53.	2/3	Not about Triple P explicitly, or ASD.

Excluded studies	Exclusion Criteria	Rationale
44 Agazzi, H., Tan, S. Y., Ogg, J., Armstrong, K., & Kirby, R. S. (2017). Does Parent-Child Interaction Therapy Reduce Maternal Stress, Anxiety, and Depression Among Mothers of Children with Autism Spectrum Disorder?. <i>Child &amp; Family Behavior Therapy</i> , 39(4), 283-303.	3	Parent-child interaction therapy, not Triple P.
45 PAGANO, F. (2017). Guidelines. Un portale per la raccolta di linee guida per lo sviluppo di software per bambini con disabilità.	3/6	ABA, not Triple P. Plus, not in English.
46 Schrott, B., Kasperzack, D., Weber, L., Becker, K., Burghardt, R., & Kamp-Becker, I. (2018). Effectiveness of the stepping stones triple P group parenting program as an additional intervention in the treatment of autism spectrum disorders: Effects on parenting variables. <i>Journal of Autism and Developmental Disorders</i> .	8	Focus on parent outcomes, not child outcomes.
47 Whittingham, K; Sheffield, J; Sanders, M. R. (2009). Stepping Stones Triple P Shows Promise for Families and Children with Autism Spectrum Disorders. <i>Clinician's Research Digest</i> , 27(6), 5.	7	Study discussed was later published and has been included in the review.

## Appendix B: Mapping the Field

Table 8

### Mapping the Field

Author	Sample	Study design	Sample characteristics	Country	Intervention method	Deliverers	Measures and Outcome	Follow-up
Lake (2010)	24 parents of children aged 2-8 years old, with a diagnosis of ASD. However, as 4 parents would be reporting on the same child, only 20 parents were included in the analyses.	4 groups of parents received the intervention. Single-group design. Pre-test, post-test, follow-up.	Mean age: 5.65 years 17 Males 3 Females 5 – Autism 5 – High Functioning Autism 10 – Asperger syndrome	Canada	Stepping Stones Triple P.  One hour a week for 8 weeks (6 group sessions, 2 individual).  Social Stories were added to the programme.	Probationary Psychologist enrolled in a Clinical Psychology programme (accredited in SSTP).	Developmental Behaviour Checklist (DBC-P).  <i>“Statistical analysis revealed that although there was a reduction in emotional and behavioural mean scores from pre to post-intervention, and again at follow-up, it was not statistically significant”</i> (p. 92).	3-month follow-up (results were not maintained at follow-up).

Author	Sample	Study design	Sample characteristics	Country	Intervention method	Deliverers	Measures and Outcome	Follow-up
Mazzucchelli, Jenkins & Sofronoff (2018)	9 parents of adolescents, aged between 12 and 16 years old, with an ASD diagnosis.	Single-group design.  Pre-test, post-test, follow-up.	Mean age: 15.14 years  5 Males 4 Females	Australia	Building Bridges Triple P.  8 week (11.5 hour) programme: 5 120-min group sessions and 3 30-min telephone sessions.	Two postgraduate Clinical Psychology students, (one was an accredited Triple P practitioner).	Child Adjustment and Parent Efficacy Scale – Developmental Disability (CAPES-DD).  “Results indicated that parents’ reports of their adolescent’s behavioural problems on the CAPES-DD reduced significantly from before to after the intervention” (p.51).	“Behaviour problems further decreased through to 3-month follow-up” (p. 51).
Tellegen & Sanders (2014)	64 parents / caregivers of children aged 2-9 years old, with an ASD diagnosis.	Randomised Controlled Trial.  Between groups design (Intervention vs. Care-As-Usual).  Pre, post and follow-up.	Mean age: 5.67 years.  55 Males. 9 Females  16 – ASD 20 – Autism 12 – Aspergers Syndrome 16 – PDD-NOS (Pervasive Developmental Disorder).	Australia	Primary Care Stepping Stones Triple P.  4 short sessions, between 15-105 minutes each (average mins per session: 1 – 66 mins 2 – 73 mins 3 – 52 mins 4 – 42 mins).	Practitioners held degrees in Psychology and were accredited in PCSSTP.	Eyberg Child Behavior Inventory (ECBI).  “Relative to the care-as-usual group, significant short-term improvements were found in the intervention group on parent-reported child behavior problems ” (p. 1193).	6-month follow-up. “Follow-up univariate analyses found no significant interaction effects indicating maintenance of improvements. There was no main effect of time, indicating that child behaviour problems did not change over the follow-up period” (p.1197).

Author	Sample	Study design	Sample characteristics	Country	Intervention method	Deliverers	Measures and Outcome	Follow-up
Whittingham, Sofronoff, Sheffield & Sanders (2009)	59 families: Parents / caregivers of children aged between 2-9 years old, with ASD.	Randomised Controlled Trial.  Mixed within-between-subjects design and wait-list control group.  Pre, post and follow-up.	Mean age: 5.91 years.  47 Males 12 Females  22 – ASD 8 – Autism 27 – Asperger Syndrome 2 – ASD-NOS (Not Otherwise Specified).	Australia	Stepping Stones Triple P.  9 weeks of group and individual sessions.	Probationary Psychologists enrolled in Clinical Psychology programme (accredited in Stepping Stones Triple P).	Eyberg Child Behavior Inventory (ECBI).  “The results demonstrate significant improvements in parental reports of child behaviour” (p. 469).	“...with the treatment effects for child behaviour...being maintained at follow-up 6 months later” (p. 469).
Zand et al. (2017)	21 parents of children aged 2-12 years old, newly diagnosed with ASD.	Mixed methods. Two-group, pre-test/post-test (wait-list control).  Semi-structured telephone interviews with program completers and practitioners.	Mean age: 5.84 years  18 Males 3 Females	United States	Primary Care Stepping Stones Triple P.  4 sessions, 1:1, targets 1-2 parent-identified child maladaptive behaviours.	Three doctoral level practitioners (Social Worker, Nurse Practitioner, and Psychologist) were accredited in PC SS Triple P.	Eyberg Child Behavior Inventory (ECBI).  “Compared to the Wait List Control group, parents who received the intervention reported statistically and clinically significant positive changes four to six weeks post-baseline in child externalizing behavior-intensity” (p.9).	No follow-up.

## Appendix C: *WoE A Criteria and Ratings*

Table 9  
*Weight of Evidence A (WoE A) Ratings*

Study	Quality ratings assigned for the four dimensions				Over-all WoE A
	Measure- ment (0-3)	Comparis- on Group (0-3)	Implementa- -tion Fidelity (0-3)	Follow-up Assessme- -nt (0-3)	
Lake (2010)	1	N/A	3	2	2
Mazzucchelli, Jenkins & Sofronoff (2018)	1	N/A	3	2	2
Tellegen & Sanders (2014)	3	2	3	2	2.5
Whittingham, Sofronoff, Sheffield & Sanders (2009)	1	2	3	2	2
Zand et al. (2017)	1	2	3	0	1.5

Table 10  
*WoE A Criteria from Kratochwill's (2003) Coding Protocol*

Dimension	Rating	Criteria
1: Measures	For a rating of 3, studies should include...	<ul style="list-style-type: none"> <li>Measures with a reliability coefficient of 0.85 or higher.</li> <li>Data should be collected using multiple methods AND from multiple sources.</li> <li>Reasons must be presented for the measures used to assess primary outcomes.</li> <li>Criteria must be met for all primary outcome measures.</li> </ul>
1: Measures	For a rating of 2, studies should include...	<ul style="list-style-type: none"> <li>Measures with a reliability coefficient of at least 0.7 or higher.</li> <li>Data should be collected using multiple methods AND/OR from multiple sources.</li> <li>Criteria must be met for at least 75% of the primary outcome measures.</li> </ul>

Dimension	Rating	Criteria
1: Measures	For a rating of 1, studies should include...	<ul style="list-style-type: none"> <li>Measures with a reliability coefficient of at least 0.5 or higher.</li> <li>Data may be collected using multiple methods AND/OR from multiple sources, however this is not required.</li> <li>Criteria must be met for at least 50% of the primary outcome measures.</li> </ul>
1: Measures	For a rating of 0, studies should include...	<ul style="list-style-type: none"> <li>Measures with a reliability coefficient of &lt;0.5.</li> <li>Data not collected using multiple methods AND/OR from multiple sources.</li> </ul>
2: Comparison Group	For a rating of 3, studies should include...	<ul style="list-style-type: none"> <li>At least one type of “active” comparison group (e.g. typical intervention, attention placebo, intervention element placebo, alternative intervention, pharmacotherapy).</li> <li>Initial group equivalency established (preferably through random assignment to conditions).</li> <li>Change agents counterbalanced.</li> <li>Must meet criteria for equivalent mortality and low attrition at post (and follow-up, if applicable).</li> </ul>
2: Comparison Group	For a rating of 2, studies should include...	<ul style="list-style-type: none"> <li>At least a “no intervention” type of comparison group (e.g. no intervention, wait list/delayed intervention, minimal contact).</li> <li>At least two of the following: counterbalancing of change agents, group equivalence established, or equivalent mortality with low attrition.</li> <li>If equivalent mortality is not demonstrated, an intent-to-intervene analysis must have been conducted (with a finding of no significant group differences between treatment and control).</li> </ul>

Dimension	Rating	Criteria
2: Comparison Group	For a rating of 1, studies should include...	<ul style="list-style-type: none"> <li>• A comparison group.</li> <li>• At least one of the following: counterbalancing of change agents, group equivalence established, or equivalent mortality with low attrition.</li> <li>• If equivalent mortality is not demonstrated, an intent-to-intervene analysis must have been conducted (with a finding of no significant group differences between treatment and control).</li> </ul>
2: Comparison Group	For a rating of 0, studies should include...	<ul style="list-style-type: none"> <li>• No efforts to ensure group equivalence.</li> <li>•</li> </ul>
3: Implementation Fidelity	For a rating of 3, studies should include...	<ul style="list-style-type: none"> <li>• Strong evidence of acceptable adherence.</li> <li>• Evidence measured through at least two of the following: ongoing supervision/consultation, coding sessions, OR audio/video tapes; AND use of a manual.</li> <li>• To be considered a “manual” for a rating of 3, information must have been provided to the implementers using either: written materials involving a detailed account of the exact procedures and the sequence in which they are to be used OR a formal training session that includes a detailed account of the exact procedures and the sequence in which they are to be used.</li> <li>• Description of procedures for potential adaptation.</li> </ul>

Dimension	Rating	Criteria
3: Implementation Fidelity	For a rating of 2, studies should include...	<ul style="list-style-type: none"> <li>Evidence of acceptable adherence.</li> <li>Evidence should be measured through at least one of the above criteria AND use of a manual.</li> <li>To be considered a “manual” for a rating of 2, information must have been provided to the implementers using either: written materials involving an overview of broad principles and a description of the intervention phases, or a formal or informal training session involving an overview of broad principles and a description of the intervention phases.</li> </ul>
3: Implementation Fidelity	For a rating of 1, studies should include...	<ul style="list-style-type: none"> <li>Demonstrates evidence of acceptable adherence, measured through at least one of the above criteria or use of a manual.</li> </ul>
3: Implementation Fidelity	For a rating of 0, studies should include...	<ul style="list-style-type: none"> <li>Nothing was done to ensure implementation fidelity or evidence indicates unacceptable adherence.</li> </ul>
4: Follow-up Assessment	For a rating of 3, studies should include...	<ul style="list-style-type: none"> <li>Must have conducted follow-up assessments over multiple intervals (e.g., 6 months, 1 year), with all participants that were included in the original sample, using similar measures used to analyse data from primary or secondary outcomes.</li> </ul>
4: Follow-up Assessment	For a rating of 2, studies should include...	<ul style="list-style-type: none"> <li>Must have conducted follow-up assessments at least once (e.g., 6 months), with the majority of participants that were included in the original sample, using similar measures used to analyse data from primary or secondary outcomes.</li> </ul>
4: Follow-up Assessment	For a rating of 1, studies should include...	<ul style="list-style-type: none"> <li>Must have conducted follow-up assessments at least once (e.g., 6 months), with some participants from the original sample.</li> </ul>
4: Follow-up Assessment	For a rating of 0, studies should include...	<ul style="list-style-type: none"> <li>No follow-up assessments.</li> </ul>

## Appendix D: *WoE B Criteria and Ratings*

Table 11  
*Weight of Evidence B (WoE B) Ratings*

Study	WoE B
Lake (2010)	2
Mazzucchelli, Jenkins & Sofronoff (2018)	2
Tellegen & Sanders (2014)	3
Whittingham, Sofronoff, Sheffield & Sanders (2009)	3
Zand et al. (2017)	3

Table 12  
*WoE B Criteria and Rationale*

Weighting	Study design	Rationale
3	Randomised controlled trial studies	According to Pettricrew & Roberts (2003), the evidence from these study designs (apart from systematic reviews) are best suited to research questions about “effectiveness”.
2	Cohort studies, Quasi-experimental designs	
1	Qualitative research, Surveys, Case-control studies, Non-experimental evaluations	

## Appendix E: *WoE C Criteria and Ratings*

Table 13  
*Weight of Evidence C (WoE C) Ratings*

Study	Criteria score				Overall WoE C
	A	B	C	D	
Lake (2010)	3	3	2	2	2.5
Mazzucchelli, Jenkins & Sofronoff (2018)	3	1	2	2	2
Tellegen & Sanders (2014)	3	3	3	1	2.5
Whittingham, Sofronoff, Sheffield & Sanders (2009)	3	3	2	2	2.5
Zand et al. (2017)	3	2	3	1	2.25

Table 14  
*WoE C Criteria and Rationale*

Criteria	Weighting	Rationale
A Country	3 – OECD countries with similar education system to UK 2 – OECD with different education system to UK 1 – Non-OECD countries	The author of this review is interested in the generalisability of the results to the UK population.
B Age of participants	3 – Participants who are up to 9-years-old only. 2 – Participants who are up to 12-years-old only. 1 – Participants who are up to 16-years-old only.	In the UK, there is a movement towards early intervention (Lindsay & Strand, 2013); therefore, studies working with parents of younger child are more desirable.
C Length of programme	3 – Programmes up to 4 sessions long. 2 – Programmes up to 9 sessions long. 1 – Programmes with 10 or more sessions.	Programmes which are shorter require less practitioner time; as a result, more parents should have the opportunity to access the training (wider impact).
D Programme format	3 – Group format only. 2 – Individual and group format.	Programmes which make greater use of a group format will reach a

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1 – Individual format  
only.

wider number of parents  
(wider impact).

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**Appendix F: Kratochwill (2003) Coding Protocols**

[Adapted from the Procedural Manual of the Task Force on Evidence-Based Interventions in School Psychology, American Psychology Association, Kratochwill, T.R. (2003)]

## Coding Protocol

**Domain:**

- School- and community-based intervention programs for social and behavioral problems
- Academic intervention programs
- Family and parent intervention programs
- School-wide and classroom-based programs
- Comprehensive and coordinated school health services

**Name of Coder:**

**Date:** 15.01.19

**Full Study Reference in proper format:**

Tellegen, C. L., & Sanders, M. R. (2014). A randomized controlled trial evaluating a brief parenting program with children with autism spectrum disorders. *Journal of Consulting and Clinical Psychology*, 82(6), 1193-1200.

**Intervention name:** (description of study): Primary Care Stepping Stones Triple P

**Study ID number:** 3

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Type of Publication:

- Book/Monograph
- Journal Article
- Book Chapter
- Other (specify):

### I. General Characteristics

#### A. General Design Characteristics

A1. Random assignment designs (if random assignment design, select one of the following)

- Completely randomized design
- Randomized block design (between participants, e.g., matched classrooms)
- randomized block design (within participants)
- Randomized hierarchical design (nested treatments)

A2. Nonrandomized designs (if non-random assignment design, select one of the following)

- Nonrandomized design
- Nonrandomized block design (between participants)
- Nonrandomized block design (within participants)
-

- Nonrandomized hierarchical design
- Optional coding for Quasi-experimental designs

A3. Overall confidence of judgment on how participants were assigned (select one of the following)

- Very low (little basis)
- Low (guess)
- Moderate (weak inference)
- High (strong inference)
- Very high (explicitly stated)
- N/A
- Unknown/unable to code

**B. Statistical Treatment/Data Analysis (answer B1 through B6)**

- |                                      | Yes                                 | No                       |
|--------------------------------------|-------------------------------------|--------------------------|
| B1. Appropriate unit of analysis     | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| B2. Familywise error rate controlled | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| B3. Sufficiently large N             | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

Statistical Test: ANOVA  
 level: 0.05  
 ES: large  
 N required: 26

Total size of sample (start of study): 64  
 N

Intervention group sample size: 35  
 N

Control group sample size: 29  
 N

**C. Type of Program**

- Universal prevention program
- Selective prevention program
- Targeted prevention program
- Intervention/Treatment
- Unknown

**D. Stage of Program (select one)**

- Model/demonstration programs
- Early stage programs
- Established/institutionalized programs
- Unknown

**E. Concurrent or Historical Intervention Exposure (select one)**

- Current exposure
- Prior exposure
-

Unknown - Just under 50% of both the treatment and control groups were accessing services for child problems, but unclear if this continued during the current study.

## II. Key Features for Coding Studies and Rating Level of Evidence/Support

(Rating Scale: 3= Strong Evidence, 2=Promising Evidence, 1=Weak Evidence, 0=No Evidence)

### A. Measurement (answer A1 through A4)

A1. Use of outcome measures that produce reliable scores for the majority of primary outcomes. The table for Primary/Secondary Outcomes Statistically Significant allows for listing separate outcomes and will facilitate decision making regarding measurement (select one of the following)

- Yes  
 No  
 Unknown/unable to code

A2 Multi-method (select one of the following)

- Yes  
 No  
 N/A  
 Unknown/unable to code

A3 Multi-source (select one of the following.)

- Yes  
 No  
 N/A  
 Unknown/unable to code

A4 Validity of measures reported (select one of the following)

- Yes validated with specific target group  
 In part, validated for general population only  
 No  
 Unknown/unable to code

Rating for measurement (select 0, 1, 2 or 3)  3  2  1  0

### B. Comparison Group

B1 Type of Comparison Group (Select one of the following)

- Typical contact  
 Attention placebo  
 Intervention element placebo  
 Alternative intervention  
 Pharmacotherapy  
 No intervention  
 Wait list/delayed intervention (Care-as-usual group offered the programme after the follow-up)  
 Minimal contact  
 Unable to identify type of comparison

B2 Overall confidence of judgment on type of comparison group

- Very low (little basis)
- Low (guess)
- Moderate (weak inference)
- High (strong inference)
- Very high (explicitly stated)
- Unable to identify comparison group

B3 Counterbalancing of change agent

- By change agent
- Statistical (analyse includes a test for intervention)
- Other
- Not reported/None

B4 Group equivalence established (select one of the following)

- Random assignment
- Posthoc matched set
- Statistical matching
- Post hoc test for group equivalence

B5 Equivalent mortality

- Low attrition (less than 20 % for post)
- Low attrition (less than 30% for follow-up)
- Intent to intervene analysis carried out? (Intent to treat analysis was carried out)  
Findings \_\_\_\_\_

**Overall rating for Comparison group** (select 0, 1, 2 or 3)     3     2     1     0

**F. Implementation Fidelity**

F1. Evidence of Acceptable Adherence

- Ongoing supervision/consultation
- Coding intervention sessions/lessons or procedures
- Audio/video tape implementation
  - Entire intervention
  - Part of intervention

F2. Manualization (select all that apply) (Manual and PCSSTP-accredited)

- Written material involving a detailed account of the exact procedure and the sequence they are to be used.
- Formal training session that includes a detailed account of the exact procedures and the sequence in which they are to be used.
- Written material involving an overview of broad principles and a description of the intervention phases.

Formal or informal training session involving an overview of broad principles and a description of the intervention phases.

**Rating for Implementation Fidelity** (select 0, 1, 2 or 3):  3  2  1  0

**I. Follow Up Assessment**

Timing of follow up assessment: 6 months

Number of participants included in the follow up assessment: 54 participants (28 treatment, 26 control)

Consistency of assessment method used: Same methods used at pre, post & follow-up.

**Rating for Follow Up Assessment** (select 0, 1, 2, or 3):  3  2  1  0

**III. Other Descriptive or Supplemental Criteria to Consider**

**A. External Validity Indicators**

A1. Sampling procedures described in detail Yes  No

Specify rationale for selection: Parents/caregivers of a 2- to 9-year-old child with an ASD diagnosis.

Specify rationale for sample size: Power analysis indicated that for a large effect size (0.8), 52 pts were necessary. Estimating 20% attrition, 64 families were recruited.

A1.1 Inclusion/exclusion criteria specified Yes  No

A1.2 Inclusion/exclusion criteria similar to school practice Yes  No

A1.3 Specified criteria related to concern Yes  No

**A2. Participant Characteristics Specified for Treatment and Control Group**

**Treatment group**

- Age
- Gender
- Ethnicity
- Race
- Primary Language
- SES
- Family structure
- Locale
- Disability

**Control Group**

- Age
- Gender
- Ethnicity
- Race
- Primary Language
- SES
- Family structure
- Locale
- Disability

A3. Details are provided regarding variables that:

A3.1 Have differential relevance for intended outcomes    Yes     No

Specify: *Group assignment was stratified for income and child ASD diagnosis.*

A3.2 Have relevance to inclusion criteria    Yes     No

Specify: *Details of child ASD diagnosis.*

A5. Generalization of Effects:

A5.1 Generalization over time

A5.1.1 Evidence is provided regarding the sustainability of outcomes after intervention is terminated    Yes     No

Specify: *Short-term effects were predominantly maintained at 6 month follow-up.*

A5.1.2 Procedures for maintaining outcomes are specified    Yes     No

Specify: \_\_\_\_\_

A5.2 Generalization across settings

A5.2.1 Evidence is provided regarding the extent to which outcomes are manifested in contexts that are different from the intervention context

Yes     No

Specify: \_\_\_\_\_

A5.2.2 Documentation of efforts to ensure application of intervention to other settings    Yes     No

Specify: \_\_\_\_\_

A5.2.3 Impact on implementers or context is sustained    Yes     No

Specify: *The majority of parent effects were maintained at follow-up.*

A5.3 Generalization across persons

Evidence is provided regarding the degree to which outcomes are manifested with participants who are different than the original group of participants for with the intervention was evaluated      Yes  No

Specify: \_\_\_\_\_

**B. Length of Intervention** (select B1 or B2)

- B1. Unknown/insufficient information provided
- B2. Information provided (if information is provided, specify one of the following:)

Weeks 8 weeks

Months \_\_\_\_\_

Years \_\_\_\_\_

**C. Intensity/dosage of Intervention** (select C1 or C2)

- C1. Unknown/insufficient information provided
- C2. Information provided (if information is provided, specify both of the following:)

C2.1 length of intervention session    Average length of each intervention session:  
1- 66 mins, 2 – 73 mins, 3 – 52 mins, 4 – 42 mins.

C2.2 frequency of intervention session: 4 sessions (once every fortnight roughly)

**D. Dosage Response** (Select D1 or D2)

- D1. Unknown/insufficient information provided
- D2. Information provided (if information is provided, answer D2.1)

D2.1 Describe positive outcomes associated with higher dosage:

\_\_\_\_\_

**E. Program Implementer** (select all that apply)

- E1. Research Staff
- E2. School Specialty Staff
- E3. Teachers
- E4. Educational Assistants
- E5. Parents
- E6. College Students
- E7. Peers
- E8. Other - Practitioners with degrees in psychology, who were accredited in PCSSTP
- E9. Unknown/insufficient information provided

**F. Characteristics of the Intervener** – (Unknown/Insufficient information provided)

- F1. Highly similar to target participants on key variables (e.g., race, gender, SES)
- F2. Somewhat similar to target participants on key variable
- F3. Different from target participants on key variables

**G. Intervention Style or Orientation** (select all that apply)

- G1. Behavioral
- G2. Cognitive-behavioral
- G3. Experiential
- G4. Humanistic/interpersonal
- G5. Psychodynamic/insight oriented
- G6. other (specify): \_\_\_\_\_
- G7. Unknown/insufficient information provided

**H. Cost Analysis Data** (select H1 or H2)

- H1. Unknown/insufficient information provided
- H2. Information provided (if information is provided, answer H2.1)

H2.1 Estimated Cost of Implementation: \_\_\_\_\_

**I. Training and Support Resources** (select all that apply)

- I1. Simple orientation given to change agent
- I2. Training workshops conducted

# of Workshops provided - Does not specify

Average length of training - Does not specify

Who conducted training (select all that apply)

- I2.1 Project Director
- I2.2 Graduate/project assistants
- I2.3 Other (please specify):
- I2.4 Unknown
- I3. Ongoing technical support
- I4. Program materials obtained
- I5. Special Facilities
- I6. Other (specify):

**J. Feasibility**

J1. Level of difficulty in training intervention agents (select one of the following)

- J1.1 High
- J1.2 Moderate
- J1.3 Low
- J1.4 Unknown

J2. Cost to train intervention agents (specify if known): \_\_\_\_\_

J3. Rating of cost to train intervention agents (select one of the following)

- J3.1 High
- J3.2 Mod
- J3.3 low
- J3.4 Unknown

**Summary of Evidence**

<b>Indicator</b>	<b>Overall evidence rating 0-3 NNR = No Numerical Rating</b>	<b>Description of evidence: Strong, Promising, Weak, No/limited evidence, or descriptive ratings</b>
<b>General Characteristics</b>		
General Design Characteristics	NNR	
Statistical Treatment/Data Analysis	NNR	
Type of Program	NNR	
Stage of the Program	NNR	
Concurrent or Historical Intervention Exposure	NNR	
<b>Key Features for Coding Studies and Rating Level of Evidence / Support</b>		
Measurement	3	Strong
Comparison Group	2	Promising
Implementation Fidelity	3	Strong
Follow-up Assessment	2	Promising
<b>Other Descriptive or Supplemental Criteria to Consider</b>		
External Validity Indicators	NNR	
Length of Intervention	NNR	
Intensity/Dosage of Intervention	NNR	
Program Implementer	NNR	

Characteristics of the Intervener	NNR	
Intervention Style or Orientation	NNR	
Cost Analysis Data	NNR	
Training and Support Resources	NNR	
Feasibility	NNR	

**Appendix G: Rationale for Adaptation of Kratochwill's (2003) Coding Protocol**

Table 15  
*Rationale for Adaptation of Kratochwill's (2003) Coding Protocol*

Items removed	Rationale
I. General Characteristics B. Statistical Treatment/Data Analysis B7 - B8	The review question was looking at the effectiveness of Triple P; therefore, only quantitative data was required.
II. Key Features for Coding Studies and Rating Level of Evidence/Support C. Primary/Secondary Outcomes Are Statistically Significant	The outcomes of these studies are considered separately within this review.
II. Key Features for Coding Studies and Rating Level of Evidence/Support D. Educational/Clinical Significance	The participant population of the included studies were parents of children with an ASD diagnosis. It was not the purpose of these studies to change or impact these diagnoses in anyway and therefore this section is not relevant in this review.
II. Key Features for Coding Studies and Rating Level of Evidence/Support E. Identifiable Components	The outcomes of these studies are considered separately within this review.
II. Key Features for Coding Studies and Rating Level of Evidence/Support H. Site of Implementation	This protocol gives preference to school settings; however, as this is an intervention for parents, this is not appropriate.

<p>II. Key Features for Coding Studies and Rating Level of Evidence/Support</p> <p>G. Replication</p>	<p>The studies looked at different versions of the Triple P intervention and with participants that differed slightly in age, therefore they were not replications.</p>
<p>III. Other Descriptive or Supplemental Criteria to Consider</p> <p>A. External Validity Indicators</p> <p>A4. Receptivity/acceptance by target participant population (treatment group)</p>	<p>Parents/caregivers participated in the study and provided feedback about their children, but the children did not provide feedback about themselves.</p>