

Building Bridges Triple P: Pilot Study of a Behavioural Family Intervention for Adolescents
with Autism Spectrum Disorder

Trevor G. Mazzucchelli^{a,b,d*}, Marian Jenkins^{a,b}, and Kate Sofronoff^{b,c}

^aChild and Family Research Group, and Brain, Behaviour and Mental Health Research
Group; Curtin University, Western Australia, School of Psychology and Speech
Pathology, GPO Box U1987, Perth, Western Australia 6845, Australia

^bCooperative Research Centre for Living with Autism Spectrum Disorders (Autism CRC),
Long Pocket, Brisbane, Queensland, Australia

^cSchool of Psychology, Faculty of Health and Behavioural Sciences, The University of
Queensland, Brisbane, Queensland, 4072, Australia

^dParenting and Family Support Centre, School of Psychology, The University of
Queensland, Brisbane, Queensland 4072, Australia

*Corresponding author.

E-mail addresses: trevor.mazzucchelli@curtin.edu.au (T. G. Mazzucchelli),
marian.jenkins@postgrad.curtin.edu.au (M. Jenkins), kate@psy.uq.edu.au (K.
Sofronoff).

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Conflict of Interest

The Parenting and Family Support Centre is partly funded by royalties stemming from published resources of the Triple P—Positive Parenting Program, which is developed and owned by The University of Queensland (UQ). Royalties from the program are also distributed to the Faculty of Health and Behavioural Sciences at UQ and contributory authors of Triple P programs. Triple P International (TPI) Pty Ltd is a private company licensed by Uniquest, Pty Ltd, a commercialization company of UQ, to publish and disseminate Triple P worldwide. T.G.M. and K.S. are employees of, or hold honorary positions at, the University of Queensland. T.G.M. and K.S., have received, receives, or may in the future receive royalties and/or consultancy fees from TPI. M.J. has no conflicts to declare.

Author Contributions

T.G.M., M.J. and K.S. conceived of the study; M.J. and T.G.M. curated and analysed the data; T.G.M. and M.J. acquired the funding; M.J. and T.G.M. conducted the research process; M.J. and T.G.M. wrote the original draft; T.G.M., K.S., and M.J. reviewed and edited the manuscript.

Abstract

Background

Many parents of adolescents with autism spectrum disorder (ASD) report that they are ill-equipped to support their children's behaviour, and these youths are known to be at substantially greater risk of emotional or behavioural problems compared to their typically developing peers. There is a need for an efficient and tailored parenting program for parents of adolescents with ASD that includes guidance on how to best support these youths' development and well-being.

Aims

The current study examined the feasibility of Building Bridges Triple P (BBTP), an eight-week (11.5 hour) parenting program specifically targeted to the needs of parents of adolescents with a developmental disability.

Methods

A pretest-posttest single group design was used to evaluate the feasibility and acceptability of BBTP, and the potential of the program to have desired intervention effects, with nine parents of adolescents with ASD.

Results

After participating in BBTP, parents reported significant reductions in their adolescent's behaviour problems, increased parenting confidence, decreased lax and overreactive responding, and decreased symptoms of depression and stress. These effects were mostly observed at post-test but were more pronounced at 3-month follow-up. Parents reported that they were satisfied with the content and format of BBTP.

Conclusions

Results provide preliminary support for the feasibility and acceptability of BBTP, and that the program has a number of desired intervention effects.

What this paper adds

The present paper describes an evaluation of one of the few parenting programs designed to provide tailored support to parents raising adolescents with a developmental disability. To our knowledge it is the first evaluation of such a program to demonstrate pre-post improvements not only in parental adjustment, but also in adolescent behaviour problems, parenting practices, and parenting self-efficacy. As such, preliminary support is provided that Building Bridges Triple P is a feasible, efficient, acceptable and efficacious program for providing support to parents of adolescents with autism spectrum disorder. This paper provides a platform for further evaluation of this promising intervention.

Keywords

Autism Spectrum Disorder; Behavioural Family Intervention; Developmental Disability; Intervention; Parenting; Parenting Program; Positive Parenting; Triple P

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1. Introduction

Autism spectrum disorder (ASD) occurs in almost 1.5% of children (Christensen et al., 2016) and is now understood to be a major public health concern because of early onset, lifelong persistence, and high levels of associated disability (Simonoff et al., 2008). In addition to impairments associated with social and cognitive deficits that constitute the core features of ASD, children and adolescents with ASD are at a substantially greater risk of showing a variety of emotional and behavioural problems compared to their typically developing peers. Skokauskas and Gallagher (2012) found that children with ASD aged between 3- and 16-years were more anxious, more depressed/withdrawn, and had more social and attention problems compared to their typically developing peers. Simonoff et al. (2008) found that 70% of children with ASD aged 10- to 14-years met the criteria for a comorbid mental health disorder such as social anxiety disorder, attention-deficit/hyperactivity disorder, and oppositional defiant disorder. Furthermore, the prevalence of co-morbid mental health conditions is higher for those children on the autism spectrum who also have an intellectual disability (Brereton, Tonge, & Einfeld, 2006).

Adolescence is a key developmental period to focus prevention efforts since it is associated with increased vulnerability to emotional and behavioural problems (Sawyer, Afifi, Bearinger, & Patton, 2012). For the young person, it is a time of significant physical, emotional, cognitive and environmental change. As adolescents transition into adulthood, they are expected to be more self-directed, and work out their own beliefs and values about who they are and what they want to do with their lives. It is also a time of increased social pressure, particularly in peer relationships. The onset and prevalence of mental health problems is highest during adolescence and young adulthood, with half of all lifetime mental

disorders starting by age 14 and three quarters by age 24 (Kessler et al., 2007). Young people with ASD may be more vulnerable to the stressors associated with adolescence due to qualitative differences and deficits in skills to manage environmental and social stressors (Fung, Lunsky, & Weiss, 2015).

Parents of adolescents with ASD also report high levels of stress and depression during the adolescent years (Fong, Wilgosh, & Sobsey, 1993; Hamilton, Mazzucchelli, & Sanders, 2014; Hartley, Seltzer, Head, & Abbeduto, 2012). Parents contend not only with the normative stress of changes that this developmental period brings, but also additional adaptive and developmental challenges that accompany disability (Fong et al., 1993; Hamilton et al., 2014; Hartley et al., 2012). Concurrent with these changes, parents report that many of the behaviour support strategies they used when their child was younger are no longer practical or socially acceptable and that they feel ill-equipped to address problem behaviours in their adolescent children (Hamilton et al., 2014). Adolescents with a disability report dissatisfaction with their relationship with parents (Skär, 2003). Significantly, parents of adolescents with a developmental disability report receiving little or no practitioner support regarding their adolescents' transition to adulthood (Mazzucchelli & Moran, 2017).

Parenting programs have potential to address these issues. Evidence has accumulated showing that parenting programs based on social learning principles are effective in preventing and treating mental health problems in children and improving parenting practices, family relationships, and parental adjustment (Mazzucchelli, in press; Sanders, Kirby, Tellegen, & Day, 2014; Sandler et al., 2011; Ward, Theule, & Cheung, 2016; Webster-Stratton & Reid, 2017). Most of this evidence comes from families of younger children who are developing typically; however, there is also evidence for the effectiveness of parenting interventions for typically developing adolescents (see Ralph, 2018) and children with a developmental disability (e.g., see Tellegen & Sanders, 2013).

Although limited, there is also some evidence that parenting programs can benefit families of adolescents with a developmental disability. For example, Hudson, Reece, Cameron, and Matthews (2009) reported on the effectiveness of Signposts, a parenting intervention targeting challenging behaviour exhibited by individuals with intellectual disability aged 3- to 16-years. Delivered either in a group format, via the telephone, or in a self-directed fashion, Signposts has demonstrated favourable outcomes across all age groups; however, the lowest positive effect sizes were for the oldest participant group (13- to 18-years; Hudson et al., 2009) indicating that a parenting program tailored specifically for parents of adolescents with a disability may benefit this cohort.

Brereton, Tonge, and Kiomall (2009) described the only parenting program that, to our knowledge, provides targeted support to parents raising adolescents with a developmental disability. This education and skills training intervention for parents of adolescents with autism, known as Growing Up with Autism, comprises 10 group and 10 individual sessions covering topics such as the symptoms of autism, changes in cognition during adolescence, physical and sexual development, social problems, adjustment and well-being, communication problems, transitioning to secondary school, and family adjustment. Importantly, there is evidence that this program leads to improvements in the mental health of caregivers (Brereton et al., 2009). However, evidence is still needed regarding the impact of this program on the well-being of youth with ASD. Also, the time commitment involved in participating in this program (30 hours) may be an impediment for some parents to participate. There remains a need for an efficient and tailored parenting program for parents of adolescents with ASD and other developmental disabilities that includes information and advice on how to best support these youths' development and well-being, as well as how to prevent emotional and behavioural problems.

Building Bridges Triple P (BBTP) is an 8 session (11.5 hours) manualised behavioural family intervention designed to meet the needs of parents with an adolescent with developmental disability. The program draws together elements of two other evidence based programs, Teen Triple P (Ralph & Sanders, 2004) for parents of typically developing adolescents and Stepping Stones Triple P (Sanders, Mazzucchelli, & Studman, 2004) for parents of children with a developmental disability. Following the guidelines described by Sanders and Kirby (2018), the program also includes additional content to address unique concerns of parents and practitioners (e.g., Hamilton et al., 2014); these include ideas to promote positive parent-adolescent relationships, manage problematic adolescent behaviour and risk taking, support teens to manage their emotions and to develop social skills and build peer relationships. The program is among the first of its kind to provide tailored parenting support to address behavioural and emotional problems in adolescents with a disability and increase positive family functioning. We propose that BBTP may be delivered in a flexible manner (Mazzucchelli & Sanders, 2010); however, for this study, we trialed a partial group format involving both group sessions and individual telephone consultations on the basis that this format may have particular advantages. The inclusion of group sessions mean that core program content can be delivered in an efficient manner while also providing opportunities to normalise difficulties and encourage parental peer support. The inclusion of one-on-one telephone sessions ensures that parents receive individualised attention and are supported to adapt program content to meet their individual goals.

There were three aims of the current study: (a) to assess the feasibility of delivering tailored content of relevance to carers of teenagers with a disability in an eight-week (11.5 hour) partial group format program; (b) investigate the acceptability of the program to parents of adolescents with ASD; and (c) explore the effects of BBTP in terms of reducing the behavioural and emotional problems of adolescents with ASD, increasing parents' confidence

in managing common behaviour problems, reducing dysfunctional parenting practices, and improving parental adjustment.

2. Method

2.1 Design

The current study adopted a pre-test post-test single group design. This design is appropriate for examining the feasibility of a novel intervention. Ethical approval was obtained from the University's Human Resources Ethics Committee.

2.2 Participants

Participants were nine parents of adolescents aged between 12- and 16-years who had previously been diagnosed with ASD by an experienced multidisciplinary team (involving a paediatrician, speech pathologist and clinical psychologist). Participants were recruited from the metropolitan area of an Australian capital city. According to an a priori power analysis, at an alpha level of .05, nine participants are capable of capturing a "large" ($f = 0.47$) main effect for time (Cohen, 1988).

2.3 Measures

2.3.1 The Family Background Questionnaire (FBQ)

The FBQ was adapted from Sanders, Mazzucchelli, and Studman (2015) and was used to collect demographic, family, and diagnosis-related information.

2.3.2 Adaptive Behaviour Assessment System (ABAS-III Parent Form; Harrison & Oakland, 2015)

The ABAS-III assesses parent's perceptions of adaptive functioning in individuals aged 5- to 21-years. Parents provide information on a 4-point response scale indicating performance across three major adaptive domains: social, conceptual and practical. The measure provides norm-referenced standardised scores and a merged summary of adaptive domains in the general adaptive composite (GAC) score. The measure has good convergent

validity and test-retest reliability with other adaptive behaviour scales (Kenworthy, Case, Harms, Martin, & Wallace, 2010).

2.3.3 *Social Communication Questionnaire-Lifetime (SCQ; Rutter, Bailey, & Lord, 2003)*

The SCQ is a screening measure used in research and clinical settings to identify individuals who may have ASD and as a measure of overall level of ASD symptomatology. Caregivers rate the characteristics of an individual and scores above a clinical cutoff suggest that the individual is likely to have ASD. The measure has shown good discriminative validity in identifying ASD in clinical and general populations (Johnson et al., 2011).

2.3.4 *Child Adjustment and Parent Efficacy Scale—Developmental Disability (CAPES-DD; Mazzucchelli, Sanders, & Morawska, 2011)*

The CAPES-DD includes a 10-item Behavioural Problems subscale, a 3-item Emotional Problems subscale (measuring children's externalising and internalising behaviour problems respectively), an 8-item Prosocial Behaviour scale, and a 16-item Self-Efficacy scale that measures parent's self-efficacy in managing specific child problem behaviours. The problem and prosocial subscale items are each rated on a 4-point scale. For the Self-Efficacy scale, respondents indicate on a 10-point scale their level of confidence when managing each of the child behaviour problems. In the current study, 13 items on the Self-Efficacy scale were used to calculate a pro-rata total. The Behavioural and Emotional Problems subscales of the CAPES-DD correlates significantly with other measures of behavioural and emotional problems in children with developmental disability (see Emser, Mazzucchelli, Christiansen, & Sanders, 2016). Based on the present study's pre-intervention data, the CAPES-DD had excellent internal consistency for the Self-Efficacy scale ($\alpha = .94$), acceptable internal consistency for the Behavioural Problems ($\alpha = .79$) and Emotional Problems ($\alpha = .71$) subscales, and questionable internal consistency for the Prosocial Behaviour subscale ($\alpha = .67$).

2.3.4 Parenting Scale—Adolescent Version (PSA; Irvine, Biglan, Smolkowski, & Ary, 1999).

This scale is an adaptation of the Parenting Scale (Arnold, O’Leary, Wolff, & Acker, 1993). The original 30-item questionnaire measured three dysfunctional discipline styles in parents: Laxness (permissive discipline), Over-reactivity (authoritarian discipline), and Verbosity (overly long reprimands or reliance on talking). The PSA retains 13 items from the original 30. Factor analysis of the revised items resulted in the Verbosity subscale being omitted, leaving two subscales: Laxness and Overreactivity. The scale has been found to discriminate between parents of clinic and non-clinic children (Arnold et al., 1993). Based on the current study’s pre-intervention data, the PSA had good internal consistency for the Overreactivity scale ($\alpha = .86$) and acceptable internal consistency for the Laxness scale ($\alpha = .73$).

2.3.5 Depression Anxiety Stress Scales—21 (DASS-21; Lovibond & Lovibond, 1995)

The DASS-21 is a 21-item measure, composed of three subscales, that assesses symptoms associated with depression, anxiety and stress. Respondents (i.e., the parents in the current study) use a 4-point scale to indicate symptom strength over the past week. The measure has high convergent validity with other measures of anxiety and depression (Lovibond & Lovibond, 1995) and is widely disseminated in community and clinical settings. Based on the current study’s pre-intervention data, the scale had good internal consistency for the Anxiety scale ($\alpha = .86$), acceptable internal consistency for the Depression scale ($\alpha = .70$), and questionable internal consistency for the Stress scale ($\alpha = .69$). DASS-21 scale scores were doubled for clinical reporting, in line with recommendations (Lovibond & Lovibond, 1995).

2.3.6 Goal Achievement Scales (GAS; Hudson, Wilken, Jauernig, & Radler, 1995)

GAS provides a way evaluating the outcome of interventions with idiosyncratic target behaviours and provides a score that allows comparison across different types of behaviours. The scale allows an estimate of the percentage of success in changing a targeted behaviour,

providing a measure of the clinical significance and social importance of treatment outcomes. GAS is similar to but different from the Goal Attainment Scaling developed by Kiresuk and Sherrnan (1968). Involvement of each parent in goal setting prior to an intervention increases the likelihood that the intervention will address their needs and provides a further assessment of consumer satisfaction (Hudson, 1998). For a week prior to the intervention (baseline), parents used monitoring sheets to track a unique target behaviour that they would like to address through their participation in BBTP. Then, in the first session of the intervention, they examined the baseline record and set a rate of occurrence that would constitute 100% success after completion of the intervention. At the conclusion of the program monitoring data were again collected for the same time period as baseline monitoring. The actual post-intervention rate could then be expressed as a percentage success ranging from zero (no improvement) to 100% (total success). Studies incorporating GAS provide evidence of convergent validity with direct observation data (Hudson et al., 1995) and validated parent-report scales (Tellegen & Sanders, 2014; Turner & Sanders, 2006).

2.3.7 Client Satisfaction Questionnaire

The Client Satisfaction Questionnaire was adapted from Therapy Attitude Inventory (TAI) developed by Eyberg (1993) to measure consumer satisfaction with parent training programs. The TAI has established reliability, internal consistency and discriminant validity (Eyberg, 1993). It consisted of 14 items with 7-point scales, including items relating to the quality of service provided, how well the program met the parent's needs, how satisfied the parent was with the amount of help provided, how satisfied the parent was with the format of the program, and whether the program increased the parent's skills.

2.3.8 Strategies Questionnaire

The Strategies Questionnaire was adapted from Whittingham (2007) and was designed to assess the degree to which attempted strategies were helpful. It contained 2

yes/no questions for each of the 23 strategies in BBTP. These 2 items were, “Did you use this strategy?” and, “If yes, did you find this strategy helpful?” This created two variables, the number of strategies used and the number of these strategies found to be helpful.

2.4 Intervention

The BBTP program consisted of five 120-minute group sessions and three 30-minute telephone sessions. Sessions were held over eight consecutive weeks. The program is manualised and topics covered include understanding teenager’s behaviour, encouraging and teaching appropriate behaviour, managing problem behaviour, and getting teenagers connected (see Table 1 for an overview of session content). Each participant received a workbook (Ralph, Mazzucchelli, & Sanders, 2016) outlining key learning principles and strategies in each session. BBTP was facilitated by two postgraduate clinical psychology students, one of whom was an accredited Triple P practitioner, at the University’s Psychology Clinic. The facilitators received weekly supervision from an accredited Triple P trainer (TM).

2.5 Protocol Adherence

Session checklists were used to monitor content adherence. The facilitators indicated that 100% of the group session and 99% ($SD = 6\%$) of the telephone session content was delivered. An independent assessor viewed all four group sessions that were recorded (50% of the program content) and rated program adherence. Rater assessment indicated perfect ($k = 1.0$) agreement with facilitator ratings.

2.6 Procedure

Participants were recruited from the metropolitan area using a number of approaches. An advertisement outlining the nature of the project was sent to local disability services and organisations. Promotion through support networks, radio and social media sites was also used. Parents who expressed interest in participating in the program undertook a 15-minute telephone screening to assess for inclusion criteria (parents or carers of a child with ASD

aged between 12- and 16-years). Participants who were identified as suitable were emailed an information pack containing a confirmation of assessment appointment letter, information sheet and consent forms. Participants attended an assessment session at the University's Psychology Clinic within one week of the group commencing (Time 1). During the assessment appointment, parents completed the FBQ, ABAS III, SCQ and pretest outcome measures (CAPES-DD, PSA, and DASS-21). Parents were also provided instructions on baseline monitoring of their GAS target behaviour. All parents participated in a single group. At the conclusion of the program, parents completed the outcome measures within one week (Time 2) and again 3-months later (Time 3).

3. Results

3.1 Descriptive Results

Participants were nine parents of six adolescents aged between 12- to 16-years ($M = 15.14$ years, $SD = 1.53$) who had a confirmed diagnosis of ASD. Parental ratings of adolescents' adaptive behaviour ranged from below average to extremely low and SCQ ratings placed 2 of 6 adolescents (33%) above the clinical cut-off for lifetime ASD symptomatology.

Three males and six female parents participated in the group. All participants lived with their adolescent child. Three parent dyads attended the program (descriptive information is presented in Table 2). Mean number of sessions attended by participants was 4.78 group sessions and 2.56 telephone sessions. Four parents (44.4%) attended all 5 group sessions and 3 telephone sessions. The majority of parents attended all of the group sessions (77.8%) and telephone (62.5%) sessions, two parents (22.2%) attended 4 group sessions, and four parents (44.4%) attended 2 telephone sessions. Three parents reported receiving professional assistance around mental health and parenting concerns within 12 months of the program commencing.

3.2 Statistical Analyses

Means and standard deviations across outcome measures are presented in Table 3. A series of Generalised Linear Mixed Models (GLMMs) using SPSS (Version 24) GENLIMIXED procedure assessed intervention effects across outcome measures. Each GLMM included two nominal random effects (participant, dyad) and one ordinal fixed effect (time: pre, post, follow-up). The traditional ANOVA repeated measures model requires the following assumptions to be satisfied: normality, sphericity, and independence of observations. The GLMM “robust statistics” option accommodates violations of normality. Violations of sphericity was accommodated by changing the covariance matrix from the default of compound symmetry to autoregressive. Finally, by specifying the multilevel nature of the current data (participant nested within dyad) in the GLMM syntax, GLMM accommodated intra-dyad dependencies in the outcome measures.

Compared to the traditional ANOVA repeated measures model, GLMM is less sensitive to participant attrition because it does not rely on participants providing data at every assessment point; the GLMM maximum likelihood procedure is a full information estimation procedure that uses all the data present at each assessment point. This reduces sampling bias and the need to replace missing data. GLMM is able to use the data present at each assessment point, this is because time (pre, post) is interpreted as a Level 1 variable that is nested within participant at Level 2, which is itself nested within dyad at Level 3.

To address possible inflation of familywise error rate, outcomes were evaluated at Bonferroni corrected levels, whereby alpha was divided by the number of subscales within each measure.

3.3 Intervention Effects

Results indicated that parents' reports of their adolescent's behavioural problems on the CAPES-DD reduced significantly from before to after the intervention, $F(2, 24) = 19.11$,

$p < .001$. Behaviour problems decreased from pre- to post-intervention, $t(24) = 4.82, p < .001, d = 0.96$, and further decreased through to 3-month follow-up, $t(24) = 4.94, p < .001, d = 1.24$. In a corresponding fashion, parents reported greater self-efficacy in managing their adolescents' behaviour problems from before to after the intervention $F(2, 18) = 32.57, p < .001$. Self-efficacy increased from pre- to post-intervention, $t(18) = -3.00, p = .008, d = -0.69$, and further increased through to 3-month follow-up $t(18) = -8.00, p < .001, d = -1.83$.

Parents reported decreased levels of lax parenting practices, $F(2, 24) = 9.07, p = .001$, from before to after the intervention. Although this reduction was not significant pre- to post-intervention, $t(24) = 1.29, p = .211, d = 0.26$, it was at follow-up, $t(24) = 2.44, p < .001, d = 0.49$.

On the DASS-21, parents reported decreased symptoms of depression, $F(2, 24) = 13.94, p < .001$, and stress, $F(2, 24) = 14.03, p < .001$. On the depression scale, parents reported a decrease from pre- to post-intervention, $t(24) = 2.41, p = .024, d = 0.48$, and a further decrease at follow-up, $t(24) = 5.24, p < .001, d = 1.85$. On the stress scale, parents reported a non-significant increase in symptoms from pre- to post-intervention, $t(24) = -0.55, p = 0.584, d = -0.11$, but a significant decrease from pre-intervention to follow-up, $t(24) = 5.23, p < .001, d = 1.05$.

3.3 *Reliable and Clinically Significant Change*

Participants' responses on the CAPES-DD, PSA, and DASS-21 were assessed using reliable change scores. The reliable change score can be interpreted as the degree to which a person changes on the outcome variable divided by the standard error of difference between the two measurements. When the absolute value of the reliable change score is greater than 1.96 (Wise, 2004, has argued that this value can be reduced in some situations), it is likely that the change reflects a *real* change, a reliable change, rather than the fluctuations of an imprecise measuring instrument. In this way, it is possible to judge whether statistically

significant group intervention effects are clinically meaningful at an individual level (Jacobson & Truax, 1991). Cronbach's α of each measure was used as the reliability parameter using Ley's (1972) formula for calculating the standard error of difference between the two measurements. Table 4 displays the number and percentage of participants who showed a positive or negative reliable change. The percentage of parents scoring in the clinical range at pre- and post-intervention on the CAPES-DD, PSA, and DASS-21 is also reported in Table 4 and illustrate movement out of the clinical range. For the CAPES-DD clinical cut-off scores were $1 \pm SD$ the mean of the normative group (Emser et al., 2016; Wise, 2004).

3.4 Intervention Acceptability

Five participants (55%) completed the baseline and post-intervention monitoring needed to calculate the percentage success of goal achievement for their personally selected target behaviour. These behaviours included following requests, spending less time on the computer or iPad, going to bed and not using electronic devices by 9 pm, and talking positively to siblings. Of these, four (80%) reached their behavioural goal or better by the end of the program. The remaining participant achieved 68% of their goal (appropriately seeking Mum's company).

On the Client Satisfaction Questionnaire, all of the participants reported being "satisfied" or "very satisfied" with the help they received, the majority (89%) reported being satisfied with the quality of the content and the format of the program, and almost half (44%) reported that "almost all" or "most" of their needs had been met by the program. Most participants (78%) agreed that they had learnt a lot from the other parents in the group; however, 4 parents (44%) felt that their needs were too complex to be adequately dealt with in the group format, and 2 (22%) stated that they would have preferred all sessions to have been delivered individually.

The frequencies of attempting to use and finding strategies helpful were assessed using data from the Strategies Questionnaire. As can be seen in Figure 1, a high percentage of parents who attempted the strategies found them to be helpful; however, some strategies were used by only a few parents (e.g., using clear family rules, routine for dealing with emotional behaviour where a teenager may be manipulative, strategies to get teenagers connected), and some strategies (e.g., setting a good example, family meetings) were found to be unhelpful by 25% to 28% of the parents who attempted them.

4. Discussion

The current study provides initial support for the feasibility, acceptability, and efficacy of BBTP. In terms of feasibility, on average participants attended 92% of the sessions and 99% of each session's content was delivered by the facilitators. Participants reported attempting the majority of strategies presented during the course of the intervention and for each strategy, the majority of parents who attempted each strategy found it to be helpful. All participants reported being satisfied with the help they received, the majority reported being satisfied with the content and format of the program, and almost half reported that almost all or most of their needs had been met by the program. These findings support the assertion that a relatively brief (11.5 hour) intervention can cover tailored content of relevance to carers of teenagers with a disability, and that the partial group format of delivering this content is acceptable to parents.

In terms of the intervention effects of BBTP, as a group, large reductions in adolescent behavioural problems were reported at post- and 3-month follow-up. At an individual level, 44% of participants reported a reliable reduction, and 33% a clinically significant reduction, in their child's problem behaviour at post-intervention. The effect sizes observed in the present study, compare favourably to those reported in relation to the Signposts program for parents of 13- to 18-year-olds with any developmental disability, as

well as for children with ASD of any age (Hudson et al., 2009). Although the measures of behaviour problems and self-efficacy differed across these studies meaning that direct comparisons of scales were not possible, these findings provide some support for the suggestion that carers of adolescents with a developmental disability would benefit from tailored parenting support (Hamilton et al., 2014).

Parents' individual goals formed an important outcome measure in the current study, allowing the reader to assess the impact of the intervention to goals that are important and meaningful to families. Mazzucchelli and Sanders (2011) argue that successful parenting programs should be able to be flexibly tailored to the needs of families. In the present study, for those parents who completed monitoring of one of their teenager's behaviours, 80% achieved or exceeded their personally selected goals. These results provide evidence that BBTP can be applied to achieve meaningful change for families. Furthermore, it is plausible that the feedback derived from monitoring may have provided families with a greater understanding of the factors perpetuating their teenager's behaviour as well as additional incentive to persist in the use of behaviour support strategies.

In terms of parenting practices, small- to large-sized improvements were reported after the intervention, with 44% of participants reporting reliable and clinically significant reductions in overreactivity and 13% in laxness at post-intervention. Equivalent measures were not reported by Hudson et al. (2009); however, these effects are somewhat smaller than those reported by Chu et al. (2015) with parents of typically developing adolescents, but comparable to those reported by Tellegen and Sanders (2013) with parents of younger children with a developmental disability.

In addition to parent practices, as a group, participants also reported a medium-sized increase in their confidence in managing teen behavioural and emotional problems at post-test (a very-large increase at follow-up). At an individual level, this improvement reflected

reliable and clinically significant improvement in for two of the five participants who completed the self-efficacy scale of the CAPES-DD at pre- and post-test. The size of the effects for self-efficacy observed in the present study compares favourably to that reported by Hudson et al. (2009) for the Signposts program.

In terms of parents' personal adjustment, a medium-sized reduction in symptoms of depression was found at post-test, and large-sized reductions in symptoms of depression and stress at follow-up. These effects are similar to the effects reported by Hudson et al. (2009), although an immediate reduction in symptoms of stress was found after the Signposts program. Although only two parents reported clinical levels of depression and anxiety at baseline; importantly, both these parents reported reliable and clinically significant reductions at post-intervention.

The results of the current evaluation of BBTP are promising; however, a number of limitations of the present research must be acknowledged. First, although all the participants met the criteria of having an adolescent who had previously been diagnosed with ASD, parental report suggested that only a third of the adolescents had lifetime levels of ASD symptomatology that would be normally be associated with an ASD diagnosis. Also, parental report indicated that only one adolescent had adaptive behaviour limitations in the extremely low ($> 2 SD$) range. These findings suggest that the adolescents were relatively high functioning and in the mild range with respect to ASD symptomatology. This limits the extent to which the present findings can be generalised. It would be desirable if future research adopted more stringent inclusionary criteria.

Although a useful first step in determining the feasibility, acceptability and effects of the intervention, the one group pretest-posttest design used in the present study does not control for a number of potential sources of invalidity (e.g., history, maturation, testing). A randomised controlled trial would provide a more rigorous test of the treatment effects

surmised to result from the present intervention. Future evaluations could also usefully augment the self-report measures relied upon in the present study with independent observer-based outcome measures. Also, given that previous research has found that adolescents with a disability have reported dissatisfaction with their relationship with parents (Skär, 2003), it would also be of interest if future evaluations included outcome measures seeking the perspective of adolescents on various aspects of family functioning. Finally, the inclusion of a teacher rating scale would be useful to determine if improvements in adolescents' functioning generalised to an important setting outside of the home.

In summary, the current study provides initial support for a tailored, manualised parenting intervention for the families of adolescents with developmental disability. The results indicate that addressing the specific needs of families in this cohort through active skills training and education, positively influences adolescent behaviours and various aspects of family functioning. These findings were further supported by parents reporting the accomplishment of individually selected, meaningful, goals for their son or daughter. Together, these findings support further investigation into the potential benefits of this intervention employing a larger sample and a more rigorous research design.

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Table 1
Overview of Session Content

Session	Content	Duration
1. Positive Parenting	1. Working as a group	120 minutes
	2. What is positive parenting?	
	3. Factors influencing teenagers' behaviour	
	4. Goals for change	
	5. Keeping track of problem behaviour	
2. Encouraging Appropriate Behaviour	1. Developing a positive relationship with your teenager	120 minutes
	2. Increasing desirable behaviour	
	3. Teaching new skills and behaviours	
	4. Holding family meetings	
3. Managing Problem Behaviour and Parenting Routines	1. Developing family rules	120 minutes
	2. Dealing with noncompliance	
	3. Dealing with emotional behaviour	
	4. Using behaviour contracts	
4. Getting Teenagers Connected and Teaching Survival Skills	1. Getting teenagers connected	120 minutes
	2. Identifying risky situations	
	3. Routine for dealing with risky behaviour	
	4. Family survival tips	
	5. Preparing for telephone sessions	
5. Implementing Parenting Routines 1	1. Preparing for the session	30 minutes
	2. Update on progress	

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30

3. Other issues

6. Implementing

1. Preparing for the session

30

Parenting Routines 2

2. Update on progress

minutes

3. Other issues

7. Implementing

1. Preparing for the session

30

Parenting Routines 3

2. Update on progress

minutes

3. Other issues

8. Program Close

1. Update on progress

120

2. Maintaining changes

minutes

3. Problem solving for the future

4. Final assessment

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Table 2

Demographic Characteristics and Diagnostic Status of Sample at Pre- and Post-Intervention.

Participant	Adolescent Age (years, months)	Adolescent Gender	ABAS III GAC range	SCQ total
Mother	16, 8	Male	Low	--
Father	16, 8	Male	Low	8
Mother	13, 3	Female	Below average	11
Father	15, 9	Female	Below average	21
Mother	15, 9	Female	Low	25
Mother	16, 9	Female	Below average	12
Father	13, 3	Male	Low	6
Mother	13, 3	Male	Low	9
Mother	14, 11	Male	Extremely low	20

Note. ABAS III GAC = Adaptive Behavior Assessment System Third Edition General

Adaptive Composite score range, SCQ = Social Communication Questionnaire (cut-off > 15 may indicate ASD), -- = participant refused to complete measure.

Table 3

Estimated Means, Standard Errors, F Statistics, and Effect sizes for Outcome Measures

Measure	Time 1.	Time 2.	Time 3.	GLMM			<i>t</i> -tests		Effect size <i>d</i>	
	Pre-	Post-	Follow-up	<i>F</i>	<i>df</i>	<i>p</i>	T1-T2	T1-T3	T1-T2	T1-T3
	intervention	intervention								
	<i>M (SE)</i>	<i>M (SE)</i>	<i>M (SE)</i>							
CAPES-DD										
Behaviour Problems	16.83 (1.62)	10.16 (1.20)	9.83 (0.80)	19.11	2, 24	<.001	4.82***	6.18***	0.96	1.24
Emotion Problems	4.71 (0.86)	2.82 (0.91)	3.71 (0.63)	5.28	2, 24	.013	3.23**	1.08	0.65	0.22
Prosocial	12.12 (1.34)	13.23 (1.22)	13.23 (1.19)	0.942	2, 24	.404	-1.35	-1.37	-0.27	-0.27
Self-Efficacy	102.03 (11.03)	121.87 (7.89)	139.06 (9.96)	32.57	2, 18	<.001	-3.00**	-8.00***	-0.69	-1.83
PSA										
Laxness	3.98 (0.23)	3.54 (0.36)	3.24 (0.23)	9.07	2, 23	.001	1.29	4.24***	0.26	0.87
Overreactivity	3.63 (0.37)	2.70 (0.30)	2.76 (0.09)	3.92	2, 24	.034	2.74*	2.44*	0.55	0.49
DASS-21										
Depression	7.13 (1.29)	4.24 (1.58)	3.36 (0.93)	13.94	2, 24	<.001	2.41*	5.24***	0.48	1.85
Anxiety	3.11 (1.61)	0.44 (0.26)	1.11 (0.35)	1.41	2, 24	.263	1.55	1.36	0.31	0.27
Stress	8.22 (0.95)	9.11 (1.63)	4.00 (0.89)	14.03	2, 24	<.001	-0.55	5.23***	-0.11	1.05

Note. Bold figures indicate significance at Bonferroni corrected level, CAPES-DD = Child Adjustment and Parenting Efficacy Scale--Developmental Disability, PSA = Parenting Scale—

Adolescent version, DASS 21 = Depression Anxiety and Stress Scale--21 (scores have been doubled), *d* = Cohen's *d* (.2 = small, .5 = medium, .8 = large).

p* < .05, *p* < .01, ****p* < .001

Table 4

Reliable Change Indices and Clinical Change

Measure	Reliably	Reliably Worse	Clinical Range	
	Improved %	% (n/n)	Pre-intervention	Post-intervention
	(n/n)		% (n/n)	% (n/n)
CAPES-DD				
Behaviour Problems	44% (4/9)	0% (0/9)	33% (3/9)	0% (0/9)
Emotional Problems	44% (4/9)	0% (0/9)	55% (5/9)	22% (2/9)
Prosocial Behaviour	0% (0/9)	0% (0/9)	0% (0/9)	0% (0/9)
Self-efficacy	40% (2/5)	0% (0/5)	33% (3/9)	0% (0/5)
PSA				
Laxness	50% (4/8)	0% (0/8)	75% (6/8)	62% (5/8)
Overreactivity	44% (4/9)	0% (0/9)	44% (4/9)	0% (0/9)
DASS-21				
Depression	11% (1/9)	0% (0/9)	11% (1/9)	0% (0/9)
Anxiety	22% (2/9)	0% (0/9)	11% (1/9)	0% (0/9)
Stress	11% (1/9)	0% (0/9)	0% (0/9)	0% (0/9)

Note. CAPES-DD = Child Adjustment and Parenting Efficacy Scale—Developmental Disability, PSA

= Parenting Scale—Adolescent version, DASS 21 = Depression Anxiety and Stress Scales—21.

