A Pilot Randomised Controlled Trial of a School-Based Resilience Intervention to Prevent Depressive Symptoms for Young Adolescents with Autism Spectrum Disorder: A Mixed Methods Analysis

Abstract

Despite increased depression in adolescents with autism spectrum disorder (ASD), effective prevention approaches for this population are limited. A mixed methods pilot randomised controlled trial (N = 29) of the evidence-based Resourceful Adolescent Program–Autism Spectrum Disorder (RAP–A–ASD) designed to prevent depression was conducted in schools with adolescents with ASD in years 6 and 7. Quantitative results showed significant intervention effects on parent reports of adolescent coping self-efficacy (maintained at 6 month follow-up) but no effect on depressive symptoms or mental health. Qualitative outcomes reflected perceived improvements from the intervention for adolescents’ coping self-efficacy, self-confidence, social skills, and affect regulation. Converging results remain encouraging given this population’s difficulties coping with adversity, managing emotions and interacting socially which strongly influence developmental outcomes.

Keywords: autism spectrum disorder; randomised controlled trial; school-based intervention; depression prevention; coping self-efficacy; affect and emotion regulation

A Pilot Randomised Controlled Trial of a School-Based Resilience Intervention to Prevent Depressive Symptoms for Young Adolescents with Autism Spectrum Disorder: A Mixed Methods Analysis

Young adolescents with Autism Spectrum Disorder (ASD) are at greater risk than their neurotypical peers of developing depression. Prevalence estimates for depression are as high as 54% (Mayes, Calhoun, Murray, & Zahid, 2011), and there is also considerably increased risk of suicidal behaviour (Hannon & Taylor, 2013). Compared to their neurotypical peers, young adolescents with ASD experience the developmental milestones associated with the transition to adolescence as more challenging (Brereton, Tonge, & Einfeld, 2006; Mayes et al., 2011; McPheeters, Davis, Navarre, & Scott, 2011). The communication and social interaction difficulties experienced by young adolescents with ASD, along with the increasing social demands of early adolescence, increase the risk that they will disengage from peers and adults and feel lonely (Bauminger, Shulman, & Agam, 2003; Downs & Smith, 2004; Humphrey & Symes, 2010; White, Oswald, Ollendick, & Scahill, 2009; White & Roberson-Nay, 2009), and fall victim to bullying (e.g., Cappadocia, Weiss, & Pepler, 2012; Sterzing, Shattuck, Narendorf, Wagner, & Cooper, 2012). Furthermore, they have reduced coping ability (Dalton et al., 2005; Jahromi, Meek, & Ober-Reynolds, 2012; Konstantareas & Stewart, 2006) which can be understood as a conscious effort to overcome or minimise a situation that is experienced as stressful (Snyder, 1999; Weiten, Dunn, & Hammer, 2015; Zeidner & Endler, 1996).
Despite high rates of depressive symptoms there is a paucity of research on effective early intervention or depression prevention approaches tailored for this population (Ghaziuddin, Ghazuiddin, & Greden, 2002; Stewart, Barnard, Pearson, Hasan, & O’Brien, 2006). Left untreated, depressive symptoms are likely to extend into adulthood, and to reduce future prospects such as engaging in and completing tertiary education, and finding jobs and remaining employed (Taylor, Henninger, & Mallick, 2015). Recent research has begun to highlight the important link between depression as a mediator between autistic symptoms and poorer psychosocial outcomes, calling for further research in the area of mental health promotion in this population (Chiang & Gau, 2016). This study reports quantitative and qualitative results of a pilot randomised controlled trial (RCT) of a school-based strength-focused resilience intervention aimed at preventing depression and promoting coping self-efficacy in young adolescents with ASD.

Many programs targeting depression in neurotypical adolescents have been developed and trialled with some success at both the prevention and treatment level (Clarke et al., 2001; Garber, Webb, & Horowitz, 2009; Gillham, Brunwasser, & Frerese, 2008; Jaycox, Reivich, Gillham, & Seligman, 1994; Landback et al., 2009; McLaughlin, 2009; Shochet et al., 2001; Shochet & Wurfl, 2015a; Stice, Shaw, Bohon, Marti, & Rohde, 2009; Young, Mufson, & Gallop, 2010). Systematic reviews and meta-analyses have concluded that these prevention programs realise modest improvement in depressive symptomology, and that they tend to show greater efficacy when targeting adolescents at risk (Brunwasser, Gillham, & Kim, 2009; Calear & Christensen, 2010; Corrieri et al., 2014; Horowitz & Garber, 2006; Merry et al., 2011; Neil & Christensen, 2007; Stice et al., 2009).

Although research on effective early intervention or prevention approaches tailored for young adolescents with ASD is in its infancy, cognitive behavioural approaches may offer a promising psychosocial intervention. Encouraging research on the effectiveness of cognitive-behavioural therapy (CBT) programs to treat depression in young people with ASD is emerging. In children, a small study trialled an enhanced curriculum that focused on building skills in emotion recognition, executive functioning, communication, and problem solving in boys with ASD aged 8 to 12 years, and found that participants had improved emotion awareness and some non-significant changes in reported levels of depression (Solomon, Goodlin-Jones, & Anders, 2004). Two recent studies have trialled CBT for depression in older adolescents: a non-randomised, small (N = 26), group-based CBT program with individuals with ASD aged 15 – 25 years achieved a reduction in self-reported depressed mood, negative thoughts, and stress relative to waitlist control (McGillivray & Evert, 2014); and a small pilot RCT that compared a depression treatment program with treatment as usual in 20 adolescents with ASD (Mage = 15.75 years) found a significant reduction in mean pre- and post-depression scores in the intervention group (Santomauro, Sheffield, & Sofronoff, 2015). However, there are no evidence-based interventions for prevention and early intervention of depression for young adolescents with ASD.

A common intervention framework for depression prevention and mental health promotion in adolescents has been to adopt a strength-focused, resilience-promoting approach that draws on evidence-based depression treatment programs such as CBT (Gillham et al., 2008; Shochet & Wurfl, 2015a). The strength-focused approach avoids pathologising which is thought to reduce the potential for stigma, and to increase reach and engagement for adolescents (Shochet et al., 2001). The resilience framework recognises the adversity facing adolescents with ASD. Developmental psychopathology defines resilience as a dynamic process (rather than an outcome) that consists of positive adaptation despite significant adversity (Herrman et al., 2011; Luthar, Cicchetti, & Becker, 2000). It has been argued that living with a neurodevelopmental disorder such as ASD constitutes significant adversity that would benefit from resilience interventions that offer a strength-focused narrative in mental health promotion (Shochet et al., 2016). The resilience framework also directs
interventions to focus on promoting protective factors because research has consistently indicated that resilience is promoted by protective factors that alter the effects of adversity so as to achieve a positive rather than negative outcome (Alvord & Grados, 2005; Benzies & Mychasiuk, 2009; Fergus & Zimmerman, 2005; Luthar et al., 2000). Conceptualising resilience as a process implies that, despite the adversity facing young adolescents with ASD, increased capacity for resilience can be detected in outcomes such as improvements in behavioural and emotional functioning, reduction of depressive symptoms, and enhancements in important protective factors such as increased coping self-efficacy.

Recent research suggests that school-based preventative intervention programs, which are available as a component of the curriculum, represent a gold standard of intervention as they are accessible, affordable, sustainable, and have been supported empirically (Corrieri et al., 2014). An evidence-based, strength-focused resilience intervention that is designed to be implemented in schools is the Resourceful Adolescent Program (RAP) (Shochet & Wurfl, 2015a, 2015b). The adolescent component of this program (RAP–A) aims to improve coping skills, promote depression protective factors (e.g., self-regulation, stress management, developing social support networks, perspective taking, preventing and managing conflict, and strengthening interpersonal relationships), and build resilience so as to foster mental health and wellbeing (Fergus & Zimmerman, 2005; Shochet et al., 2001; Shochet & Ham, 2003; Shochet & Osgarby, 1999). RAP–A is typically implemented in a universal format with whole cohorts of neurotypical students aged 11 – 15 as an 11-session group program delivered on a weekly basis across one school term but can also be delivered in a selected or indicated format (Merry, McDowell, Wild, Bir, & Cunliffe, 2004; Millear, Liossis, Shochet, Biggs, & Donald, 2008; Muris, Bogie, & Hoogsteder, 2001; Shochet et al., 2001). The program purposefully avoids using deficit orientated words such as “depression” and “mental illness”, adopting instead a strength-based focus that reinforces adolescents’ existing personal strengths. Based on the metaphor of the children’s story of the Three Little Pigs, in which only the house made of bricks withstood the attacks of the Big Bad Wolf, each week participants identify “resource bricks” such as “personal strength” bricks and “keeping calm” bricks. Session content and process are described in a Group Leader’s Manual (Shochet & Wurfl, 2015a), and each participant receives a Participant Workbook (Shochet & Wurfl, 2015b).

RAP–A is based on integral elements of CBT and Interpersonal Psychotherapy (IPT), both of which have developed a solid evidence base for the treatment of depression in young people (Clarke et al., 2001; Garber, 2006; Garber, Clarke, et al., 2009; Horowitz, Garber, Ciesla, Young, & Mufson, 2007; Merry et al., 2004; Rivet-Duval, Heriot, & Hunt, 2011). The CBT components of RAP–A cover stress management using self-management and relaxation strategies; positive self-talk (i.e., cognitive restructuring); and problem solving strategies based on defining problems, identifying and evaluating solutions, and implementing the chosen solution step by step. The interpersonal dimensions of RAP–A are drawn from IPT for depression (Mufson, Moreau, Weissman, & Klerman, 1993) and are designed to promote connectedness by encouraging participants to establish and draw on support networks; and to develop skills that reduce interpersonal conflict by applying an understanding of others’ perspectives in maintaining peace, and promoting harmony.

The efficacy of RAP has been established in a number of RCTs, and was initially examined in a study conducted with 260 year 9 secondary school students randomised to one of three groups: RAP–A only, RAP–A and a three session parent group program that targets improved parent-adolescent attachment (RAP–P), or a comparison control group (Shochet et al., 2001). Students in the RAP intervention groups were found to have significantly lower rates of clinical and subclinical levels of depressive and hopelessness symptoms post-intervention and at follow-up, compared to the control group. A subsequent RCT conducted in New Zealand (Merry et al., 2004) indicated that the
RAP participants reported fewer depressive symptoms at post and 18 month follow-up compared to a placebo control group. Subsequent qualitative research has suggested that improved affect regulation and interpersonal relationships (domains that are particularly challenging for adolescents with ASD (American Psychiatric Association [APA], 2013)) are the major mechanisms underlying the success of the program (Cunningham, Shochet, Smith, & Wurfl, 2016; Shochet, Montague, Smith, & Dadds, 2014).

Given the solid evidence for RAP–A as an effective program that can be implemented in schools to reduce symptoms of depression in adolescents (e.g., Merry et al., 2004; Shochet et al., 2001), the current study involved a pilot RCT and a mixed methods evaluation of a version of RAP–A, the Resourceful Adolescent Program–Autism Spectrum Disorder (RAP–A–ASD) adapted for young adolescents with ASD (the participants). The primary adaptations to RAP–A included changing from a group to an individual format, and the addition of components to target difficulties that adolescents with ASD typically experience. The individual treatment format was adopted to reduce the risk of social demands interfering with the ability of the young adolescent with ASD to engage in the program content. Interestingly, a recent meta-analysis of the effectiveness of anxiety interventions in youth with ASD found individual therapy to be more effective than group therapy (Kreslins et al., 2015). Examples of components added to target ASD-specific difficulties were a social story to target theory of mind deficits (Gray & White, 2002), and computerised sessions (iRAP) to increase the engagement of adolescents with ASD by using interactive activities and video segments that model behaviours and emotions that children with ASD can find difficult to distinguish. The RAP–A–ASD program was fully manualised (Shochet, Mackay, & Wurfl, 2011).

The current study compared two groups: the intervention group in which participants received the RAP–A–ASD intervention; and the control group in which participants received treatment as usual in the form of support from school-based services. In addition, qualitative exploration of participants’ experience of the RAP–A–ASD program, and parents’ and teachers’ observations of participants during and following their involvement was conducted.

It was hypothesised that RAP–A–ASD would be implemented with fidelity by the facilitators, and that it would be accepted by the participants. In addition, it was hypothesised that the RAP–A–ASD group would be associated with fewer depressive symptoms, greater coping self-efficacy, and a greater improvement in emotional and behavioural functionality post-intervention and at 6 month follow-up, compared to the control group. It was expected that themes uncovered by the thematic analysis of qualitative triangulated data would endorse increased capacity for resilience through outcomes similar to those previously identified in RAP–A qualitative research, such as improvements in behavioural and emotional functioning, enhancements in important protective factors such as increased coping self-efficacy, and in more effective management of interpersonal difficulties.

**Method**

**Study Design**

A mixed methods convergent design was undertaken in line with best practice guidelines for mixed methods research (Cresswell, Klassen, Plano Clark, & Smith, 2011). The quantitative and qualitative components of the research employed triangulation, using multiple data sources (participants, parents and teachers) to strengthen the data collection and verification process, and to answer research questions and validate findings (Guion, 2002; Miles & Huberman, 1994; Palinkas, Horowitz, Chamberlain, Hurlburt, & Landsverk, 2011; Silverman, 2005).

The research implemented a RCT evaluating the effectiveness of the RAP–A–ASD intervention
group compared to the control group. Primary outcomes were depressive symptomatology, coping self-efficacy, and emotional and behavioural functionality at pre-intervention, post-intervention and 6 month follow-up. Qualitative data, focusing on participants’ experiences of the program, and parent and teacher observations of participant behaviours, was collected post-intervention.

Participants

The study was conducted in schools in Brisbane, Australia, an urban city of approximately 2.3 million people. Participants included all children in year 6 or 7 who had been formally ascertained through the schooling system as having a diagnosis from a psychiatrist or paediatrician of Autistic disorder, Asperger’s disorder, or PDD-NOS as per the DSM–IV–TR (APA, 2000). Schools provided written evidence of ascertainment and diagnosis to the principal researcher after obtaining written permission from each participant’s parents. As the cognitive demands of RAP–A–ASD require participants to be high-functioning, individuals with intellectual impairment, severe behavioural difficulties or psychosis were excluded. RAP–A–ASD aims to prevent depression, therefore participants were not required to be sub-clinically or clinically depressed at baseline to participate. (Full details of participants by condition, together with randomisation and participant flow, are described in the Results section).

Measures

**Child Depression Inventory** (CDI; Kovacs, 2003) is a 27-item measure of childhood depression that has a possible total score of 54, with higher scores indicative of greater severity of depressive symptoms. The CDI has good internal consistency, moderate test–retest reliability for identifying depressive states, and an alpha coefficient of .86 (Kovacs, 2003). This study omitted the item that screens for suicidal ideation, leaving 26 items with a possible total score of 52. Scores of 12 or above were deemed to be indicative of sub-clinical or clinical depression. In the current study the alpha coefficient ranged across time points one to three for adolescents from .90 to .91. This is consistent with the alpha coefficients of .89 to .91 reported for neurotypical adolescents (N = 2022) measured at two time points 12 months apart (Shochet, Dadds, Ham, & Montague, 2006).

**The Coping Self-Efficacy Scale** (CSES; Chesney et al., 2006) is a 26-item self-report measure, scored on an 11-point Likert scale ranging from 0 (cannot do at all) to 10 (certain can do), of an individual’s confidence to respond adaptively to stressful events. Higher scores are indicative of greater confidence. The CSES has a reported alpha coefficient of .95 (Chesney et al., 2006). This study adapted the CSES to suit young adolescents with ASD by using more literal language (e.g., the item, “Resist the impulse to act hastily when under pressure” was replaced with “Stop yourself from acting too quickly when under pressure”), and also added items that tapped positive options (e.g., “Ask a teacher for help”). The final measure included 35 and 33 items for the adolescent and parent versions respectively. In the current study the alpha coefficient ranged across time points one to three for adolescents from .95 to .97, and for parents from .95 to .96.

**Strengths and Difficulties Questionnaire** (SDQ; Goodman, 1997) is a 25-item measure of behavioural and emotional mental health problems. It is scored on a 3-point scale ranging from 0 (not true) to 2 (certainly true), with higher scores indicative of poorer emotional and behavioural functionality. The SDQ has good reliability, with an alpha coefficient of .82 (Hawes & Dadds, 2004). In the current study the alpha coefficient for total strengths and difficulties ranged across time points one to three for adolescents from .80 to .87 which is consistent with the alpha coefficient of .85 reported for neurotypical adolescents (N = 2022) (Shochet et al., 2006), and for parents from .77 to .85; and across time points one and two for teachers from .79 and .80.
Process Evaluation Scale. Participants completed a 15-item process evaluation scored on a 5-point Likert scale ranging from 1 (never/not at all useful) to 5 (all the time/very useful) at the end of the RAP–A–ASD intervention. Items tapped participant satisfaction with the program using questions such as “How often did you look forward to coming to the RAP session?”, “How often have you talked about the RAP program with friends/school peers or siblings?”, and “How much do you think the RAP program helped your confidence in yourself?”

Procedure

Randomisation and treatment process. The randomisation process adhered to consort guidelines (Moher et al., 2010) and was conducted by a research assistant not involved in the study. Binary codes created by an online random permutation program, concealed from the principle researcher, were used to individually allocate participants to the intervention or control group (Dallal, 2008) based on the contents of individual sealed envelopes (to ensure concealment from researchers) that contained an intervention or control label.

RAP–A–ASD. This program was implemented according to the RAP–A treatment manual, in conjunction with the RAP–A–ASD supplementary treatment manual that identifies the ASD-specific adaptations made to the RAP–A program and also includes information about working with an ASD population. RAP–A–ASD consists of 11 weekly 50-minute sessions covering the following topics: (1) Getting to know you, (2) Building self-esteem, (3) Introduction to the RAP model, (4) Keeping calm, (5) Self-talk, (6) Thinking resourcefully, (7) Finding solutions to problems, (8) Identifying and accessing support networks, (9) Considering the other person’s perspective, (10) Keeping the peace and making the peace, and (11) Putting it all together. The content of each session of RAP–A–ASD is described in Table 1.
<table>
<thead>
<tr>
<th>Session</th>
<th>Key message</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Getting to know you</td>
<td>We’re interested in you! Let’s work together as a team.</td>
<td>Use fun-based activities to build rapport and gauge participant’s interactive capacity and turn-taking ability. Introduce the program using a social story.</td>
</tr>
<tr>
<td>3. Introduction to the RAP model</td>
<td>Our body clues and our self-talk affect the way we feel and behave.</td>
<td>Introduce RAP model with iRAP computer program. Provide a CBT based description of the link between behaviour, body clues, self-talk and emotions. Introduce concept of risky and resourceful responses.</td>
</tr>
<tr>
<td>4. Keeping calm</td>
<td>Be a detective. Find your body clues and keep calm.</td>
<td>Explore body signals related to positive and negative feelings using iRAP. Develop strategies to relax and manage stress.</td>
</tr>
<tr>
<td>5. Self-talk</td>
<td>I am what I think.</td>
<td>Introduce cognitive restructuring with the assistance of a movie clip. Generate positive self-talk.</td>
</tr>
<tr>
<td>6. Thinking resourcefully</td>
<td>You can change your thinking.</td>
<td>Understand and identify self-talk. Practice challenging negative self-talk and developing positive self-talk.</td>
</tr>
<tr>
<td>7. Finding solutions to problems</td>
<td>There are solutions to my problems.</td>
<td>Learn a step-by-step problem solving model and apply it in interpersonal situations.</td>
</tr>
<tr>
<td>8. Identifying and accessing support networks</td>
<td>There is always help at hand.</td>
<td>Use fun-based activities to learn about developing a support network, and seeking help to maintain emotional wellbeing.</td>
</tr>
<tr>
<td>9. Considering the other person’s perspective</td>
<td>There are two sides to every story. Take time out, stop and think.</td>
<td>Promote perspective taking and empathy for others. Develop strategies to prevent escalation of conflict.</td>
</tr>
<tr>
<td>10. Keeping the peace and making the peace</td>
<td>Keep the peace and make the peace.</td>
<td>Develop strategies to promote harmonious relationships and to get connected. Develop strategies to prevent or manage conflict with care givers and significant others.</td>
</tr>
<tr>
<td>11. Putting it all together</td>
<td>Being a resourceful adolescent really works! Let’s celebrate!</td>
<td>Review program content, evaluate program, deliver personal positive feedback, and celebrate.</td>
</tr>
</tbody>
</table>

The intervention was implemented in the second and third terms of the Australian school year (i.e., April to September). Each weekly session was conducted with one participant at a time, during school hours, by a facilitator who had undergone training to deliver RAP–A and RAP–A–ASD.
Training included awareness of ASD phenomenology, diagnosis, and treatment; familiarisation with the RAP–A and RAP–A–ASD facilitator manuals and participant workbooks; and understanding of possible process issues that may arise when working with an ASD population. Each facilitator was a provisional psychologist who was completing the internship component of a postgraduate degree in Educational and Developmental or Clinical Psychology at the Queensland University of Technology (i.e., the fifth year of a six year course of study required to become a fully registered psychologist in Australia). Their training was supplemented with fortnightly supervision by the program developers for the duration of the intervention.

Control. The control group had the usual access to the school guidance counsellor and/or learning support teacher for emotional support and counselling, as well as ongoing monitoring and support from classroom teachers and other school services.

Data Analysis and Power

Sample size. To measure the efficacy of the RAP–A–ASD intervention with a two-sided 5% significance level and power of 80%, a sample size of 26 participants per group was necessary. A-priori power analysis was conducted using G*Power (Faul, Erdfelder, Buchner, & Lang, 2009) to determine target study size per group. The magnitude of inflation size was unknown because the program had not been implemented before. Given small sample size and logistics, in absence of information regarding inter cluster correlations, within logistical boundaries, we aimed for a sample size of 52. Recruiting only 29 participants increased the risk of failing to find significant between-group differences in quantitative outcomes due to insufficient power to detect an effect.

Qualitative Data Collection

To obtain information from multiple sources for triangulation of data (Guion, 2002), the impact of the intervention was evaluated further with qualitative information obtained post-intervention from interviews with participants, and written responses from parents and teachers. To assess experience of the program, short structured individual interviews were conducted by the principle researcher with a convenience sample of participants who were available on the day of post-intervention questionnaire completion (n = 10). Questions asked included, “What was it like doing the RAP program?”, “Do you remember anything you learned from the program?”, and “Can you think of a time when you’ve used something you learned in the program?”

On the parent and teacher post-intervention questionnaires, 16 parents and 12 teachers provided written qualitative responses to open-ended questions designed to evaluate their experiences and observations of any changes noticed in participants since the commencement of RAP–A–ASD, such as “Have you noticed any changes in the/your child/student’s behaviours since commencing program?”, and “Have they made any comments or behaved in a particular way that is linked to the RAP program?”

Qualitative Analysis

The transcribed interviews and written responses to open ended questions were analysed using thematic analysis to identify recurrent themes (Braun & Clarke, 2006). To become familiar with the data and generate initial codes the analysis focused on one participant’s response, and as a set of categories was generated the process steadily expanded to additional parts of the data set (Silverman, 2005). Categories were further reviewed and organized based on the units of meaning to develop codes. To search for, define and name themes, the categories were further reviewed and organized based on the units of meaning to develop codes (Braun & Clarke, 2006). This
comprehensive analytical process involved repeated inspections of the data (Braun & Clarke, 2006; Silverman, 2005). By continuing to reread and review categories and codes, other codes emerged progressively, and this process was repeated until categories were saturated (Miles & Huberman, 1994; Strauss & Corbin, 1990).

The analysis was inductive and the emerging themes were strongly linked to the data, rather than coding data to fit into pre-existing theoretical codes or frameworks (Patton, 1990). Allies and divergent cases were sought out to strengthen the validity of the research (Silverman, 2005). The frequency of respondents was recorded to show commonalities across responses, and to show the extent to which the theme may be more largely shared (Toerien & Wilkinson, 2004). The codes and subsequent emerging themes were examined and validated by an independent rater with no investment in the project.

Results

Participants

Eighteen of 46 invited schools agreed to participate. Some schools declined to participate due to concerns about time commitments, and a number of schools decided not to participate because they were already committed to other research studies. However, once a school committed to involvement, recruitment of participants and their parents was high. All eligible students at the participating schools (N = 30) agreed to participate but one participant met exclusion criteria, resulting in a final sample of 29 students with ASD (Age range: 10 – 13 years, $M_{age} = 11.8$, $SD_{age} = 0.70$, 90% males). An equivalent number of participants in the intervention and control groups fell in the sub-clinical or clinical range for depression (as determined by their CDI scores) at baseline (intervention $n = 8$, control $n = 8$). This elevation of depressive symptoms in over 50% of the sample is consistent with the expectation of depression symptoms in this population (Shochet et al., 2016). Figure 1 presents the participant flow and overall design of the study. Table 2 shows demographic data for the two groups after randomization. Participants did not differ significantly by study intervention condition on any demographic or clinical characteristic at entry. Fifteen of the 16 participants who commenced RAP–A—ASD completed the program, with only one participant opting out after 8 sessions due to a timetable clash. There was a 97% completion and return rate of post and follow-up measures from participants.
Figure 1. Study flow of participants through the RCT from screening to analysis.
Table 2

Baseline Demographic and Clinical Characteristics of Participants, Parents and Teachers Randomised to the RAP–A–ASD and Control Groups

<table>
<thead>
<tr>
<th>Baseline demographics</th>
<th>RAP–A–ASD (n = 16)</th>
<th>Control (n = 13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age: M (SD)</td>
<td>11.94 (0.68)</td>
<td>11.77 (0.73)</td>
</tr>
<tr>
<td>Males</td>
<td>87.5%</td>
<td>92.3%</td>
</tr>
<tr>
<td>Child received extra support outside school</td>
<td>43.7%</td>
<td>30.7%</td>
</tr>
<tr>
<td>Parents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mother of child</td>
<td>93.7%</td>
<td>92.3%</td>
</tr>
<tr>
<td>&gt; High school education</td>
<td>62.5%</td>
<td>46.1%</td>
</tr>
<tr>
<td>Employed (full or part time)</td>
<td>62.5%</td>
<td>76.9%</td>
</tr>
<tr>
<td>Teachers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years teaching (average)</td>
<td>16 – 20</td>
<td>11 – 15</td>
</tr>
<tr>
<td>Frequency of time spent with child (average)</td>
<td>Daily</td>
<td>Daily</td>
</tr>
<tr>
<td>Child received extra support at school</td>
<td>93.7%</td>
<td>92.3%</td>
</tr>
</tbody>
</table>

Program Fidelity

Facilitators completed an integrity checklist after each RAP–A–ASD session to ensure internal validity and assess adherence to the RAP–A–ASD treatment manual (Bond, McHugo, Becker, Rapp, & Whitley, 2008; Mowbray, Holter, Teague, & Bybee, 2003). Facilitators were asked to rate completion of the session components on a 3-point scale (“0” = no, “1” = somewhat, and “2” = yes), and to rate participant engagement and the usefulness of session components on a 5-point Likert scale (“1” = not at all, “2” = somewhat, “3” = neutral, “4” = mostly, and “5” = very). Percentages relating to program completion (93%), engagement (74%), and usefulness (80%) indicated that the treatment manual was implemented consistently, and that participants were engaged and found the program to be useful.

Process Evaluations

Recall that process evaluations were scored on a 5-point Likert scale, with “5” being the most favourable rating. Participants’ overall mean rating for core aspects of the program fell in the useful to very useful range (M = 4.43, range: 3.64 - 4.18), Participants indicated that they looked forward to coming to sessions (M = 4.11, range: 3 - 5) and that involvement in RAP–A–ASD had helped to
increase their confidence ($M = 4.29$, range: 3 - 5) and to feel more positive about everyday life ($M = 3.93$, range: 3 - 5), supporting the strength-based nature of the program and its aim of promoting wellbeing. However, participants indicated that it was not as likely that they would discuss their involvement in the program with parents ($M = 2.57$, range: 1 - 5) or peers and siblings ($M = 1.64$, range: 1 - 3), or recommend the program to peers or friends ($M = 2.71$, range: 1 - 5).

**Imputation**

Some parents and teachers failed to return the post-implementation questionnaire. Multiple imputation procedures were conducted to replace missing values using the EM method. Little’s MCAR test determined that missing items were missing completely at random for the whole data set. On all measures, the percentage of missing items was within the allowed limit/amount for each scale.

**Descriptive Statistics**

The mean scores for outcome measures on depressive symptomatology, coping self-efficacy and strengths and difficulties at pre-intervention, post-intervention and 6 month follow-up are shown in Table 3.

<table>
<thead>
<tr>
<th>Measure</th>
<th>RAP–A–ASD Pre</th>
<th>RAP–A–ASD Post</th>
<th>RAP–A–ASD Follow Up</th>
<th>Control Pre</th>
<th>Control Post</th>
<th>Control Follow Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDI</td>
<td>14.25 (9.10)</td>
<td>12.88 (8.76)</td>
<td>10.75 (9.47)</td>
<td>15.08 (8.26)</td>
<td>13.83 (9.88)</td>
<td>10.00 (6.99)</td>
</tr>
<tr>
<td>Coping Self Efficacy</td>
<td>173.33 (66.43)</td>
<td>200.56 (81.54)</td>
<td>203.71 (69.89)</td>
<td>189.13 (69.58)</td>
<td>200.75 (65.68)</td>
<td>209.92 (59.33)</td>
</tr>
<tr>
<td>SDQ</td>
<td>15.44 (6.29)</td>
<td>14.25 (6.99)</td>
<td>13.31 (6.65)</td>
<td>16.31 (6.13)</td>
<td>14.92 (7.76)</td>
<td>12.42 (6.56)</td>
</tr>
<tr>
<td>Parent report</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coping Self Efficacy</td>
<td>113.04 (55.18)</td>
<td>141.50 (42.32)</td>
<td>160.86 (44.00)</td>
<td>124.00 (43.64)</td>
<td>130.45 (41.29)</td>
<td>147.00 (52.16)</td>
</tr>
<tr>
<td>SDQ</td>
<td>18.38 (6.03)</td>
<td>16.56 (5.30)</td>
<td>16.86 (6.79)</td>
<td>20.77 (8.95)</td>
<td>18.69 (5.86)</td>
<td>18.08 (6.79)</td>
</tr>
<tr>
<td>Teacher Report</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDQ</td>
<td>16.07 (5.22)</td>
<td>14.83 (5.39)</td>
<td>-</td>
<td>16.23 (7.08)</td>
<td>14.60 (7.37)</td>
<td>-</td>
</tr>
</tbody>
</table>

Note: CDI = Children’s Depression Inventory, SDQ = Strengths and Difficulties Questionnaire
Pre-Intervention Difference

Paired (two-tailed) t tests were conducted to examine whether there were any differences between groups at time one (pre-intervention). Statistical analysis revealed no significant differences between the RAP–A–ASD and control groups on outcome measures.

Analysis of Intervention Effects

Ten separate repeated measures analyses of variances (ANOVAs) were conducted with the between participants factors of group (RAP–A–ASD, control), and within participants factor of time (pre-intervention, post-intervention, and follow-up) for all outcome variables (see Table 4). Separate ANOVAs were chosen over multivariate analyses due to the risk of data loss resulting from a small sample. The hypothesis was that there would be a group by time interaction effect that would indicate a significant intervention effect over time. Given that a small sample size might not always detect a breach of sphericity (Field, 2005), a conservative alpha level of the Mauchly’s test of Sphericity was set at $p = 0.1$. When assumptions of sphericity were violated, degrees of freedom were adjusted using Greenhouse Geisser epsilon adjusted F.

There was a significant main effect for time on the adolescent-reported measures of depression (CDI) and strengths and difficulties (SDQ), but no group main effects for any other self-report measures. There was a significant main effect for time on the parent-reported measure of coping self-efficacy (CSES), but no group main effects for parents’ or teachers’ measures of strengths and difficulties (SDQ). As there was no group X time effect on the clinical measures, no follow-up clinical significance analyses were conducted. We note that both groups continued to have an equivalent number of participants falling into the subclinical and clinical ranges on the CDI at baseline, post-intervention and follow-up, but that consistent with the time effects, both groups showed a general improvement in the number of participants with clinically significant symptoms of depression (baseline: intervention $n = 8$, control $n = 8$; post-intervention: intervention $n = 6$, control $n = 6$; 6 month follow-up: intervention $n = 4$, control $n = 5$).

There was an interaction effect found for the intervention group by time on the parent-reported measure of coping self-efficacy ($F (1, 25) = 4.47, p = .023, \eta^2 = .157$), indicating that 15.7% of the variability in parent-reported coping self-efficacy was explained (or predicted) with knowledge of the participant’s allocation to the RAP–A–ASD or control group (independent variable). The intervention effect was in favour of the RAP–A–ASD group (shown in Figure 2). Post hoc pairwise comparisons showed that significant increases in parent-reported coping self-efficacy were found for the RAP–A–ASD group between Time 1 and Time 2 ($p < .001$), Time 2 and Time 3 ($p < .001$) and Time 1 and Time 3 ($p < .001$), while no significant differences were revealed for the control group.
Table 4

F Values and Significance Levels for ANOVAS

<table>
<thead>
<tr>
<th>Measure</th>
<th>Main effects Group</th>
<th>Main effects Time</th>
<th>Intervention effect (Group x Time)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>F</td>
<td>p</td>
<td>F</td>
</tr>
<tr>
<td>Self-report (participants)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CDI</td>
<td>0.00</td>
<td>.990</td>
<td>4.87</td>
</tr>
<tr>
<td>Coping Self Efficacy</td>
<td>0.18</td>
<td>.677</td>
<td>1.85</td>
</tr>
<tr>
<td>SDQ</td>
<td>0.00</td>
<td>.990</td>
<td>3.61</td>
</tr>
<tr>
<td>Parent report</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coping Self Efficacy</td>
<td>0.07</td>
<td>.789</td>
<td>12.42</td>
</tr>
<tr>
<td>SDQ</td>
<td>0.73</td>
<td>.402</td>
<td>1.21</td>
</tr>
<tr>
<td>Teacher report</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDQ</td>
<td>0.00</td>
<td>.985</td>
<td>4.12</td>
</tr>
</tbody>
</table>

Note: CDI = Children’s Depression Inventory, SDQ = Strengths and Difficulties Questionnaire
* Significance ≤ 0.05
Qualitative Results

Responses from interviews with a subset of participants \((n = 10)\), along with written responses to open-ended questions from all parents \((n = 16)\) and classroom or learning support teachers \((n = 12)\), revealed a number of themes and sub-themes relating to the effectiveness of RAP–A–ASD. These themes, sub-themes, the frequency with which respondents endorsed sub-themes, and illustrative quotes from the raw transcript data are presented by respondent (participant, parent and teacher) in Tables 5 to 7. While participants’ responses were brief, when converged with parent and teacher responses, the results showed good triangulation.

Participants. Four themes emerged from participants’ responses about their experience of the effectiveness of RAP–A–ASD (see Table 5). In the first theme, the usefulness of RAP, 50% indicated that they envisaged using skills learned in the program sometime in the future, while 40% identified situations when they had already used some of the skills that they had learned. The second theme, RAP to assist with coping and managing emotions, highlighted that, as a result of completing RAP–A–ASD, 80% of participants experienced their coping as improved and felt better able to manage their emotions and affect in a resourceful manner, and 50% could identify strategies for coping and for emotion regulation that they had learned. In the third theme, participants’ response to RAP, 80% of respondents liked the program, while one reason for the less favourable response from 20% of respondents was the necessity to talk about emotions which may have been uncomfortable for some young adolescents with ASD. The fourth theme, the value of the interactive components of the program, emerged when 60% of participants endorsed the interactive activities in RAP–A–ASD as standing out for them, and 10% of participants also mentioned that they liked the way in which interactive activities were used to help them to understand that there is more than one point of view in a situation.
Table 5

Participants’ \((n = 10)\) Experience of the Effectiveness of RAP–A–ASD: Identified Themes, Sub-themes and Respondents’ Frequency of Endorsing Sub-themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub theme</th>
<th>Respondent frequency (n) (%)</th>
<th>Illustrative quotes</th>
</tr>
</thead>
</table>
| Usefulness of RAP         | Contemplation of future application of acquired skills | 5 (50%)                      | “I like the stuff that could help me when I get older.”
                                                                                         |                                       | “I haven’t used it yet, but one day RAP might be a bit helpful in a certain situation.”
                                                                                         |                                       | “Nothing [has needed to be used] yet, thank goodness.”
                                                                                         |                                       | “When I went to some park and some kids were calling me and my friends names.”
                                                                                         |                                       | “Breathing calmly perhaps... when feeling stressed.”
                                                                                         |                                       | “Yeah because each week when I’m getting to come on a Friday afternoon (session time), it’s like, I’m coming down, I’m doing it, and over the weekend I’m thinking of it and when I’m coming back to school I’m confident, and yeah on the ball.”
|                           | Application of acquired skills in real-life situations | 4 (40%)                      | “Just say that you’re trying to ring up someone and they didn’t answer or text back, you don’t get angry, you would just try again, or just get over it or just drive to their home.”
                                                                                         |                                       | “When I wanted to go over to [friend’s] place but he wasn’t there....Oh he was with his mum and that what, see I, yeah, I got over it.”
                                                                                         |                                       | “When someone [is] arguing about a problem, like you want to watch TV for five hours and someone wants you to do it for five minutes... there needs to be a “change up... [you might] try a different time.”
                                                                                         |                                       | “Like yesterday, I was angry and I just wanted to punch him but I was holding my hands away and I was saying keep calm just let it go, don’t worry about it, walk in the other direction... like that. And then he went and I was up there and he was coming behind me and we didn’t talk to each other.”
                                                                                         |                                       | “So we are over each other now. We are back together...Yeah, see you’re angry with him one day, the next day you are ‘Oh, hi how are you?’”
| RAP to assist with coping and managing emotions | Improved coping and increased capacity to manage emotions and regulate affect by being flexible and remaining calm | 8 (80%)                      | “How to stay calm in situations.”
                                                                                         |                                       | [For] stopping arguments.
                                                                                         |                                       | “Breathing calmly.”
                                                                                         |                                       | “Finding an easier solution.”
                                                                                         |                                       | “[Remember that you] don’t get over-exaggerated with people that just say something ‘cause they don’t mean it.”
|                           | Learned helpful strategies for coping and for managing emotions in difficult situations | 5 (50%)                      | “How to stay calm in situations.”
                                                                                         |                                       | [For] stopping arguments.
                                                                                         |                                       | “Breathing calmly.”
                                                                                         |                                       | “Finding an easier solution.”
                                                                                         |                                       | “[Remember that you] don’t get over-exaggerated with people that just say something ‘cause they don’t mean it.”
<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub theme</th>
<th>Respondent frequency $n$ (%)</th>
<th>Illustrative quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Response to RAP</td>
<td>Affirmative appraisal of the program</td>
<td>8 (80%)</td>
<td>“Good.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Fun.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Awesome - everything... I liked ... the stuff that could help me when I get older.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Quite helpful.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Thumbs up, pretty good... [recommended that a friend] give it a go.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Yeah I liked it, because it’s helped me through the weeks. Like let’s say we did self-talk, that next week I was thinking back about it, because I had the book in my mind and I was saying ‘don’t do that’ or self-talking to myself.”</td>
</tr>
<tr>
<td></td>
<td>Neutral or less positive appraisal</td>
<td>2 (20%)</td>
<td>“Alright, [but it meant] missing out on a lot of school and ... sports days.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“A bit boring...because we talked about emotions and stuff.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“It hasn’t really helped me in any situations though.”</td>
</tr>
<tr>
<td>Value of interactive</td>
<td>Liked interactive activities</td>
<td>6 (60%)</td>
<td>“Some of the activity work, like the problem solving.”</td>
</tr>
<tr>
<td>components</td>
<td></td>
<td></td>
<td>“Working out what you had to do, the problem [solving]”</td>
</tr>
<tr>
<td></td>
<td>Liked perspective-taking activities</td>
<td>1 (10%)</td>
<td>“The illusion picture, we looked at the pictures with different types. It took some time, first I’d see one thing and then they’d [facilitator] say their point of view and I might see it.”</td>
</tr>
</tbody>
</table>
Parents. Overall, 75% of parents experienced their young adolescents’ behaviour as improved since commencing RAP–A–ASD, with 21% elaborating that their young adolescent had made comments or had behaved in a manner that was linked to skills developed in the program. Four themes were identified from parents’ responses about their observations of the effectiveness of RAP–A–ASD for their young adolescents (see Table 6). The first theme, enhanced psychological wellbeing, was endorsed by 63% of parents and indicated that the majority of parents experienced their young adolescent as happier, calmer, more confident and more capable of managing their emotions since completing the program. Furthermore, 31% of parents experienced their young adolescent as using skills and strategies learned in the program to enhance their psychological wellbeing. The second theme, openness and social engagement, revealed that 25% of parents experienced their young adolescent as being more willing to interact socially with others, and 25% experienced their young adolescent as better able to interact socially with others which they attributed to their young adolescent’s acquisition of improved communication skills and social capacity from the program. The third theme, parental response to RAP, indicated that half the parents (50%) experienced the program as beneficial for their young adolescent, while only one parent (6%) did not think that the program had been helpful for their child. The fourth theme, challenges experienced by young adolescents with ASD, emerged when parents provided insight into some of the emotional and social difficulties that young people with ASD may experience. Young adolescents’ struggles with anxiety were endorsed by 25% of parents; as were their difficulties with expression, interpretation and interaction in social contexts.
Table 6

Parents’ (n = 16) Observations of the Effectiveness of RAP–A–ASD for their Young Adolescents: Identified Themes, Sub-themes and Respondents’ Frequency of Endorsing Sub-themes

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub theme</th>
<th>Respondent frequency</th>
<th>Illustrative quotes</th>
</tr>
</thead>
</table>
| Enhanced psychological wellbeing | Emotion control and confidence     | 10 (63%)             | “There is more maturity and thinking before acting.”  
A little more patient ….. overall more generally pleasing behaviour.”  
“He has seemed happier and more relaxed.”  
“Shows more self-control in his responses in some situations.”  
“It relates to his more positive attitude when something he was trying didn’t go exactly as planned. I asked him about it and he mentioned learning things in the RAP program.”  
“He is becoming much more aware of his differences and is able to laugh at them which is just so nice because he can see that he needs to control them but is not overwhelmed by them.”  
“Since and during the September school holidays he was whistling happily as he did things around the house. He volunteered to do jobs such as empty the dishwasher, he talked more openly about his feelings than he had done in the past.”  
“He is a little more settled and happier and a little more confident.”  
“[He] is a lot more confident to participate in a conversation.”  
“We feel it helped [her] with confidence about changing schools.”  
“He has been getting very overwhelmed but does talk encouragingly when we have a problem together… he does come up with a positive perspective.”  
“After some sessions and on other occasions he appears to be trying new strategies with communicating his feelings and tries to influence direction of settling disputes.”  
“Could see a picture in a picture, meaning the picture could be seen in different ways. This is something she could not interpret before doing RAP.”  
“He is less anxious and makes good decisions in situations that occur in the playground.”  
“[He] does have trouble with dealing with his own issues [but] he is the one who encourages me and lifts me up when I’m feeling down!” |
| Strategies adopted     |                                   | 5 (31%)              |  

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub theme</th>
<th>n (%)</th>
<th>Illustrative quotes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Openness and social engagement</td>
<td>Increased willingness to interact with others</td>
<td>4 (25%)</td>
<td>“[He] is a lot more confident to participate in a conversation.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“He hasn’t complained of any problems between school students, but has talked openly about teachers.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“He has been getting very overwhelmed but does talk encouragingly when we have a problem together.”</td>
</tr>
<tr>
<td></td>
<td>Increased ability to interact with others</td>
<td>4 (25%)</td>
<td>“[He] gives more input and (is) pro-active rather than being passive and avoidant.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“He seems to be interacting with peers a little more easily.”</td>
</tr>
<tr>
<td>Parental response to RAP</td>
<td>Positive response to the program</td>
<td>8 (50%)</td>
<td>“He has certainly enjoyed spending time with you.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“He really enjoyed working with the psychologist and said he would miss her.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Your work with [her] was greatly appreciated and was of great assistance for her.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Thank you for your help. I feel [he] has benefitted a great deal from this program. I hope my answers reflect this.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I thank you for all your support in this area.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“Thank you for having [him] to be part of your program.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“We would be delighted if he would be considered for any future courses or studies.”</td>
</tr>
<tr>
<td></td>
<td>Negative response to the program</td>
<td>1 (6%)</td>
<td>“He stated that he didn’t like the training ... [it] is not helpful to him.”</td>
</tr>
<tr>
<td>Challenges experienced by young adolescents with ASD</td>
<td>Anxiety</td>
<td>4 (25%)</td>
<td>“He does internalise issues/worries and usually does not discuss these. He has been getting very overwhelmed... and does have trouble with dealing with his own issues.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“I have noticed that [he] functions far better cognitively and emotionally when he is not pressured or stressed.”</td>
</tr>
<tr>
<td></td>
<td>Communication difficulties</td>
<td>4 (25%)</td>
<td>“[He] is very tricky to assess in these situations because he may act out something he has been taught months later but if I asked him what he learned in those sessions he wouldn’t be able to verbalise it.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“We are working on that interpretation with other things, as children with Asperger’s need most things interpreted. I guide her and answer millions of questions.”</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>“[She] is more confident to participate in a conversation, but all of us have to accept that sometimes it is irrelevant to what is being spoken about.”</td>
</tr>
</tbody>
</table>
**Teachers.** Of the 12 teachers who provided responses to the open ended questions, 11 reported that they had noticed positive changes in the students’ behaviour since commencing the program. Two themes were identified from teachers’ responses about their observations of the effectiveness of RAP–A–ASD for their students (see Table 7). The first theme, improved coping, emotional control and maturity, emerged when 67% of teachers reported that they had observed enduring changes in the student’s capacity to manage emotions and regulate affect, while one teacher (8%) reported that such changes had been observed but that they had been short-lived. The second theme, enhanced social engagement, emerged when 58% of teachers reflected that students were better able to engage in social situations, and when one teacher (8%) reported experiencing their student as more willing to engage socially.
Table 7

*Teachers’ (n = 12) Observations of the Effectiveness of RAP–A–ASD for their Young Adolescent Students: Identified Themes, Sub-themes and Respondents’ Frequency of Endorsing Sub-themes*

<table>
<thead>
<tr>
<th>Theme</th>
<th>Sub theme</th>
<th>Respondent frequency n (%)</th>
<th>Illustrative quotes</th>
</tr>
</thead>
</table>
| Improved coping, emotional control and maturity | Enduring effects                              | 8 (67%)                    | “Is somewhat calmer about various situations.”
|                                            |                                               |                            | “Is calmer and less stressed and less anxious.”
|                                            |                                               |                            | “Seems more at ease in the playground.”
|                                            |                                               |                            | “[He] is less anxious. It takes bigger issues/problems to cause stress etc. He seems more in control, mature (and is) coping better.”
|                                            |                                               |                            | “While [he] was seeing [facilitator] he was much calmer and more settled. He was not as bossy and was easier to have in specialist lessons. The PE teacher commented how much easier he was.”
|                                            |                                               |                            | “[He] seems to be able to handle situations in the classroom and playground more calmly and with understanding as to why an event has happened.”
|                                            |                                               |                            | “I think while he was seeing [facilitator] that he was more aware of his behaviour. He enjoyed going on a Friday - he felt important.”
|                                            |                                               |                            | “[She] is generally happier and has taken a more mature approach with her school work.”
|                                            |                                               |                            | “[During the program] he was not as bossy.”
|                                            |                                               | 1 (8%)                     | “He has reverted back to bossing everybody including me. He is easily distracted. Back to calling out and barging into the room first.”
|                                            | Short term effects                            | 1 (8%)                     | “He is more measured in his response to other people.”
|                                            |                                               |                            | “He appeared to be more confident when interacting with other children.”
|                                            |                                               |                            | “He seems to be calm and has fostered positive relationships with his friends over the past two terms.”
|                                            |                                               |                            | “As the year progressed the student continued to become more open and talk out problems and issues involving other students.”
|                                            | Improved ability to engage appropriately and socially | 7 (58%)                    | “He doesn’t speak or share his feelings much but he always appeared to be happy with going along to the sessions and never made a fuss.”                                                                                                                                             |
|                                            | Willingness to engage socially                | 1 (8%)                     |                                                                                           |
Discussion

This mixed methods study implemented and evaluated a school-based resilience program that aimed to prevent adolescent depression (RAP–A–ASD) with a small sample of young adolescents with ASD (the participants). RAP–A–ASD was implemented as a RCT with strict adherence to the consort guidelines (Moher et al., 2010). The first hypothesis, that RAP–A–ASD would be implemented with fidelity by the facilitators, and that it would be accepted by the participants, was supported. The second hypothesis was only partly supported: there were no intervention effects on depression and emotional and behavioural functionality but there was a significant intervention effect in favour of RAP–A–ASD on parent reports of adolescent coping efficacy. Qualitative outcomes (from participants, parents and teachers) further supported the findings of improvements in coping self-efficacy, and also provided strong themes of improved self-confidence, social skills, and affect regulation.

It was encouraging to discover that a school-based resilience intervention could be implemented with good validity and high acceptability. To our knowledge, this is the first manualised mental health promotion initiative with young adolescents with ASD. The adaptation of the program used for neurotypical adolescents from a group to an individual administration, and the greater use of computerised sessions, was deemed to be satisfactory. Further, the strength-focused narrative provides the prospect of mental health promotion that might avoid stigma or labelling (as possibly reflected in the high recruitment, engagement, and retention). Hence, it appears that such interventions are feasible and sustainable.

Contrary to expectations, the quantitative results did not support the hypothesis of a significant improvement in quantitative ratings of depressive symptoms (as reported by participants on the CDI), and adolescents’ emotional and behavioural functionality (strengths and difficulties as reported by participants, parents and teachers on the SDQ). Both the RAP–A–ASD and control groups became less depressed and experienced an improvement in emotional and behavioural functionality over time. A possible explanation for the null finding is that, according to the researchers’ ethics obligations, participants who scored in the clinical range on the measure of childhood depression (CDI) were brought to the attention of parents and/or guidance officers so that an appropriate depression intervention could be implemented. Consistent with research that suggests that young adolescents with ASD are at risk of experiencing depressive symptomology (Kelly, Garnett, Attwood, & Peterson, 2008; Kim, Szatmari, Bryson, Streiner, & Wilson, 2000; White & Roberson-Nay, 2009), these participants were distributed across both conditions. Due to the small sample size, they were included in the data analysis, thus depression treatment effects across groups may have diluted the program effect in the RAP–A–ASD group. In addition, the study was underpowered due to the small sample size, with 29 participants recruited rather than the estimated 52 required to detect a medium effect (Faul et al., 2009). Only future studies with a larger sample size and stronger power would be able to explore this further. It could however also be that the intervention did not have a wide enough focus to impact on sufficient risk and protective factors for depression. Recent research has indicated the importance of the interpersonal context of depression (Joiner & Coyne, 1999; Sheeber, Davis, Leve, Hops, & Tildesley, 2007; Young et al., 2010), with a particular stress on school-belonging or the family context (Shochet et al., 2006; Shochet, Homel, Cockshaw, & Montgomery, 2008). Interventions at the individual level may be insufficient, and a more multilayered program that also intervenes at the school and parent level might be required to significantly reduce depressive symptoms. The rationale, along with the theoretical, empirical and methodological framework of such a multilayered intervention that targets the school, parents, and adolescents on the spectrum has recently been described (see Shochet et al., 2016).
In-spite of the lack of intervention effects on depressive symptoms, the intervention effect on parent reports of adolescent coping self-efficacy was encouraging. Parents evaluated their young adolescents’ coping self-efficacy as significantly improved following their involvement in the program and at 6 month follow-up compared to the control group. The participants did not report a significant change in their coping self-efficacy. However, the triangulated qualitative results from participants, parents and teachers provided convergent support for the significant quantitative finding of parental evaluation of their young adolescents’ increased coping self-efficacy. Themes uncovered in the qualitative analysis endorsed participants’ improved coping and increased self-confidence. Participants’ improved coping through an increased capacity to recruit behavioural and cognitive strategies acquired from RAP–A–ASD to minimise their response to stressful situations, and to use problem solving to reduce or resolve conflict, was reflected in the participant sub-theme of learning helpful strategies for increasing coping in difficult situations (e.g., “breathing calmly” and “don’t get over-exaggerated with people that just say something ‘cause they don’t mean it”). Similarly, parent and teacher qualitative reports converged to suggest enhanced coping resources as a consequence of adopting strategies learned from RAP–A–ASD (e.g., “[he] does talk encouragingly when we have a problem together... he does come up with a positive perspective” and “[he] seems to be able to handle situations in the classroom and playground more calmly and with understanding as to why an event has happened”). Given the difficulties with coping strongly exhibited by this population (Dalton et al., 2005; Jahromi et al., 2012; Konstantareas & Stewart, 2006), it is encouraging that there may be a mental health promotion framework to support greater coping which is a known protective factor for depression.

The discord arising from parents evaluating their young adolescents’ coping self-efficacy as significantly improved, while their adolescents did not report a significant change, is consistent with mental health treatment research with neurotypical adolescents (De Los Reyes & Kazdin, 2005). Such discrepancies have also been found in research with adolescents with ASD, and may be magnified by the expression of ASD symptoms which can limit insight into psychiatric symptoms, reduce motivation to engage in the assessment process, augment concrete interpretation of questions, and foster under-reporting (e.g., Mazefsky, Kao, & Oswald, 2011; Storch et al., 2012).

Qualitative reports also showed that parents and teachers converged in their views of improvement in adolescents’ social skills through a shift in participants’ potential for openness and social engagement, and enhanced communication skills (e.g., “[he] is a lot more confident in conversation” and “he appeared to be more confident when interacting with other children”). These results are very promising for the potential of RAP–A–ASD as a depression prevention program given the difficulties that young adolescents with ASD experience with relationships and social skills (Downs & Smith, 2004; White & Roberson-Nay, 2009). The IPT component of RAP–A–ASD is likely to be closely associated with these reported improvements, and suggests that RAP–A–ASD may produce benefits greater than a program consisting purely of CBT, which is more common for existing prevention and early intervention programs (Kennard et al., 2009; Stice, Rhode, Gau, & Wade, 2010; Stice, Rohde, Seeley, & Gau, 2010).

Importantly, participant, parent and teacher qualitative feedback highlighted the perception that engagement in the RAP–A–ASD program also improved young adolescents’ affect and emotion regulation. Affect regulation is a process triggered by self-regulation that monitors and moderates emotions in order to enhance mental health and wellbeing (Eisenberg, Fabes, Guthrie, & Reiser, 2000; Fledderus, Bohlmeijer, Smit, & Westerhof, 2010), and results in a greater ability to navigate developmental challenges (e.g., Buckley & Saarni, 2009; McLaughlin, Hatzenbuehler, Mennin, & Nolen-Hoeksema, 2011; Silk et al., 2007; Yap, Allen, & Sheeber, 2007). Participants’ increased capacity to keep calm, manage anger and respond maturely in challenging situations was reflected
in the participant theme of using RAP–A–ASD to assist with managing emotions (e.g., “I was angry and I just wanted to punch him but I was holding my hands away and I was saying keep calm just let it go, don’t worry about it, walk in the other direction”). Similarly, parent and teacher qualitative reports converged to suggest enhanced affect and emotion regulation resources as a consequence of improved emotional control, confidence and maturity (e.g., “there is more maturity and thinking before acting” and “is calmer and less stressed and less anxious”). It is important to explore further these preliminary qualitative findings. Young adolescents with ASD typically struggle with affect regulation, most likely because of their deficits in theory of mind (Samson, Huber, & Gross, 2012), executive functions (Hofmann, Schmeichel, & Baddeley, 2012; Jahromi, Bryce & Swanson, 2013), and cognitive linguistic processes (e.g., Losh & Capps, 2006).

That RAP–A–ASD may be effective for improving coping self-efficacy, social engagement, and affect and emotion regulation in young adolescents with ASD suggests that the program may increase the capacity for resilience of young adolescents. As can be seen from the verbatim extracts of adolescents who participated in RAP–A–ASD, adolescents regularly described an improved ability to cope, to keep calm, to control their emotions, and to avoid interpersonal conflict in the face of stress or adversity. Thus, the qualitative findings appear to suggest improvement in some aspects of resilience as defined as a process (Herrman et al., 2011; Luthar et al., 2000).

With regard to limitations, we have already alluded to limitations of the sample size and possible insufficient dosage or breadth of focus of the intervention. It is also important to mention the limitations of the use of self-report measures of mental health (CDI and SDQ). Overall, participants in this study had elevated depressive symptoms compared to CDI normative data (Kovacs, 2003) at all three time points, their scores on the SDQ were elevated compared to the findings with typical community samples such as reported by Shochet and colleagues (2006), and the alpha level coefficients and inter-correlations in this study were similar to those found with neurotypical adolescents (Shochet et al., 2006). Notwithstanding, participants’ depressive symptoms and emotional and behavioural functionality were assessed using self-report, and were not augmented with a clinical interview. The use of multi-informants (i.e., participants, parents, and teachers) partly addresses the weakness of self-report data, however parents and teachers did not complete all the measures completed by the participants (see Table 3 for details) to avoid adding to parental and teacher stress.

A limitation concerning potential for bias in the qualitative findings also needs to be acknowledged. The subjective nature of the qualitative analysis and the principal researcher’s personal investment in the project may have limited findings but to counteract potential bias, contrasting responses and alternative viewpoints were highlighted in the data analysis, and an external rater reviewed the data and validated findings. Further, although teachers and parents did not have explicit information about the behaviours being targeted in the intervention, they were aware that participants were receiving RAP–A–ASD as a resilience intervention designed to promote mental health which may have created a potential bias in teacher and parent qualitative reports. However, there was convergence of parents’ qualitative reports of improved adolescent coping behaviour and the quantitative intervention effects found in parent reports of the coping behaviour of their young adolescents as measured by the CSES. Aside from these limitations, the methodological strengths of this study include the use of the RCT (adhering to the Consort Guidelines) and the multimethod and multi-informant approach.

Regarding future research, the encouraging triangulated quantitative and qualitative findings from this pilot RCT justify a larger RCT of RAP–A–ASD to examine the effectiveness of the program. Conducting independent clinical assessments of mental health with participants at each time point...
would also strengthen self-reports of depression, emotional and behavioural functionality, and other symptomatology. In line with qualitative teacher feedback that program effects had been short-lived in some instances, dosage effects would be worth exploring, either through the introduction of booster sessions (face-to-face or online or via SMS), or with a more multilayered program that intervenes at the adolescent, school and parent level as proposed by Shochet and colleagues (2016). Given the identified risks for children with ASD to develop depression in adolescence and early adulthood (Hannon & Taylor, 2013; Mayes et al., 2011), conducting additional, longer term follow-up with participants will help to inform the duration of program effects, and may assist in reducing or preventing depressive symptomatology. As participants, parents and teachers experienced RAP–A–ASD as improving young adolescents’ affect and emotion regulation, the incorporation of an emotion regulation scale would facilitate further exploration of this construct.

In summary, this pilot RCT implemented and evaluated a program designed to prevent depression (RAP–A–ASD) with a small sample of young adolescents with ASD, and produced some mixed but encouraging findings. The strength-focused program was implemented with good validity and acceptability. In spite of the lack of an intervention effect for depressive symptoms and emotional and behavioural functionality, the convergent quantitative and qualitative reports of improved coping self-efficacy are promising. Parents evaluated their young adolescents’ coping self-efficacy as significantly improved following their involvement in the program, and triangulated qualitative data strongly supported this finding. Qualitative explorations also indicated potential improvements in affect and emotion regulation, and enhanced social communication and engagement skills. Thus, the RAP–A–ASD program shows some initial evidence for promoting resilience through enhancing some protective factors for adolescents with ASD. However, the lack of a significant intervention effect for depression and emotional and behavioural functionality indicates that more multilayered interventions might be needed.

As depression and mental health problems have a strong influence on developmental outcomes for adolescents with ASD, it is important to continue to explore the optimal focus and dosage of prevention and early interventions to promote more positive mental health with adolescents with ASD. School-based strength-focused resilience interventions appear encouraging but may need to involve the promotion of protective factors at the individual, family and school levels with appropriately timed boosters, and be augmented by timely tertiary care support.
References


