The efficacy of Aggression Replacement Training on interpersonal deficits and aggressive subtypes in New Zealand high school students.

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Abstract

Aggression Replacement Training (ART) is a three component intervention that targets the emotional, cognitive, and behavioural deficits associated with antisocial behaviour. Despite the growing number of outcome studies demonstrating the efficacy of ART in reducing antisocial behaviours, gaps in our understanding of how ART operates to create positive change remain. The current research aimed to reduce some of these gaps by trialling ART with three groups of high school students in New Zealand schools. Improvements in interpersonal competence that the intervention is claimed to target, empathy, and the proactive and reactive tendencies of aggression were investigated. This research also aimed to show the added value of the Moral Reasoning Training (MRT) component, over and above that of the Anger Control Training (ACT) and Social Skills Training (SST) components, by delivering the MRT component last and assessing change in variables over the course of the intervention.

Overall the current research found multiple improvements from pre-test to follow-up, across a range of measures, consistent with theoretical expectations. Findings particularly suggest that ART may be a useful intervention for reducing reactive aggressive tendencies. However, little evidence was seen to suggest the ART is effective for reducing proactive aggression. This research also found changes across the course of the intervention that suggest the MRT component is a valuable addition to the overall intervention: particularly in reducing the cognitive distortions associated with overt antisocial behaviour, as well as increasing global stage moral reasoning. ART seems to be an acceptable intervention for students that warrants further investigation for use with students in New Zealand.

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Introduction

The impact of adolescent aggression and conduct problems on individuals, families, and communities is substantial. Specific areas of interpersonal deficit differentiate aggressive children and adolescents from their non-aggressive peers. These include limited social skills, less well developed social and emotional competence, and lower moral maturity. Despite the large number of intervention programmes developed to target these deficits, outcome studies only demonstrate small to moderate improvements and the majority of these have not been researched with adolescent samples. Those that show the most efficacy are often intensive, individually focused interventions that therefore require high resources and are expensive to implement. As a result, they are aimed at only the most serious cases and cannot be readily implemented by single services such as schools. School is often the first place that antisocial behaviours are identified; where they impact academic achievement as well as disrupting other students and burdening staff. In order to target and reduce antisocial behaviours, where and when they are most problematic, schools need to be provided with research based intervention methods that are cost-effective and practical to implement. Therefore, interventions for use with New Zealand adolescents need to be researched. One such intervention that looks promising as a school-based intervention is Aggression Replacement Therapy (ART), which is the subject of focus for this research.

ART is a three-component intervention that targets behavioural, emotional, and cognitive interpersonal deficits associated with antisocial and externalising behaviours. Despite the promising status of ART as an intervention for antisocial adolescents, and the largely positive outcome-research base supporting its efficacy, there are still many questions left to answer about how it operates to create change and who it works best for.

Outcome research on ART is largely based on broad behavioural outcomes, such as recidivism and externalising behaviours, rather than assessing change in the interpersonal deficits ART is theorised

to ameliorate. While examining external behaviours makes sense in terms of assessing whether or not ART is a useful intervention for reducing antisocial behaviours, further research is required to establish the conceptual relevance of the components to the specific deficits they target and the overall intervention. Such research is required to provide a better understanding of the active elements of this intervention and how ART operates to create positive change. This is particularly true for the moral reasoning component of ART, which was the last to be added to the intervention and which has the least research to justify its addition to the ART programme as a whole.

This research also looks to investigate how ART impacts levels of proactive and reactive aggression. Several authors have criticised the use of aggression as a homogenous construct while ignoring the underlying subtypes that make up its various forms and functions. Each component of ART targets a different deficit associated with aggressive behaviour; however, when applied to the subtypes of proactive and reactive aggression, components would seem to largely target only the deficits associated with reactive aggression. By ignoring the subtypes of antisocial tendencies when assessing outcomes, interventions will only be able to go so far. To produce more potent or targeted interventions, research must begin to unpack and investigate what works best and for whom.

The current research aims to explore some of these knowledge gaps by investigating the change in interpersonal variables that are associated with both antisocial and prosocial behaviours following intervention with ART, as well as change in tendencies of proactive and reactive aggression.

This thesis follows a typical social sciences format, with the introductory sections followed by the method, results, and discussion sections. There are five introductory sections as follows:

- Section one provides background information to place this research project in context, including information regarding the current state of conduct and behavioural problems in New Zealand; a brief review of interpersonal deficits associated with conduct and behaviour

problems in children and adolescents; and a brief review of recommended interventions to target behavioural difficulties of adolescents within educational settings.

- Section two describes the intervention that is the focus of this research, Aggression Replacement Training (ART), and reviews relevant outcome research on ART with a particular focus on outcome trials run with adolescents and within school settings. Knowledge gaps in outcome research on ART are highlighted.
- Section three provides a closer examination of the moral reasoning component of ART, including how this component is theorised to create change and the constructs for which change is expected to occur. Knowledge gaps in the research and understanding of the moral reasoning component of ART are highlighted.
- Section four describes the subtypes of proactive and reactive aggression, and explores how ART might remedy the deficits associated with each. Knowledge gaps in the research regarding ART, and the specific subtypes, are highlighted.
- Section five provides a brief summary of the current research project and its aims, and outlines the research questions and associated hypotheses for each.

Aggressive/Antisocial Behaviour in Adolescents

Conduct problems in childhood and adolescence can be seen in behaviours that are aggressive, dishonest, delinquent, defiant, disruptive, and in general, anti-social. These can include law-breaking behaviours, schoolyard bullying, and classroom disruption. Conduct problems, including aggression, are commonly referred to under the term *antisocial behaviours* (Church, 2003). These can range from minor problematic behaviours to severe behaviours that meet the criteria for Oppositional Defiant Disorder (ODD) and Conduct Disorders (CD; American Psychiatric Association, 2013). Referrals for behaviour problems are approximately one-third to a half of all referrals to child and adolescent mental health services (Kazdin, 1995).

Antisocial behaviour comes at a great cost to society, as well as to the individuals who engage in antisocial behaviour, their families, and victims. The long-term outcome for antisocial children and adolescents includes severe and continuing adjustment difficulties over their lifespan. Children and adolescents with conduct problems tend to experience greater interpersonal problems, academic failure, and delinquency at school age (Church, 2003). These difficulties may also carry over into adulthood - including poor interpersonal relationships, unemployment, psychiatric disorders, substance abuse, and criminal offending (Church, 2003; Farrington, 1991).

Three surveys of all the schools in the South Island, of New Zealand, estimated that the number of antisocial children within these schools was between 4.5% and 5%, (Church, 2003). In 2010 in New Zealand over 10,000 Year 1-10 students were dealt with by specialist behaviour teachers for aggressive and antisocial behaviours (Ministry of Education, 2012). At the extreme end of this spectrum, children and adolescents are engaging in unlawful behaviours such as theft, vandalism and violence, and aggression. Over the last decade this equated to over 46,000 young people between the ages of ten to 16 being charged in court (Statistics New Zealand, 2014).

For some individuals, aggressive and antisocial behaviours emerge in preschool and persist through to adolescence and beyond. These individuals are known as having early onset or life-course persistent behaviour problems (Moffitt, 1993). For others antisocial behaviour appears to be limited to adolescence (Moffitt, 1993). The combination of these groups, however, means that adolescence is recognised as the period with the highest prevalence of antisocial behaviour (Broidy et al, 2003; Joliffe & Farrington, 2007; Loeber, Green & Lahey, 2003).

Adolescence is a time of intense change as individuals undergo dramatic maturation across multiple domains (i.e., physical, cognitive, sexual, emotional, identity formation) as they transition to adulthood (Berk, 2009). Increased freedom and responsibility in adolescence also mean that these changes happen with less adult supervision and structure than occurred in childhood (Steinberg, 2005). Adolescents face multiple challenges during this period that influence who they will become and, as a result, adolescence is a period of heightened vulnerability (Steinberg, 2005) and a key period for intervention.

The sequelae of early antisocial behaviour not only contribute to disruptive and aggressive behaviour in classrooms and playgrounds but also ongoing burdens on communities, as well as health, justice, and economic systems. Given this knowledge there is a real need for the development of effective interventions to remediate antisocial behaviours in adolescence. In order for effective interventions to be developed, implemented, and evaluated there needs to be a clear understanding as to what differentiates antisocial individuals from their pro-social peers, and how they develop and maintain anti-social behaviours.

Interpersonal deficits & Aggressive/Antisocial Behaviour

One area of difference between antisocial or disruptive youth and their pro-social peers is within the domain of interpersonal functioning (e.g., social competence, emotion regulation and moral

maturity). Every day, adolescents are required to navigate ever more complex social and interpersonal situations - situations that require an adequate repertoire of social and problem solving skills (Spence, 2003). A growing body of research shows that the inadequate acquisition or performance of social skills, and social understanding, is linked with delinquency and antisocial behaviours (Evans & Stefanou, 2009; Hollin, Browne & Palmer, 2002; Keltikangas-Jarvinen & Heinonen, 2003; Mathur & Rutherford, 1996; Spence, 2003).

Social skills are socially acceptable behaviours that allow a person to interact with others in ways that result in positive outcomes (Cartledge and Milburn, 1995, as cited in Chen, 2006). These skills are learned and developed over time by observation, imitation, social interaction, and rehearsal. Adequate enactment of social skills requires social competence; that is both the knowledge of and ability to practice these skills, as well as the understanding of when and where to use them. Social competence relates to how social information is attended to and interpreted, the impact of one's behaviour on the social environment, and the needs of other people within it (Langeveld, Gundersen & Svartdal, 2012). Underlying social competence are cognitive and emotional skills such as impulse control, emotion management, the ability to understand the perspective of others, and social problem solving (Hollin et al, 2002).

Within the interpersonal domain aggressive and antisocial youth differ from their non-aggressive counterparts in several social, emotional, and cognitive domains.

In the social domain, antisocial or aggressive individuals are found to have less well developed social competence, social problem solving, and lack a wide repertoire of practical social skills. Social behaviours significantly predict classroom achievement (Wentzel, 1993). Necessary behaviours include listening to others, following classroom rules, complying with teacher instructions, asking for help, cooperating with peers, and controlling temper in conflict situations (Gresham, Sugai & Horner, 2001). Failure to do so results in multiple negative outcomes including school failure, peer rejection

(Gresham, Van & Cook, 2006), and mood and anxiety disorders (Mathur & Rutherford, 1996) that can lead to acting-out behaviours, hostility, and association with anti-social peer groups (Keltikangas-Jarvinen & Heinonen, 2003).

Antisocial youth have less effective interpersonal skills and communication behaviours than their non-aggressive peers (Connor, 2002). As a result, they lack appropriate ways of interacting with peers and adults (Keltikangas-Jarvinen & Heinonen, 2003). They are less able to ask questions, whether these questions are to elicit information or show an interest in others, are more likely to be inattentive and to interrupt and criticise their peers, are more likely to believe they have a higher rate of social acceptance than they actually do, and are more likely to believe that aggression is a valid way of solving social problems than their non-aggressive peers (Bloomquist & Schnell, 2002).

Deficits are also found within the cognitive domain. Strong evidence has been found, from both practice and research, for a link between cognition and antisocial behaviour (Sestir and Bartholow, 2007; Hollin et al, 2002). For example, Crick and Dodge (1994) examined the social information processing of aggressive and socially maladjusted children and found that aggressive children and young people process social information differently than their non-aggressive peers. These deficits can be seen at different stages of Dodge & Crick's reformulated, six-stage Social-Information Processing model (SIP; Figure 1).The SIP model describes how individuals interpret and process social interactions through a filter of cognition and affect that is influenced by underlying schemas (short cuts that help social information to be sorted through more rapidly), which are shaped by underlying temperament and previous experiences (Crick & Dodge, 1994). Aggressive children show a tendency to attend to the aggressive cues of others, but fail to see pro-social cues; are more likely to interpret others' ambiguous behaviours as hostile or as having hostile intent (i.e., have a hostile attribution bias); are more like to select aggressive or confrontational goals to deal with such behaviours; show limited social problem-solving and are more likely to use aggressive solutions to

solve interpersonal problems; and expect more positive consequences from the use of aggressive behaviour than non-aggressive peers.

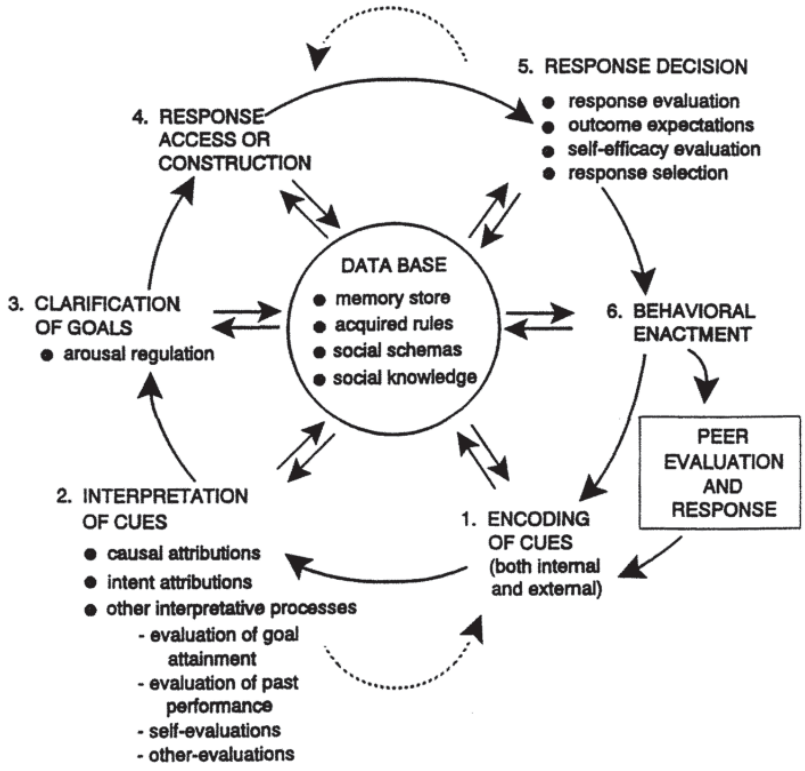

Figure 1: A social-information processing model of children's social adjustment. From Crick & Dodge (1994).

Inappropriate social performance may also result from distortions in the way social information is processed and interpreted (Spence, 2003). How social information is interpreted (step two of the SIP model) is an important determinant of how the situation will be navigated. There is a growing body of research on the rationalising beliefs or attitudes that antisocial individuals use to interpret their own, or others', social behaviour (Liau, Barriga & Gibbs, 1998). A common finding is the association between antisocial behaviour and self-serving cognitive distortions (Gibbs, 2010; Barriga et al, 2001; Lardén, Melin, Holst & Långström, 2006; Palmer, 2003a,b; Van der Velden et al, 2010; Wallinius, Johansson, Larden & Dernevik, 2011). Antisocial youth have been found to use the ego-centric or self-serving thinking common of younger children; putting their needs and wants above others. They also show a tendency to externalise responsibility, minimise the impact of their own

actions, and assume the worst when interpreting social situations (equivalent to a hostile attribution bias). SIP errors and cognitive deficits vary as a function of severity, with the most aggressive children exhibiting a greater deficit in these processes than moderate to mildly aggressive children who - in turn - have greater deficits than their non-aggressive peers (Bloomquist & Schnell, 2002).

Along with deficits in the social and cognitive domains, deficits in emotional regulation and emotional understanding are also found to be associated with antisocial behaviours. Children with aggression and conduct problems show less emotional understanding of their feelings, are more prone to emotional over-arousal and lack the ability to regulate their emotions (Bloomquist & Schnell, 2002). Emotions act to motivate and regulate in social situations (Lemerise & Arsenio, 2000). Poor emotion regulation puts children, particularly those with high emotionality, at risk for behaviour problems; children with high emotionality but good emotion regulation, on the other hand, do not have the same risk (Lemerise & Arsenio, 2000). Emotion management deficits further impact the social-information processing of aggressive children as both emotional and cognitive processes inform how social information is processed (Steinberg, 2005). As a result, such individuals are likely to become angry more easily and are less able to de-escalate their anger, which may result in aggression.

As well as a lack of insight into their own feelings, antisocial and aggressive adolescents also show a less developed understanding of the perspective and feelings of others (Bloomquist & Schnell, 2002). Aggressive individuals have less empathy for others in comparison to non-aggressive and pro-social peers. Higher levels of empathy are protective against antisocial behaviours and increase the incidence of prosocial and altruistic behaviours (Jolliffe & Farrington, 2011). Similarly, aggressive individuals may differ from their prosocial peers on moral reasoning maturity. Significant, positive associations have been found between moral reasoning and prosocial behaviour (Eisenberg, Cumberland, Guthrie, Murphy & Shepard, 2005). Offending and other antisocial behaviours are

associated with moral delay, or moral reasoning at levels below the developmental norms (Palmer, 2003a). This makes sense in light of the above research on empathy as both the ability to put oneself in the place of another and concern for their rights and feelings are required for mature moral judgement or competence, and thus the motivation to behave in a moral way (Gibbs, 2010; Myyrya, Juujärvi, & Pesso, 2010; Pizzaro, 2000).

Interpersonal deficits are not isolated but instead overlap to form a picture of an individual who may find it difficult to understand or misinterprets the actions, feelings, and intentions of others; find it difficult to understand their own emotional responses to situations; and may lack the necessary social skills to required to cope with interpersonal situations in an appropriate and prosocial manner. The result is a tendency to hold negative beliefs about the world and interpret ambiguous social cues as threatening and hostile. This can lead to the use of aggression as a form of defence (pre-emptively or in retaliation). As a result, others may be more likely to be rejecting or act punitively toward such individuals, confirming their negative beliefs about the world and hostility of others. This effectively traps individuals into a self-perpetuating pattern of aggression and antisocial behaviours.

Given the large body of research on the association between antisocial behaviours, social cognition and interpersonal skills deficits it is not surprising that there are many interventions that have been developed to target these deficits, and the self-perpetuating negative behaviour cycles they can engender, with some research claiming an improvement of social skills deficits is protective against later development of antisocial behaviour (Harrell, Mercer & DeRosier, 2009). Examples of such interventions include: social skills training, anger management courses, empathy training, moral reasoning training, and social problem solving training, to name a few. Outcome findings and the current use of such interventions with adolescents in New Zealand high school students are briefly reviewed below.

Interpersonal deficit interventions for Aggressive/Antisocial Behaviour

A wide variety of interventions come under the umbrella of social skills interventions. These include cognitive-behavioural, affective, and problem solving interventions (Sukhodolsky, Kassinove & Gorman, 2004). The use of different outcome measures, procedures, the variation in intervention intensity, age of samples, and severity of deficits (from minor to severe) mean it is difficult to get an accurate picture from the literature as to how effective such interventions are and for whom (Maag, 2006). Outcome results show large variation (Evans & Stefanou, 2009). The majority of reviews and meta-analyses on the efficacy of targeting interpersonal deficits for aggressive and antisocial behaviour report small (McGuire, 2008; Litschge, Vaughn & McCrea, 2010) to moderate effect sizes (Bennett & Gibbons, 2008; Gansle, 2005; Gresham, Cook, Crews & Kern, 2004; Litschge et al, 2010; Sukhodolsky et al, 2004; Wilson & Lipsey, 2007). Larger effect sizes are more often found for interventions that include a cognitive-behavioural component, rather than those that are behavioural or skill-deficit based, or those without a cognitive component (Matjasko et al, 2012; Sukhodolsky et al, 2004). Furthermore, many studies are done on children or young adolescents (10-12 years) making it less clear if such findings are applicable to adolescent populations (Ministry of Social Development, 2013).

The interventions regarded as the most effective for aggressive and antisocial youth are multimodal (containing more than one distinct intervention modality; i.e., parent training, CBT, and contingency management), target multiple deficits, and involve interventions for whole families (i.e., parent training) as well as individuals (Matjasko et al, 2012; Bennett & Gibbons, 2008; Church, 2003). Multisystemic Therapy (MsT; Henggeler, 1999), Multidimensional Treatment Foster Care (Fisher & Chamberlain, 2000), and Functional Family Therapy (Alexander and Parsons, 1973, cited in Alexander and Robbins, 2011) are considered among the most effective (Caldwell & Rybroek, 2013; Ministry of Social Development, 2013). These systemic interventions, however, involve considerable

resources in terms of cost and people hours. This means that they are often only applicable for the highest need individuals and not practical for implementation by smaller community groups and schools. The requirement for family involvement can also cause a difficulty, as in practice such involvement is often limited or not possible due to parental mental illness, severe family dysfunction, a lack of willingness from parents to participate in therapy (Bennett & Gibbons, 2008), and may be more difficult for families that are disadvantaged or stressed (Matjasko et al, 2012).

School is often the primary place that antisocial and aggressive places are uncovered, as individuals with social and interpersonal deficits can find the everyday demands, routines, and rules of school life challenging to negotiate (Jimerson, Oakland & Farrell, 2006). As a result, schools become an ideal setting for identifying such behavioural difficulties and providing intervention (Jimerson et al., 2006). The majority of existing interventions recommended for use in New Zealand schools are aimed at the early school years in an effort to prevent the escalation of problem behaviours for the most extreme individuals. Funding for behavioural interventions is only provided up to Year 10, as there is currently a strong focus on early intervention (Ministry of Social Development, 2013). As a result, there are few manualised, empirically and theoretically supported school-based programmes accessible to schools working with those above this age group, which can be administered by a wide-range of professionals in a cost-effective and practical way.

The best-evidence school programmes currently recommended in New Zealand, for disruptive and antisocial students, are programmes that include an interpersonal component within them (Ministry of Social Development, 2013). Check-and-Connect (Christenson et al., 2008) is an intervention aimed primarily at youth with problem behaviours who are at risk of dropping out of school. This intervention provides at-risk students with a monitor who provides school engagement feedback, mentoring, discussions on school interfering behaviours, teaches problem solving and conflict resolution skills, and helps students find adaptive extracurricular activities for non-school hours and

school holiday breaks. Monitors meet with students on a weekly to monthly basis depending on that student's need. Monitors also encourage parents to be actively involved in their child's schooling. Monitors work with their students for at least two years (Christenson et al., 2008). A Randomised Control Trial (RCT) of Check-and-Connect with adolescents shows a significantly lower dropout rate and lower scores on the problem behaviour scales of the Social Skills Improvement System (SSIS; Gresham & Elliot, 2008) when compared to controls (Ministry of Social Development, 2013). The control group received the same intervention for two years prior to being randomly assigned to the control group, who stopped receiving the intervention and returned to school as normal, while the experimental group continued to receive intervention (Ministry of Social Development, 2013). This suggests that the intervention must be delivered over an extended period.

Prevent-Teach-Reinforce (Dunlap et al, 2010) is an individualised positive-behaviour intervention that utilises three major methods of behaviour support: the identification and manipulation of antecedent stimuli (triggers associated with problematic response patterns), teaching pro-social replacement behaviours (including effective communication strategies and self control/coping strategies for effective communication), and contingency management for reinforcing desirable behaviours while extinguishing problematic ones (Dunlap et al, 2010). Intervention with Prevent-Teach-Reinforce resulted in higher levels of school engagement and social skills and lower problem behaviours based on a RCT with 5-13 year olds – this study is yet to be repeated with older adolescents (Dunlap et al, 2010; Ministry of Social Development, 2013). Both Check-and-Connect and Prepare-Teach-Reinforce are developed for intervention with individual students and require extensive staff training and input; due to this, they are reserved for individuals with the most serious behaviour difficulties (Dunlap et al, 2010; Ministry of Social Development, 2013).

The management of student behaviour problems is one of the greatest difficulties for education services (Jimerson et al., 2006). Intervention programmes need to be available to the stakeholders

that deal with youth, such as schools, community groups, youth centres and specialised agencies. In order to be able to effectively intervene with such individuals, empirically supported interventions that are both practical and cost effective to implement are required. An obvious step between school-wide interventions and high-intensity individual interventions are interventions that aim to increase interpersonal skills and social cognition in a group format. Of the many that have been developed, one considered "promising" (Ministry of Social Development, 2013, p. x) by a recent inter-agency group on conduct disorder in New Zealand is Aggression Replacement Training (ART; Glick & Gibbs, 2011). ART appears to meet many of the needs required by an intervention for use by schools; it is a manualised, multimodal, CBT, group based intervention that targets multiple interpersonal deficits. Further, with adequate training and supervision, it could be facilitated by a wide range of school staff (e.g., teachers, special education teachers, school counsellors; Feindler & Engel, 2011).

Summary

Adolescence is a unique and important time in an individual's development. It is also a peak time for antisocial behaviour, which takes a large toll on individuals and their communities. Many individuals who exhibit antisocial behaviours have interpersonal deficits including low social competence, poor emotion regulation, and low moral maturity. Despite the large number of intervention programmes that have been developed to target these deficits, the majority have not been researched with adolescents and the research on outcomes for those show only small-to-moderate improvements. Those that show the most efficacy are often individually focused and intensive, and therefore require high resources and are expensive to implement. As a result they are aimed at only the most serious cases and cannot be implemented by single services such as schools. School is often the place that antisocial behaviours are first identified and impact academic achievement as well as burdening other students and staff. As a result, cost-effective, easy to implement interventions should be researched for use with New Zealand adolescents in order to target and reduce antisocial behaviours where and

when they are most problematic. One such intervention that looks to meet the requirements for a successful school-based intervention is ART, which is the subject of focus for this research.

Aggression Replacement Training (ART)

As outlined in the previous section, there are many interventions that target the interpersonal deficits associated with aggressive and antisocial behaviours. Of these, one which looks to meet the requirements of a programme that can be run as an intervention within school settings is Aggression Replacement Training (ART).

ART targets the interpersonal deficits hypothesised to maintain adolescent aggression and antisocial behaviour on three levels: cognitive, affective, and behavioural (Glick & Gibbs, 2011; Hollin, 2004). ART has a growing research base to support its efficacy (Goldstein, 2004; Hollin, 2004) and has been delivered in a variety of different settings; including school districts in the USA, community centres, mental health centres, inpatient facilities, residential treatment centres for delinquent youth, and correctional facilities (Amendola & Oliver, 2010; Glick & Gibbs, 2011; Goldstein & Glick, 1994; Goldstein, Glick & Gibbs,1998; Hollin, 2004).

This section describes ART and provides a brief review of the relevant outcome research of ART, with a particular focus on trials of ART run with adolescent samples and those within school settings. This research provides background for the specific areas of ART focused on in this research, which are examined in greater detail in Section Three.

ART is a group intervention that consists of three components:

- The *Anger Control Training* (ACT) component is drawn from anger and frustration theories of aggression and related interventions (Goldstein et al, 1998). This component focuses on the physiological, behavioural, and cognitive aspects of angry aggression (Feindler & Engel, 2011). ACT teaches young people who have difficulties with anger control to identify their internal and external triggers that provoke an angry reaction; recognise the physiological cues of their anger and strategies to regulate these; assist participants in

examining their angry assumptions; and encourages them to think of the negative outcomes of using aggressive behaviours and to select pro-social skills to deal with conflict instead of aggressive choices (Feindler & Engel, 2011; Glick & Gibbs, 2011; Goldstein et al, 1998).

- The *Social Skills Training* (SST) component of ART aims to teach aggressive youths more effective pro-social methods for dealing with social situations (e.g., asking for help, making a complaint or saying no), providing them alternative behaviours to use where they may have formerly used aggression (Glick & Gibbs, 2011). SST was first developed as a practical application of Bandura's Social Learning Theory (Goldstein et al, 1998). The aim of SST is to increase both skill repertoire and performance - providing alternatives to aggressive strategies for negotiating social situations. This component provides training and practice in pro-social ways to deal with commonly encountered, and sometimes difficult, social situations. Role-play scenarios allow for discussion, practice, and feedback to increase participants' competence in using the skills learnt.
- The final component of ART is *Moral Reasoning Training* (MRT). This component is considered the cognitive component of the programme (Goldstein & Glick, 2004) and aims to raise participants' level of fairness, justice, and concern for the needs and rights of others (Gibbs, 2004, 2010). MRT was the last component to be added by the authors of ART to the overall programme. The authors state that while ACT and SST provide participants with the skills to behave pro-socially without motivation to use these skills aggressive youth might still choose aggressive strategies, which are often "richly rewarded" (Goldstein & Glick, 1994, p.11) in the real world. The MRT component aims to provide this motivation by targeting self-centred cognitive distortions that prevent antisocial individuals from taking responsibility for, and experiencing emotional distress about, their behaviour and that might otherwise lead to the use of more pro-social behaviours. The moral

reasoning component has a strong theoretical rationale based on the well known theories of Piaget (1932), Kohlberg (1969), Selman (1976), and Hoffman (2000).

ART outcome evaluations

The first evaluation studies of ART were completed by the intervention's authors at Ainsville, a limited security facility for young male offenders in the United States (Goldstein & Glick, 1987, as cited in Goldstein & Glick, 1994). Three sessions of ART per week were delivered for ten weeks to 24 youth at the facility. The programme compared their social skill acquisition and transfer, anger control, impulse reduction, and moral reasoning with two control conditions: 24 individuals from the same facility who attended a brief instruction group designed to motivate them to use any pro-social skills that they may have had but were not using and 12 individuals from the same facility that received no treatment. ART participants showed significant skill acquisition and transfer of four of the ten social skills taught in the intervention, exhibited significantly fewer and less intense behavioural incidents (as evidenced by the facilities' behaviour records), and less impulsivity as rated by facility staff when compared to the two control conditions. No change was reported for moral reasoning maturity. These initial results gave empirical support for both ART as an intervention and the theoretical basis that remediating deficits in social skills and anger control strategies would result in less aggressive and antisocial behaviours.

To test for replicability of the study's outcomes, ART was then delivered to the 36 control condition participants from the initial study. The delivery of ART was replicated as per the original trial. Incident reports for the ten weeks prior to ART (when the participants were acting as controls) were compared with incidents during their participation in the ART programme. As with the previous experimental group, both the number and severity of incidents decreased. Fifty-four individuals were released in the one-year period that followed the delivery of the ART intervention, 17 of who had been participants in the study and received ART. To test the maintenance and generalisability of

gains outside the facility settings, the authors developed a measure of community functioning to be rated by the community workers assigned to youth released from Ainsville. Community workers, blind to which individuals had participated in ART, rated youth on six scales of community functioning. ART participants were rated significantly higher on four of the six scales compared to the individuals who had not participated in ART. These additional parts to the Ainsville study lent further evidence to the efficacy of ART, and also gave evidence of the maintenance and generalisability of treatment gains.

Following on from their success at Ainsville, the authors trialled ART at a maximum security facility for male juveniles (aged 13-21) that had committed more serious offences (including manslaughter, armed robbery, rape and murder) than those at Ainsville (1987; as cited in Goldstein & Glick, 1994). The authors replicated the same methodology they employed at their initial ART trial at Ainsville. They found significant differences emerging for ART participants when compared to the motivation group and no-treatment controls. Five out of the ten social skills taught were acquired and transferred. The authors reported a significant increase in moral reasoning maturity (though significance data was not reported). However, unlike at Ainsville, there was not a significant result when acting-out behaviours were compared to base rate for any of the three conditions. The authors posit that this was possibly due to the high security conditions at MacCormick, which meant these acting out behaviours were already very low at pre-test.

The initial results of the first trials of ART suggested that it was a promising intervention to combat antisocial and aggressive behaviours, with the authors claiming ART to be an intervention of "considerable potency" (Goldstein, 2004, p238.). However, given the controlled settings of the detention centres, research findings could not be generalised to wider settings or populations beyond male juvenile delinquents. Due to the shift in emphasis from residential treatment to community rehabilitation that was occurring at the time, a third study was completed by the authors. This time in

community settings and including both male and female delinquents post-release from detention facilities (1989; as cited in Goldstein & Glick, 1994). While no motivation condition was used in this third study, the authors included a third condition where a parental component was added. Parents of participants completing ART attended a weekly ART session to learn the same interpersonal skills and anger control techniques that their child was being taught. This family condition was compared to a youth-only ART condition and a no-treatment control. ART was delivered in 24, 1.5 hour sessions over three months. When compared to the no-treatment control group, both of the ART conditions resulted in a significant increase in overall interpersonal competence and a reduction in self-reported anger levels when faced with mild provocation.

A second study was done by the authors in community centres for youth in Brooklyn, NY, this time with youth gang members (Goldstein & Glick, 1994). Six separate gangs were involved in the study. Three received ART over four months as well as the regular services of their community centres and another three gangs only received the usual services of the community centres with which they were involved. Once again, results favoured ART, with significant increases in pro-social skill acquisition. Though no significant gain was seen in anger control, there was further anecdotal evidence of the gang members that completed ART gaining employment returning to school and reducing criminal activities. Similar re-arrest data was seen for the ART groups as for those participants in the family condition in previous community study (Goldstein & Glick, 1987, as cited in Goldstein & Glick, 1994), with 13% of the ART participants being re-arrested compared to 52% of participants in the treatment-as-usual control groups. These latter two studies suggest that ART could be an effective intervention not just within forensic settings, but for more generalised settings for aggressive and antisocial youth, especially when supported by family or friends.

Since these initial studies, ART has also been investigated by other researchers. Coleman, Pfeiffer & Oakland (1991, as cited in Goldstein & Glick, 1994) evaluated a ten week programme of ART at a

residential centre for behaviour disordered adolescents in Austin, Texas. Using a sample of 39 females and males with conduct disorder, they compared outcomes of ART compared to a no-treatment control. While the ART group improved in their skills knowledge on three of the ten taught social skills, compared to the no-treatment control, no change was seen in their overt skill behaviours.

In 2009 Currie, Wood, Williams & Bates piloted ART in a custodial setting with youth male offenders in Australia (17-18 years of age, *N*=5). They delivered a ten-week programme of ART and, using a pre-post test design, examined the gains theorised to improve for each of the three ART components. Though the results showed improved social skills and reduced overall aggression (significance was set at *p*=.10) there was no change in the cognitive distortions that ART's authors claim the Moral Reasoning component alleviates (Gibbs, 2004). Moral reasoning maturity itself was not assessed in this study. Given the positive changes found, Currie et al. felt further investigation was warranted given the limitations of the small sample size used and the lack of a no-treatment control. They subsequently ran a larger evaluation study within the same settings, delivering ART to 20 males (18-20 years of age) serving custodial sentences of at least three months for violent or violence related offences (Currie, Wood, Williams & Bates, 2012). Participants were assessed with self-report and observer reports at intake, post-intervention, and at six month follow-up. In this study, significant reductions were reported for aggressive thoughts and behaviours, cognitive distortions and impulsivity, as well as some improvement in social problem solving abilities. Many of these improvements were clinically significant, leading the authors to conclude that the effectiveness of ART with violent Australian youth in custodial settings was supported.

ART within school settings

While ART's efficacy within custodial settings has been established (MSD, 2013), most adolescents with antisocial behaviours are not found within such settings. ART can be effectively used to lower

aggressive behaviours and increase social competency in schools (Amendola & Oliver, 2004; Gundersen & Svartdal, 2006; Roth & Striepling-Goldstein, 2003). Nodarse (1998) trialled a ten-week programme of ART at a school for adolescents with emotional disorders in Miami, Florida. Participants were fifty 12-to-14 year olds. All participants received the schools' normal educational services as well as individual therapy, crisis management, and adventure therapy. Five of these participants also received 10 weeks of ART. ART group participants were compared to matched pair no-treatment controls on a teacher-rated instrument of behaviour. Significant decreases in overt aggression and increases in social skills and higher stage thinking were found for the ART group when compared to the no-ART controls.

An outcome evaluation of 11 teaching students' ART projects was carried out by Gundersen & Svartdal (2006). Each project consisted of 24 sessions of ART delivered over 13 weeks. Participants received an average of 10.8 social skills sessions, 8.4 anger control sessions, and 4.8 moral reasoning sessions at schools and institutions in Norway. Eleven groups of six received the intervention and were compared to students who were receiving only the standard educational and social services; in some instances this meant that no special services were being given. Results indicated a significant increase in social skills and a reduction in problem behaviours, as rated by parents and teachers, for the ART participants but not for the comparison control group. The researchers also found that there was a significant reduction in the participants of the ART group self-ratings of their own behavioural problems. A significant decrease in cognitive distortions as measured by the How I Think (HIT) questionnaire (Barriga, Gibbs, Potter & Liau, 2001) was also found, though these changes were seen in both the experimental and control groups. The authors suggest this may have been a result of participants and controls interacting within schools outside of the programme. Further, as these improvements were observable at both home and school, this indicates that gains from ART that were taught at school generalised to home settings.

Are all components created equal?

The above studies suggest that ART can be successfully implemented within school settings, as well as having positive impacts on non-participants and other settings. Interestingly, in the Gundersen and Svartdal (2006) study these benefits occurred despite the delivery of, on average, less than half of the recommended MRT sessions. Other studies have shown positive results following ART despite reduced or no MRT component.

Nugent, Bruley & Allen (1999) ran a field study to investigate the effects of ART on the antisocial behaviour of adolescents in a runaway shelter. Using an interrupted time series design, Nugent et al. condensed the traditional 30 sessions of the ART curriculum into 15 1.5-hour sessions that were delivered to groups of seven to ten adolescents over three weeks. The condensed curriculum included the full ACT component and six social skills but did not include any of the MRT sessions. Behaviour incidents taken from school and shelter records of the 310 day period prior to the start of the delivery of ART were compared to the 209 days after it began. Results showed that, despite the lack of the MR components, the ART programme was associated with a 20% decrease in the rate of antisocial behaviour and a 17% decrease in the daily number of antisocial incidents compared with pre-treatment.

At a juvenile detention centre in the Caribbean, Brigell (2012) delivered 18 hours of ACT and SST to 14 male inmates (10 – 17 years of age) over three weeks. No moral reasoning component was delivered as the centre already ran moral-reasoning-like training. Results showed that those who began the intervention with a high level of aggression (as measured by pre and post pen-and-pencil inventories) showed a significantly greater decrease in aggressive, delinquent, and conduct disordered behaviours than those participants who began the intervention exhibiting lower levels of aggression. The lack of a treatment as usual or control group unfortunately means that the impact of running the intervention without the MR component could not be assessed.

These studies raise questions about the necessary dosage of each component. This is especially important where an intervention is being run within a school setting where the least interruption to the normal school learning curriculum is desirable. As Palmer (2007) noted, the relative contribution each ART component adds to the whole is yet to be ascertained. This is particularly true of the MRT component, which has the least support as an effective component and requires further investigation (Palmer, 2007).

The MRT component is considered the cognitive component of ART (Glick & Gibbs, 2011). While some research on interventions for aggressive and antisocial behaviours suggests that those with a cognitive component result in greater change, debate ensues regarding the relative efficacy of cognitive versus behavioural components in CBT based interventions (Hundt, Mignogna, Underhill & Cully, 2013; McManus, van Doorn & Yiend, 2012; Longmore & Worrell, 2007; Worrell & Longmore, 2008). “Empirical anomalies” (Hayes, Follette & Linehan, 2004; as cited in Worrell & Longmore, 2008) in research include findings that cognitive interventions do not show added value over behavioural techniques. Component analyses suggest behavioural techniques are superior to cognitive techniques, leading to earlier and broader generalisation of changes in distorted beliefs (McManus et al, 2012). In studies on CBT for depression, for example, improvement often occurs prior to the implementation of cognitive techniques in treatment and changes in cognitive mediators have not been shown to precede changes in symptoms (Worrell & Longmore, 2008). With regard to ART specifically, Palmer (2007) questioned if the moral reasoning component provides any added value over and above that of other interpersonal skill deficit interventions without a moral reasoning component. Given the other components also contain elements of cognitive restructuring it is difficult to know how much the MRT component is actually contributing to positive change, especially when studies show positive change with limited MRT sessions (Gundersen & Svartdal, 2006). For example, the ACT component includes cognitive restructuring strategies to help

participants examine their narrow thinking and develop alternative, non-aggressive casual attributions for others' behaviour (Feindler & Engel, 2011); in other words challenging an *Assuming the Worst* or hostile attribution bias.

Interventions that include multiple elements, such as ART, are shown to be beneficial; however, assessing the relative impact each element has on behaviour change is more difficult (Coyle, 2002; Lipsey, 1995; Palmer, 2007). Some researchers have attempted to more systematically investigate the contribution of the moral reasoning component by comparing the outcomes of participants receiving the full ART curriculum to the outcomes of participants receiving just one or two components. In 1990, Curulla (as cited in Goldstein & Glick, 1994) ran a community-based study using 67 male delinquents that compared the incidence of recidivism after 14 weeks of full ART versus ART without the moral reasoning component and a no-treatment control. There was significantly less recidivism for the full ART group when compared to the other two conditions.

A second 1990 study did a similar component analysis, but this time compared full ART to just the moral reasoning component and a no-treatment control. Jones (1990, as cited in Goldstein & Glick, 1994) ran a 10-week ART programme with 18 violent high school students in Brisbane, Australia. Only the full ART condition resulted in significant increases on skill acquisition and decreases on violent incidences. Interestingly, no significant change in moral reasoning maturity was found for any of the conditions, not even in the moral education only group. This study lends support to the author's claim that all three components of ART are necessary to achieve the maximum benefits of ART for aggressive and antisocial individuals (Glick & Gibbs, 2011).

Overall, evaluation studies of ART suggest that it is indeed a promising intervention that consistently results in positive outcomes for many participants. However, findings are inconsistent and mixed. This can in part be attributed to the non-equivalent designs between studies. Researchers do not consistently examine the same variables or outcomes - some looking at broader impacts that the

intervention may have on recidivism or behavioural incidents, others examining the more direct impact of the individual components. This makes it difficult to draw solid conclusions as to not only the efficacy of ART, but also where the intervention is having the most impact.

Many studies remain unpublished or are not reported in peer-reviewed journals (Currie et al, 2009). Sample sizes are often small and studies considered exploratory. Further, the use of quasi-experimental design means that results are vulnerable to the fact that there may be more than one explanation for observed change. This is in large part due to the real and considerable difficulties implementing and researching interventions with challenging populations in real-life settings (Cook & Campbell, 1979). Most outcome studies have tended to focus on the effect of all components concurrently and the research that has attempted to isolate components is still limited.

Despite this, the limitations of the research should not take away from the positive changes that result from ART. The majority of studies that have emerged since the inception and initial evaluations of ART suggest ART does have a positive, and perhaps even long-lasting, impact on many of the individuals that have participated in it. These findings support the underlying theory that remediating deficits associated with aggression and antisocial behaviour is an effective strategy for remediating the behaviour itself. Many questions, however, still remain and further research is required so there is not only a better understanding of the efficacy of ART but also supporting evidence for how ART can create positive change and for who.

Summary

Aggression Replacement Training (ART) is a three component intervention for antisocial youth that aims to remediate deficits in interpersonal skills and understanding. The components include an anger control training component, a social skills training component, and a moral reasoning discussion group. Outcome studies investigating the efficacy of ART have shown positive

improvements for adolescents including youth offenders and disruptive school students. Outcome studies typically show improvement in social skill acquisition, anger control, and decreases in problem behaviours but less often show increases in moral reasoning maturity. Despite this, ART has been described as a promising intervention that warrants further investigation to better understand how positive change is occurring and which components are acting to create this change.

The Moral Reasoning Component

The Moral Reasoning Training (MRT) component of Aggression Replacement Training (ART) is considered to be the cognitive component; challenging the ego-centric and self-serving cognitive distortions that serve to minimise concern and understanding for others and retard the development of more mature moral reasoning. The MRT component was the last to be included within the ART intervention and was added to provide 'motivation' for participants to use the prosocial skills and methods of dealing with conflict and frustration learnt in the Social Skills Training (SST) and Anger Control Training (ACT) components. The motivation gained from the MRT component is thought to come from remediation of antisocial cognitive distortions and increased empathic concern, perspective taking, and moral reasoning.

As outlined in the previous section, the constructs targeted by the MRT component are the least investigated. While outcome studies of ART consistently show gains in social skills knowledge and ability and decreases in aggressive behaviours, not all studies that include a moral reasoning component have shown gains in moral reasoning ability or change in cognitive distortions (e.g., Goldstein & Glick, 1987); in fact, many outcome evaluations of ART having not even looked for changes in these variables. ART interventions have often focused more on the ACT and SST components and have not always provided an equivalent number of MR sessions, which may be one of the reasons for this; however, the MR component has the least support as an effective component and requires further investigation (Palmer, 2007).

When assessing ART as an intervention for use within schools it is important that the intervention is easy to implement and has minimal impact on the time and resources of both implementers and participants. Therefore it is important that only components that will add value to an overall intervention are included. In order to ensure this, more consistent research findings and a better

understanding of the 'active elements' of this component are required. In this section the theory behind the MRT component and how the component is believed to operate to create positive change is examined, with gaps in findings between theory and outcome research highlighted.

Moral Reasoning Development

Moral reasoning refers to the way people think about, and rationalise, behaviour that involves harm or justice to themselves or other people; as antisocial behaviour involves either direct harm to others or the violation of individuals' rights in some way, it therefore seems reasonable to expect an association between moral reasoning and antisocial behaviour (Palmer 2003a, b; Hollin et al, 2002).

According to Kohlberg's (1969, as cited in Berk, 2009) well known cognitive-developmental theory of moral reasoning development, as individuals grow and mature their reasoning develops through six stages[1] - from egocentric, fixed and concrete to abstract, flexible and decentred (see Figure 2 for a summary of these stages; Palmer, 2003). Though individuals may reason from different stages at different times, the majority of reasoning will occur at the predominant stage with lesser amounts of reasoning from adjacent stages (Walker & Taylor, 1991).

Individuals justify antisocial actions, such as lawbreaking, in different ways and for different reasons depending on their stage of moral development (Hollin et al, 2002). For example, at the early egocentric and concrete stages of moral reasoning breaking the law is justifiable if someone older/bigger sanctions it (stage 1), if punishment can be avoided (stage 1) or if gains outweigh the

[1] Following criticism of the sixth stage of moral reasoning, which research showed few individuals ever reached, Kohlberg revised his theory to only five stages (Hollin et al, 2002).

costs (stage 2). In the later stages justifications relate to the maintenance of relationships or society (stages 3-4) and basic human rights/social justice (Stage 5).

SUMMARY OF KOHLBERG'S SIX STAGES
Level I: Pre-conventional Reasoning
Stage 1 - Moral reasoning is based upon avoiding punishment and obeying perceived authority figures
Stage 2: Moral reasoning is egocentric, with the person's own needs being of greatest importance. Reasoning is based on the perceived balance of rewards and punishment
Level II: Conventional Reasoning
Stage 3: Moral reasoning is determined by other people's needs, with personal relationships assuming importance
Stage 4: Moral reasoning is based on maintaining society's rules and laws in order to maintain social cohesion.
Level III: Post-conventional Reasoning
Stage 5: Moral reasoning is underpinned by an understanding that society's laws are a contract between the individual and society. However, under certain circumstances these laws can be broken.
Stage 6: Moral reasoning is determined by self-chosen ethical principles that are consistent over time and situations, and these may over-rule society's laws if they come into conflict with each other.

Figure 2: Kohlberg's stages of moral reasoning (taken from Palmer, 2003b)

From this viewpoint, opportunities for antisocial behaviour are more likely at the earlier stages of moral reasoning than at the more developed stages (Hollin et al, 2002). This association is supported by research showing that both juvenile and adult offenders, and delinquent youth use earlier stages (stages one and two) of moral reasoning significantly more often than their prosocial peers (Hollin et al, 2002; Palmer, 2003b, 2007).

Movement through the stages of moral reasoning is associated with normal cognitive development as underlying cognitive structures are required to support more complex, decentred, and abstract thinking. Therefore, individuals must have a reached a sufficient level of cognitive development or

logical reasoning before being able to advance to the parallel moral reasoning stage (Piaget, 1932; Kohlberg, 1958, 1969; as cited in Palmer, 2003b).

Secondly, individuals must have acquired a sufficient level of social-perspective taking ability. Similar to both logical reasoning and moral reasoning, social perspective taking has also been described as developing in stages or phases that also depend on an individual having reached a certain level of cognitive-development (Selman, 1976, 1980; see Figure 3). Social perspective-taking development primarily occurs through social interactions with family, peers, and community members and role-taking in within different groups and settings such as in the home, in school, and within cultural institutions. These interactions provide opportunities for exposure to the thoughts, needs, and attitudes of other people. Research evidence to support the need for these requirements comes from the work of Selman (1976) and Walker (1980, as cited in Palmer 2003b).

SUMMARY OF SELMAN'S SOC-PT STAGES.

Level I: Pre-conventional Reasoning = concrete individual perspective

Stage 1 – The individual has an essentially self-centred view of the world, with little recognition or consideration given to other people's perspectives.

Stage 2: While the individual appreciates that other people have their own views of the world, the individual's personal view is of greatest importance.

Level II: Conventional Reasoning = member-of-society perspective

Stage 3: The individual becomes concerned with the perspective of people they have relationships with (e.g., family and friends).

Stage 4: The individual differentiates the societal point of view from those of people within society.

Level III: Post-conventional Reasoning = prior-to-society perspective

Stage 5: The individual takes a perspective that is aware that people have rights that exist regardless of social contracts (i.e., prior to society). Differing perspectives are combined in a rational way, although there is recognition that this might not always be possible.

Stage 6: The individual takes a perspective derived from holding his or her own set of consistent moral principles.

Figure 3: Selman's stages of social-perspective taking (Taken from Palmer, 2003b)

Social experience, along with advances in logical reasoning, leads to better understanding of the social arrangements and social structures (e.g., societal institutions and lawmaking systems) that govern moral responsibilities (Berk, 2009). Along with such understanding comes new ideas about what should be done when the needs and wants of individuals or groups conflict. The precursors of cognitive development and social-perspective taking, however, are not sufficient alone for the development of moral reasoning to the equivalent level; this has been shown by Walker, 1983, (as cited in Palmer, 2003b). Research suggests moral conflict, or disequilbrium, resulting in cognitive dissonance is a key requirement for stimulating the necessary accommodation required to change underlying knowledge schemas (Walker & Taylor, 1991). Cognitive dissonance has been described as an aversive internal experience caused due to inconsistencies between ones attitudes, feelings, thoughts, and behaviours (Festinger, as cited in Leenders & Brugman, 2005).

Dissonance occurs in the form of logical inconsistencies that cannot be accommodated by existing schemas. In relation to antisocial behaviour, dissonance promoting conflict is also thought to result from affective inconsistencies resulting from feelings such as empathy and guilt (Gibbs, 2010; Hoffman, 2000). While Kohlberg's theory largely focuses on the role of cognition in moral reasoning, Gibbs (2010) posits that emotions that result from the processes of decentration and social perspective taking motivate moral decisions and behaviours (Palmer, 2003b). Gibbs (2010) argues that both cognitive (justice) and affective (caring) motivate prosocial behaviour and that empathic concern, as well as the ability to understand unfairness and injustice, is an important precursor for mature moral reasoning and the motivation of prosocial behaviour. Feelings, such as concern and guilt, can spur the cognitive dissonance required for development as well as influence decision making (Gibbs, 2010).

Gibbs (2004, 2010) has placed a greater emphasis on the roles of social perspective-taking and empathy in his revised and expanded version of Kohlberg's developmental stages of Moral

Reasoning. Gibbs dubbed his version Sociomoral Reasoning, to reflect the centrality of these facets to his version, as well as to distance "moral" from the association of right and wrong. Though Gibbs' revision maintains the structure and sequence of Kohlberg's theory, it does differ from Kohlberg's theory in several important ways (Palmer, 2003b). Given the small number of individuals found to reach post-conventional reasoning (largely individuals who have been educated, generally beyond high school, and have been exposed to western liberal philosophical ideas) and the rarity of post-conventional reasoning found outside western cultures, Gibbs (2004, 2010) argues that post-conventional reasoning is not a Piagetian-based stage (i.e., not based on underlying cognitive structures or an equivalent stage in logical reasoning) and therefore no more structurally advanced than mature or autonomous reasoning. Gibbs argues, instead, that conventional moral reasoning represents the cognitive-structural norm for any culture.

GIBBS' STAGES OF SOCIOMORAL REASONING
Immature Sociomoral Reasoning
Stage 1: Unilateral and physicalistic
Pervasive egocentric bias is evident. Sociomoral reasoning is based upon unilateral authority that emphasis physical strength. Consequences are understood in absolute and inflexible terms, "all or nothing thinking"
Stage 2: Exchanging and instrumental
The total egocentric bias of stage 1 gives way to sociomoral reasoning that takes account of social interactions; however morality is still external to the self and superficial. Moral decision making is understood in purely pragmatic exchanges- "what's in for me?" or "eye for an eye"
Mature Sociomoral Reasoning
Stage 3: Mature and prosocial
Sociomoral reasoning moves beyond the individualistic and pragmatic concerns of stage 2 toward a deeper consideration of interpersonal relationships (i.e., social empathy). A greater understanding and willingness to adhere to prosocial norms in order to maintain social order and intrapersonal approval.
Stage 4: Systemic and standard
At Stage 4 sociomoral reasoning incorporates mature social perspective taking in which complex social systems are able to be considered. The development of conscience and social responsibility informs a sense of fundamental human rights and social justice.

Figure 4: Gibbs' stages of sociomoral reasoning Note. Adapted from Palmer (2003b)

As a result Gibbs' revised levels of moral reasoning do not include a post-conventional stage. Instead Gibbs has divided moral reasoning into immature and mature stages (see Figure 4). Immature reasoning (analogous to Kohlberg's pre-conventional stages 1-2) is superficial and egocentric, based on immediate features and pragmatic exchanges. Mature reasoning, by comparison, is able to take into consideration the needs of others in personal relationships and society (stage three) and the rights of others and society (stage 4). The MRT component of ART is based on Gibbs' revision and as such it is his revision that was used to look at change of variables after implementation of the MRT component in the current research.

Moral Reasoning Delay

Adolescents normally progress from relatively superficial to more profound levels of interpersonal and societal sociomoral understanding. Based on normal cognitive and social development, reasoning at the pre-conventional or immature stages decreases by early adolescence to be replaced by conventional or mature reasoning stages. By mid-adolescence Stage Three reasoning dominates, with Stage Four dominating by late adolescence and early adulthood (Berk, 2009). Where individuals use reasoning from stages lower than would be expected for their age, such individuals are said to have delayed or immature moral reasoning. Adolescents, even in early adolescence, who show little or no moral judgment beyond Stage 2 are considered to be developmentally delayed (Gibbs, Basinger & Fuller, 1992).

A variety of factors are implicated in the disruption of typical moral development. As the ART intervention and the current research are largely concerned with how moral delay is maintained (rather than developed) and therefore remedied, these factors are only briefly mentioned here, however have been well covered by other sources (e.g., Gibbs, 2010; Palmer 2003b). Assuming normal cognitive development, moral reasoning delay is primarily thought to result from a lack of opportunities for role-taking and exposure to the perspectives of others in childhood at home, school,

or in the community (Gibbs, 1994; Palmer, 2003b). This limits the development of mature social perspective taking and sources of moral conflict. Factors associated in limiting role-taking opportunities include innate variables such as temperament (e.g., a lack of openness), socio-cultural factors (e.g., socioeconomic deprivation, stressful life events, parental stress and isolation), parenting practices (harsh, cold and inconsistent discipline, lack of supervision), and children's peer and school experiences (antisocial peers, peer rejection and academic failure).

Moral reasoning discussion groups are a long established method of ameliorating moral reasoning delay. Such groups provide a forum for participants to be exposed to multiple social and moral reasoning perspectives and encourage debate among viewpoints to stimulate the necessary dissonance required to stimulate change. Research shows that moral reasoning development is stimulated in discussions in which one of the members is reasoning at a level that is higher than another, but only when the difference between the higher and lower levels of reasoning is approximately 1/3 of a stage (Palmer, 2003b). It is posited that this amount of difference means that the new reasoning is similar enough to the existing reasoning to be able to be understood, but different enough to cause the required dissonance, which makes it necessary for some alteration of underlying schemas to be altered to accommodate the new reasoning (Palmer, 2003b). If the difference between the existing and new reasoning is too similar it will be readily accommodated and no dissonance and therefore no accommodation will be necessary. On the other hand, if the reasoning is too advanced it will not be able to be assimilated and will not be able to be integrated or accommodate and no development will occur (Palmer, 2003b).

The peer group design of the MRT component is therefore a key part of facilitating change as, given the developmental similarities between peers, the 1/3 stage difference criteria is more likely to be met. Peers are also more likely to share scenarios and viewpoints that other participants can relate to, and will feel more able to challenge, given the more equivocal relationship between peers.

Supporting this is research demonstrating conversations between peers are more likely to result in upward moral reasoning change than those with adults (Palmer, 2003b).

Moral reasoning discussion groups are an established intervention for remediation of moral delay. The rationale for these sessions comes from research on what drives moral reasoning maturation. Movement through the stages occurs by a process of equilibration (Piaget 1932, as cited in

Berk, 2009 and Palmer, 2003b); information from the environment is assimilated into existing knowledge structures/schemas in order for an individual to make sense of it. When new information cannot be made sense of within existing knowledge schemas it must be accommodated; that is existing schemas must change in order to fit new information. In theory then, this process could be stimulated by exposure to higher levels of moral reasoning; however necessary (but not sufficient) precursors are required (Palmer, 2003b).

Despite the large body of theory that sits behind the use of moral reasoning discussion groups, such as the MRT component of ART, outcome studies demonstrate mixed results. This is true both in terms of facilitating more mature moral reasoning and in showing an association between improved moral reasoning and decreased antisocial behaviour (Arbuthnot & Gordon, 1986; Claypoole, Moody, & Peace, 2000; Gibbs, Arnold, Ahlborn, & Cheesman, 1984; Leeman, Gibbs, & Fuller, 1993; Nas, Brugman, & Koops, 2005). Arbuthnot & Gordon's (1986) much cited outcome research on moral reasoning discussion groups showed both an increase in moral reasoning at post-test and continued improvements by follow-up. This same research found an association between moral reasoning and improved behaviour; leading its authors to conclude that behavioural change could be influenced by altering underlying moral decision making. By comparison, more recent studies of EQUIP (an extension of ART that includes the MRT component) found no increases in moral reasoning at post-test (Leeman et al, 1993; Nas et al, 2005; Van der Velden, Brugman, Boom & Koops, 2010); though

the 1993 study did find that recidivism at 12 month, but not six month, follow-up was inversely related to moral reasoning in the experimental group but not in the control group.

Further, unlike the Arbuthnot and Gordon (1986) study, several studies do not find that moral reasoning level or competence is a powerful predictor of antisocial behaviour (Leenders & Brugman, 2005). While the development of beliefs that support antisocial behaviour, or a weakening of moral beliefs, has been found to precede the development of minor antisocial behaviours in early adolescence, once antisocial behaviours become established these have been found to exert a stronger influence on moral beliefs than beliefs exert on behaviour (Menard & Huizinga, 1994). This has led several researchers to suggest that there may be other psychological variables that better predict antisocial behaviours than moral reasoning (Barriga et al, 2001; Leenders & Brugman, 2005).

One such variable, which is a growing area of research interest, is self-centred cognitive distortions. These distortions are found to better predict later antisocial behaviour than moral reasoning delay and may mediate the relationship between them. In a further extension of Kohlberg's theory of moral reasoning development, Gibbs (2010) posits that moral reasoning delay is maintained by cognitive distortions that allow individuals to disengage from feeling such as guilt and regret and the subsequently the avoidance of the cognitive dissonance required for moral development – that is there is no affective motivation (such as guilt or pity) to spur change. This work follows on from the neutralisation theory of Sykes and Matza, the research on the belief systems used by antisocial youth to justify their behaviour and Bandura's cognitive social learning theory which states that such distortions enable antisocial individuals to disengage from self-reflection of their behaviour (Gibbs, 2004).

Evidence to support this view of self-centred cognitive distortions includes research by several authors that demonstrate the use of distortions to justify antisocial behaviour (Palmer, 2003b). Other research has been able to distinguish between antisocial youth and non-antisocial high-school

controls using the presence of self-centred cognitive distortions in antisocial youth (Barriga et al, 2000; Liau et al, 1998, Barriga & Gibbs, 1996). With regard to moral development, more mature moral reasoning has found to be correlated with lower use of self-centred cognitive distortions; with self-centred cognitive distortions found to partially mediate the association between moral judgement and antisocial behaviour (Stams et al, 2001).

Gibbs (2010) outlines two levels of self-centred, cognitive distortion; a primary *egocentric* bias and three secondary cognitive distortions that support it. Ego-centric thinking has also been called an "attitude of entitlement" (Gibbs, 2004, p57.), an attitude that might be adaptive in certain environments (Church, 2003; Palmer, 2003b). Ego-centric thinking is commonly seen in younger children who lack the underlying cognitive and social-perspective taking abilities to appreciate other's viewpoints, but which decline with growth and appropriate social experiences. Where individuals lack role-taking opportunities, because they lack the social skills to effectively engage with others or their peers are similarly deficient, social-perspective taking will not adequately develop and egocentric thinking will be maintained. While having egocentric bias is a normal quality of early childhood development, it is also a common thinking style found in offenders (Gibbs, 2010, 2004; Palmer, 2003a, 2007). It is highly correlated with the superficial thinking that is also seen in immature moral reasoning (Barriga et al, 2001; Gibbs, 2004).

Self-serving thinking is supported by secondary cognitive distortions. Gibbs posits that the secondary cognitive distortions not only justify antisocial behaviour, but also act as psychological defence mechanisms that protect individuals from the stress and aversive experience of guilt and remorse associated with considering the impact of their actions on others; protecting their ego against feeling like they are a bad person. Thus they allow disengagement at both a cognitive and affective level. This moral disengagement prevents correction of behaviour and may further contribute to antisocial and aggressive behaviours (Gibbs, 2004). The secondary cognitive distortions are: externalising or

blaming external circumstances for causing antisocial and aggressive behaviours; minimising or mislabelling consequences of behaviour to minimise feelings of remorse or guilt; and assuming the worst, or a hostile attribution bias (Gibbs, 2004, 2010).

- *Assuming the Worst* is synonymous with a hostile attribution bias (Dodge, 1991), whereby others' intentions and actions are interpreted as deliberate, negative, and hostile. Underlying this distortion is the belief that everyone is against, and out to get, them. This results in a sense of the self as a victim and others as perpetrators deserving of punishment and retribution.
- *Blaming Others* is a distortion that functions to externalise responsibility for antisocial behaviour onto outside sources, such as other people (e.g., he was asking for it or if you leave your bag unattended you deserve to have it stolen), groups (e.g., supermarkets are ripping us off, therefore they deserve to have their products shoplifted), and states (e.g., being drunk, high, or angry). Externalising responsibility enables antisocial individuals to pre-empt or neutralise guilt and justify continued the use of self-serving antisocial behaviours.
- *Minimising and mislabelling* is the third cognitive distortion that supports the egocentric bias. Described as downplaying the severity of antisocial actions or the harm caused to others, dehumanising groups, and/or glorifying antisocial actions (Gibbs, 2010).

These distortions, particularly the secondary distortions, reflect the deficits in social information processing described in Section Two (Crick & Dodge, 1994). Over time such thinking becomes ingrained and habitual. The antisocial individual views the world as hostile; a place where defensiveness (rather than openness to others' perspectives) is a necessary requirement. Such thinking may even cast the individual in the role of a victim who is oppressed by authority and unfairly punished if caught. Such thinking may only serve to strengthen or fuel anger and hostility and the ego-centric bias. As a result individuals are essentially trapped in an immature thinking style

that acts to prevent maturation of the social-perspective taking and empathy required for the development of mature moral reasoning. While cognitive distortions may protect an individual from stress or depression they also prevent any cognitive dissonance or motivation for changing thinking and behaviour.

The Moral reasoning component of ART, therefore, aims to provide students with a forum in which they can be exposed to not only higher stages of moral reasoning development but the opportunity for exposure to different social-perspectives within a supportive setting in which cognitive distortions can be challenged and cognitive dissonance created (Glick & Gibbs, 2011).

Given the theoretical underpinnings one would expect to see a reduction in the use of self-centred cognitive distortions and an increase in moral reasoning stage following ART, specifically the MRT component. However, there is surprisingly little research evidence demonstrating ART's efficacy in this regard. The majority of ART research has focused on broad outcomes such as recidivism or externalising behaviours, much less had focused on the individual constructs that ART focuses on or the individual mechanisms of change. As outlined in the previous chapter, outcome studies of ART that look at change in moral reasoning stage are few and those that do have inconsistent findings. Some studies have found improvement in moral reasoning with relatively few sessions of MRT (Gundersen & Svartdal, 2006). Others found significant positive change at post-test only when all three components were delivered as opposed to just one or two components (Jones, 1990, as cited in Goldstein & Glick, 1994), but did not find significant improvements in moral reasoning stage. Similarly, while only few studies have examined change in cognitive distortions following ART, the majority of those that have found positive change (Currie et al, 2009; Gundersen & Svartdal, 2006) but these studies are few. Understanding of both the mechanisms of change in ART and the value these add to the overall treatment is required to provide evidence to support the theoretical base of this intervention (Lovett & Sheffield, 2007). This means it is important to look at not only overt

change in behaviours following ART, but also how ART impacts those variables believed to bring about this change.

ART and Empathy

One of the main aims of the MRT component is to raise participants' level of concern for the needs and rights of others in order to motivate them to use prosocial behaviours (Gibbs, 2004, 2010; Glick & Gibbs, 2011). Gibbs (2010), building on the affective primacy theory of Hoffman (2000), argues that empathy plays a key role in motivating prosocial behaviour. Individuals with low empathy may be more likely to act in antisocial ways because they do not understand, or vicariously experience, the feelings of distress and suffering their behaviour causes – however research on the association between empathy and antisocial behaviour is mixed.

Given the role that cognitive distortions are believed to play in disengaging individuals from empathy, a change in empathy following ART - specifically the moral reasoning component - might be expected. Relatively few studies have examined change in empathy following moral reasoning discussion groups (Krivel-Zacks, 1995). Langeveld et al (2012) examined factors of social competence as moderating factors of improvements following ART with children and adolescents. They found that levels of empathy increased significantly, but no evidence that empathy significantly affects decreases in problem behaviours. The measure they used to assess empathy, however, made no distinction between cognitive empathy (i.e., social perspective taking) and affective empathy. This distinction is important given that each is theorised to contribute to moral reasoning, social competence, and subsequently antisocial behaviour in fundamentally different ways (Jolliffe & Farrington, 2007). Both affective and cognitive components of empathy are important to consider when looking at the relationship between empathy and behaviour (Jolliffe & Farrington, 2007; Lovett & Sheffield, 2007).

Affective empathy, defined as feelings of warmth, compassion, and concern for others' negative experiences, is the ability to share the feelings of another person or vicarious emotional experience (also known as empathic concern or sympathy; Davis 1983). Low affective empathy has been found to be associated with aggressive bullying (Jolliffe & Farrington, 2011) and higher rates of offending behaviours and violent offending (Jolliffe & Farrington, 2007; Lovett & Sheffield, 2007). Conversely higher levels of empathic concern have been associated with decreases in aggression one year later (Batanova & Loukas, 2011) and have been shown to inhibit bullying among adolescent boys (Caravita, Di Blasio & Salmivalli, 2009).

Social perspective-taking, also conceptualised as cognitive empathy, is the ability to understand what another person may be thinking or feeling and understand (but not experience) the emotions they are likely to have. Cognitive empathy is considered to be distinct from affective empathy as it lacks an emotional component (Eisenberg & Morris, 2001). Similarly to affective empathy, some research has found the expected negative relationship between the ability to take the perspective of others and antisocial behaviour (Jolliffe & Farrington, 2004); and positive relationships between perspective taking, empathic concern, and mature moral reasoning have been found (Myvryaa, Juujärvi & Pesso, 2010). Conversely, however, some research has found an association between high levels of perspective-taking ability and an increase in antisocial behaviours (Batanova & Loukas, 2011; Caravita et al., 2009). Gasser and Keller (2009) found only bully-victims (i.e., individuals who are both victims and perpetrators of bullying) showed deficits in perspective-taking,whereas bullies only (i.e., individuals who bullied, but were not themselves bullied) showed well developed perspective taking abilities. The ability to understand others' emotions may not automatically result in the motivation to care about others (Astington, 2003; Moore & MacGillivray, 2004). This ability may actually facilitate the ability to hurt or manipulate others; the absence of empathic concern for another's feelings, allowing the bypass of any emotional arousal or distress associated with

behaviour that causes harm to others, may subsequently prevent it (Eisenberg & Morris, 2001; Batanova & Loukas, 2011). Other research has found no association between perspective-taking ability and aggression (Jolliffe & Farrington, 2006, 2011) or differences in perspective-taking ability between bullies and non-bullies (Gini, 2006).

Though research remains inconclusive on the link between empathy and antisocial behaviour (Lovett & Sheffield, 2007) deficits in affective empathy, rather than social perspective, taking may contribute more to empathy's theorised protective role against antisocial behaviour. Krivel-Zacks (1995) found that moral reasoning was significantly related to empathic concern, but not social-perspective taking, following moral reasoning discussions with a class of pre-adolescents. This suggests that removing barriers to empathic concern is important for the reduction of antisocial behaviours; i.e., increasing concern for the rights and needs of others. In light of this research further understanding of how both cognitive and affective is impacted by ART would be beneficial for understanding the active elements of this intervention (Lovett & Sheffield, 2007).

Summary

The MRT component of ART aims to raise participants' levels of fairness, justice, and concern for the needs and rights of others in order to motivate the selection of pro-social alternatives to antisocial behaviour (Gibbs, 2004; 2010). Based on the work of Lawrence Kohlberg and colleagues, it does this by way of exposure to cognitive conflict regarding a moral dilemma for which the group must reach a consensus. Antisocial attitudes and egocentric thinking are challenged to make way for empathic concern, decentered social perspective-taking, and more mature moral reasoning. Despite the strong theoretical basis for the inclusion of this component there is minimal research on the added value that this component brings to the overall intervention (Palmer, 2007). Few outcome studies of ART have looked for changes in the variables that the theory suggests will change following MRT. In order to develop more potent and targeted interventions, however, it is essential to understand which variables

are changing as a result of the intervention. This will not only support the theoretical basis of ART, but also expand understanding of how ART might be operating to create positive change.

Reactive and proactive aggression: Aggressive function subtypes

The previous section outlined the gap between theory and demonstrated change of the Moral Reasoning Training (MRT) component in our understanding of this component's 'active elements'. As well as understanding what psychological variables are impacted by ART it is also important to investigate who such elements are active for, furthering our understanding of how ART operates to create positive change. This section looks at the differences between two motivations of aggression, proactive and reactive, and explores how the different components of ART might target the deficits associated with each.

The Functions of Aggression

As outlined in previous sections, the Moral Reasoning Training (MRT) component aims to 'motivate' the use of the skills taught in ART. The authors state that aggressive behaviours are 'richly rewarded' in the real world, which is why a motivating component is necessary. This would seem to assume that the motivation for using aggressive behaviours is fundamentally the same. One of the criticisms of research on aggression is that the heterogeneity of the individuals grouped under the term of antisocial is often overlooked, confusing what we know about how such behaviours develop and are maintained (Little, Henrich, Jones, & Hawley, 2003; Poulin & Boivin, 2000). This has been particularly true for the motivations or functions of aggression, which are often not distinguished neither from each other nor from the expression or forms of aggression (Little et al., 2003; Poulin & Boivin, 2000). Instead aggression is more often viewed and measured as a unitary construct (Little et al., 2003), rather than a heterogeneous construct that can take numerous forms (e.g., physical, verbal and relational) and has different underlying motives for its use that vary between and within individuals in different situations (Little et al., 2003).

While there are many forms that aggression can take the function, or motivation for, aggression is commonly conceptualised under two dimensional subtypes: proactive and reactive (Dodge, 1991). Reactive aggression is motivated by frustration and anger, whereas proactive aggression is motivated by the desire for control over another person or object. Each subtype has distinct theoretical backgrounds (Dodge, 1991), developmental precursors, behavioural outcomes, physiological patterns, social-cognitive, and emotional processes (Dodge & Coie, 1987; Dodge, Lochman, Harnish, Bates, & Pettit, 1997; Hubbard, Mcauliffe, Morrow, & Romano, 2010; Poulin & Boivin, 2000; Vitaro, Brendgen, & Tremblay, 2002; Vitaro, Gendreau, Tremblay, & Oligny, 1998).

Some researchers suggest that the correlation between the two subtypes is too high for the distinction to be useful (Bushman & Anderson, 2001; Poulin & Boivin, 2000) and criticise the proactive/reactive distinction for not acknowledging there may be multiple motives of aggressive acts (Bushman & Anderson, 2001). A high correlation (r=.68) between the two subtypes has been found by meta-analysis (Card & Little, 2006) and co-morbidity for the two subtypes is common (Little, Brauner, Jones, Nock, & Hawley, 2003). From an observer's viewpoint the two can sometimes be difficult to distinguish (Little, et al., 2003; Poulin & Boivin, 2000). This is because the same underlying motivation for aggression can take different outward forms e.g., overt physical aggression could be motivated by provocation or by a desire to scare someone in order to control them. Early research using traditional measures of the two subtypes did not distinguish between the forms and functions of aggression; however, when these are separated correlations between the two subtypes have been found to be much lower (Fite, Stauffacher, Ostrov, & Colder, 2008; Little et al., 2003). A 2007 meta-analysis investigating the validity between reactive and proactive distinction in children and adolescents concluded that, while they may coexist within individuals, they are in fact distinct constructs (Polman, Orobio de Castro, Koops, van Boxtel, & Merk, 2007). Factor analysis has found that using proactive and reactive aggression in a two factor model is a better fit for samples of

aggressive children than a single factor model (Poulin & Boivin, 2000). Most aggression researchers today accept the distinction.

Reactive Aggression

Reactive aggression is defined as aggression motivated by anger (also known as "hot-blooded aggression) occurring as a defensive response to provocation and threats (real or perceived; Dodge, 1991). Support for the angry-aggression hypothesis comes from research showing that acts of reactive aggression, but not of proactive aggression, are accompanied by the same increased physiological arousal as experienced with the emotion of anger (Hubbard et al., 2010). Reactive aggression is associated with the first two steps of Crick & Dodge's (1994) Social Information Processing (SIP) model. At the first step, encoding of cues, it has been shown that reactive aggressors have difficulties encoding social cues; tending to focus on possible hostile cues while being inattentive to other details (Dodge & Coie, 1987; Dodge et al., 1997). In the second step, interpretation of cues, reactive youths are more likely to interpret ambiguous social situations as hostile (i.e., have a hostile attribution bias) - a distortion research has shown to be associated with reactive but not proactive aggression - and demonstrate lower problem-solving skills in social situations (Dodge & Coie, 1987). Reactive aggression is also associated with peer rejection and victimisation by other peers, which may contribute to, or be a result of, high aggression in social situations (Cresconi & Baumeister, 2009; Hubbard et al., 2010).

The reactive aggression function is underpinned by the frustration-aggression model (Berkowitz, 1983). This model conceptualises aggression as a reaction to a perceived threat or provocation (Dodge, 1991). The basic premise of this theory is that frustration (i.e., an aversive stimulus) is a necessary pre-cursor to aggression (Eron, 1994). An aversive stimulus triggers autonomic nervous system arousal and distorted cognitive interpretations, which result in anger. Reactive aggressors have both a lower threshold for this frustration (heightened emotionality) and less ability to control

aggressive reactions to frustrating or provocative situations (Crick & Dodge, 1996). These reactions are often impulsive (Poulin & Boivin, 2000) and out-of-proportion to the trigger event (Feinder & Engel, 2011). The picture that emerges from the literature is one of a child or young person who is both more likely to be teased, more likely to see others behaviours as hostile or teasing, and who is more likely to experience high negative affect as a result of that teasing. The response is an impulsive reaction with high levels of hostility and anger, which the individual feels they are unable to regulate or control as they lack pro-social responses to more appropriately respond with (Feindler & Engel, 2011). As a result individuals high on this dimension are more likely to react to these situations with behaviour such as temper tantrums, explosive outbursts, hostility, and anger.

Proactive Aggression

Proactive aggression, by comparison, is defined as non-provoked, unemotional aggression motivated by the desire to obtain a specific goal (also known as "cold-blooded" or instrumental aggression). Proactive aggression is theoretically grounded in Social Learning Theory (Dodge, 1991). Social Learning Theory states that aggression is a learned behaviour used to gain specific outcomes, reinforced initially by environmental factors and later by both external and internal or cognitive reinforcement (Eron, 1994). Proactive aggression is associated with biases seen in the later steps of the Social Information Processing model; steps four, response or access construction, and five, response decision, (Dodge & Coie, 1987). Proactive aggressors are more likely to have access to more aggressive, than pro-social, responses and are more likely to anticipate positive outcomes for the use of aggressive responses in social situations (Card & Little, 2006; Dodge et al.,1997; Hubbard et al., 2010; Polman et al., 2007). Proactive aggression can be independently predicted in children who have a high-self efficacy for enacting aggressive behaviours, who hold the belief that aggression will result in more positive than negative outcomes, and who prioritise personal gain over social relationships (Card & Little, 2006; Smithmeyer, Hubbard & Simons, 2000). Proactive aggressors

also place less importance on how their actions impact others and, while they are able to take the perspective of others, they lack empathy, remorse, and may even use their perspective-taking abilities to manipulate others to their advantage (Gasser & Keller, 2009; Gini, Pozzoli & Hauser, 2011; Smithmeyer et al, 2000). In contrast to individuals high on reactive aggression then, proactive aggressors don't have difficulties with reading ambiguous social situations or anger control (Poulin & Boivin, 2000). In fact there seems to be a subset of individuals, with high social competence and understanding of social rules, who choose to act aggressively (Brown, Atkins, Osborne & Milnamow, 1996). They are motivated by personal gain, to manipulate or intimidate others to their advantage; actions that result in feelings of achievement and efficacy rather than of guilt or regret. Rather than an inability to regulate emotions, proactive aggressors seem to lack the emotional conscience necessary to motivate them to behave in a prosocial way (or prevent them from behaving in an antisocial way). Proactive aggression has been theoretically linked to early psychopathy and there is some empirical research that supports this link (Fite, Raine, Stouthamer-Loeber, Loeber, & Pardini, 2010).

The risk factors associated with the development of aggressive behaviour have also been found to be different for the two aggressive subtypes (Hubbard et al., 2010). Reactive aggression has been related to earlier physical abuse and maternal neglect, whereas parental substance abuse and low parental supervision are positively related to proactive, but not reactive, aggression (Dodge et al., 1997). Having distinctive developmental risk factors and deficits, it follows that the two subtypes also lead to distinct long-term outcomes. Reactive aggression in childhood and early adolescence is associated with poor psychosocial adjustment and dating violence in later adolescence (Hubbard et al., 2010) and negative emotionality and anxiety in adulthood (Fite et al., 2010). Proactive aggression in early adolescence has been found to be associated with greater levels of externalising problems including

delinquency and disruptive behaviours three years later (Vitaro et al., 1998) and has been associated with psychopathic features and antisocial behaviour in adulthood (Fite et al., 2010).

ART and the Aggressive Subtypes

The specific deficits, risk factors, and long-term outcomes of proactive and reactive aggression lend themselves to the adaption or development of interventions that are more individually targeted toward reactive or proactive tendencies, and indeed several researchers have called for this (Smithmeyer et al, 2000). Gibbs (2010), one of the authors of ART, has acknowledged the differentiation between reactive and proactive aggression but asserts that both subtypes share the same primary ego-centric distortion hypothesised to contribute to the maintenance of antisocial behaviour. Proactive aggressors, Gibbs (2010) states, believe their rights are superior to all others and use antisocial means if necessary to achieve them and feel triumphant following their use. Reactive aggressors feel that others do not recognise their rights or show them respect and use aggression in the form of retaliation or to show strength to counter an underlying sense of inadequacy; though they may regret their actions and feel shame and guilt following their enactment (Gibbs, 2010). In the case of secondary cognitive distortions, however, Gibbs states that “at least reactive aggressors” (Gibbs, 2010 p. 135) use secondary cognitive distortions to pre-empt or justify their actions and disengage from the distress that may result from guilt and shame. Though this implies that secondary cognitive distortions could be operating in a similar way for proactive aggression, Gibbs doesn’t elaborate on whether proactive aggressors use secondary cognitive distortions or how their egocentricism is maintained by them. Further, there appears to be little research to provide support for these claims or on the impact of ART on proactive and reactive tendencies as the forms, rather than functions, of aggression tend to have been such research’s focus.

Given the different underlying deficits associated with proactive and reactive aggression, it follows that each would benefit from different interventions to target these. Reactive aggressors would

benefit from interventions that focus on the social competence deficits, on anger management (such as the anger management component of ART), and that are designed to remedy their underlying hostile attribution biases (Kempes, Matthys, de Vries & van Engeland, 2005) and cognitive distortions (Gibbs, 2010). By comparison, deficits associated with proactive aggressive tendencies would be better targeted by interventions that sought to increase empathy and understanding of the impact of one's actions on others (Lovett & Sheffield, 2007) as well as the challenging of egocentric biases, which lead to the prioritisation of means over relationships and prosocial outcomes (Gini et al., 2011; Kempes et al., 2005).

Examination of the components of ART, and the specific deficits they target, allows some prediction of how each might target the underlying deficits of reactive and proactive aggression. The social skills training component provides the steps and practice so aggressive youth can increase their pro-social behavioural repertoire to provide alternatives for aggressive techniques for negotiating social situations (Glick & Gibbs, 2011). This component then should act to decrease the social skills deficits of reactive aggressors, who have difficulties with peer rejection, and help to challenge the beliefs that aggression is the most effective way for negotiating situations. By comparison, those with high proactive aggressive tendencies may not benefit from training in social skills (Ogloff, Wong & Greenwood, 1990; Rice Harris & Cormier, 1992). The SST component, therefore, would appear to target deficits associated with reactive rather than proactive aggression.

The Anger Control Training (ACT) component provides participants with the steps to examine and regulate their anger and frustration and provides them with the space to use an alternative, prosocial method of dealing with these emotions. This component, therefore, directly targets the anger regulation difficulties of reactive aggressors and encourages them to think beyond their immediate hostile interpretations. It is less obvious how this component might target deficits associated with proactive aggressive tendencies, which are not associated with difficulties in anger regulation.

The application of the Moral Reasoning Training (MRT) component to the different functions of aggression is less clear. The MRT component aims to raise concern for the rights and needs of others by challenging egocentric cognitive distortions and remediating moral reasoning delay. However, the relationship between moral reasoning and the functions of aggression is not well understood as little research has addressed this association (Manning & Bear, 2011). Given what is known about the two subtypes, one might reasonably expect that the prioritisation of one's own goals and valuing of aggressive methods seen with proactive aggression would be associated with moral reasoning within the immature stages more than reactive aggression, for which aggressive actions are related to a lack of control of emotion and a misinterpretation of social situations (Manning & Bear, 2011). This prediction has been supported in one study that found a significant positive association between self-oriented moral reasoning and proactive aggression, but not for reactive aggression, in a sample of adolescents (Arsenio, Adams & Gold, 2009). However, other research has found the opposite finding – that reactive aggression, not proactive aggression, was positively associated with self-oriented moral reasoning (Manning & Bear, 2011). These apparently contradictory findings make it difficult to predict if the MRT component might be more or less beneficial for one subtype over the other. Both proactive and reactive subtypes have been found to be negatively associated with a caring perspective (Manning & Bear, 2011). This suggests that both tendencies would gain from an intervention that aims to raise concern for the rights and feelings of others.

With regard to MRT's role in ameliorating cognitive distortions, again, the differential impact of this component on the subtypes of aggression is less clear. Based on Gibbs' description of secondary cognitive distortions and the opportunity provided for engaging in discussion about others' attitudes and moral view points, reactive aggressors' social processing deficits could benefit from this component. Langeveld et al (2012) found that children and adolescents with problem behaviours benefitted from ART regardless of whether or not they were low or high in social competence at pre-

test. They concluded that the inclusion of the MRT component in ART may be especially important for those high in both social competence and antisocial behaviours (as can be the case for proactive aggression). The challenging of egocentric viewpoints and possible empathy development that *may* occur during this component would therefore be of benefit to those with proactive aggressive tendencies.

ART then seems a promising intervention for dealing with aggression as it targets deficits on both the proactive and reactive aggression dimensions, especially given that these constructs are often highly correlated within individuals. However, no research exists to demonstrate ARTs effectiveness with the subtypes of reactive and proactive aggression. In light of this research further understanding of how levels of proactive and reactive aggression are impacted by the ART intervention would be beneficial for providing support for Gibbs' implication that ART is a beneficial intervention for both subtypes, for helping to target intervention where it is most beneficial, and for expanding the knowledge base of the efficacy of ART.

Summary

The reactive-proactive distinction has been largely ignored in the literature and research on ART. This has resulted in less understanding about who ART is most effective for. Given that each subtype has a different theoretical basis, different deficits, and different long term outcomes it seems unreasonable to expect that one intervention will equally target them both. Much of ART seems geared towards underlying reactive, rather than proactive, deficits; the MRT component is the exception. While Gibbs recognises that the "presumptions" (2010, p.134) or content of the primary self-centred thinking errors are different for each aggressive subtype, the primary egocentric thinking error is still seen as fundamentally the same (Gibbs, 2010). The assumption seems to be that the same method of treating these thinking errors (the MR component of ART) will work equally for both

aggressive subtypes. In order to develop more potent and targeted interventions, however, it is essential that research on who interventions work best for is investigated.

The current research

Existing research on Aggression Replacement Training (ART) suggests it is a promising intervention for use with adolescents in high school settings. Given both the high incidence of antisocial behaviours seen in this age group, the unique time of life, and the need for interventions that target problem behaviours for this age group in school settings the current ART trial is an attempt to see if ART is acceptable to New Zealand students and leads to positive change for them.

It was hoped that the trialling of a manualised programme like Aggression Replacement Training (ART), which can be implemented by a wide range of professionals (teachers, social workers, psychologists, counsellors etc), might provide evidence for the use of ART. Further, it was hoped that a better understanding of how ART, and particularly the Moral Reasoning Training (MRT) component, contributed to the improvement in behaviour of individuals could then be used to inform future developments in treating aggression and other behavioural problems and add to the research base on ART.

Despite the promising status of ART as an intervention for antisocial adolescents, and the largely positive outcome research base supporting its efficacy, there are still many questions left to answer. Outcome research on ART is largely based on broad behavioural outcomes such as recidivism, externalising behaviour, or aggressive behaviours rather than assessing change in interpersonal variables that may be contributing to these changes. While examining external behaviours makes sense, in terms of assessing whether or not ART is a useful intervention for reducing antisocial behaviours, further research is required to establish the conceptual relevance of the components to the overall intervention (Palmer, 2007) and to the deficits they target (Lovett & Sheffield, 2007). Given the relatively few outcome studies on ART that focus on targeted deficits, as opposed to broad behaviours, this is an area that still requires investigation. The current research aimed to add to the knowledge base on ART by looking at changes in interpersonal variables targeted by ART. Further,

it attempted to examine the added value of the MRT component by delivering this component following the delivery of the Social Skills Training (SST) and Anger Control Training (ACT) components and assessing levels of interpersonal variables at several time points in order to assess where significant gains are made.

This research also looked to investigate how ART impacted levels of proactive and reactive aggression. Criticisms exist in the literature regarding research on antisocial adolescents as if they were a homogenous group, while neglecting the differences in the tendencies that motivate aggression (e.g., Poulin & Boivin, 2000). By ignoring the underlying functions of aggression interventions, especially those that claim to motivate the use of prosocial behaviours such as the MRT component of ART, will only be able to go so far. To produce more potent or targeted interventions research must begin to investigate what works best and for whom. This is particularly true of ART, for whom some of the components seem more appropriately aimed at deficits of reactive aggression compared with proactive aggression.

The current research aimed to explore the above outlined knowledge gaps by investigating the change in variables that are theorised to lead to positive change following intervention with ART.

Research Questions:

- Does a 10 week programme of Aggression Replacement Training (ART) lead to an improvement in social competence (as assessed by decreases in interpersonal deficits associated with problem behaviour and increases in variables associated with pro-social behaviours) for 12-15 year old students identified as having aggressive/disruptive behaviours?

- Does the Moral Reasoning Training (MRT) component of ART appear to result increased treatment gains when compared with gains from Anger Control Training (ACT) and Social Skills Training (SST) sessions alone?
- Does intervention with ART result in changes in empathy? (Examining both empathic concern and perspective taking as separate facets of empathy).
- Does a 10 week programme of ART result in reduced levels of proactive and reactive aggression?
- Is a 10 week programme of ART acceptable to NZ high school students?

Method

Participants

Participants in this study were 18 high school students from high schools within the wider Wellington region, ranging from 13 years, 10 months of age to 15 years, 10 months of age with a mean age of 14 years, 8 months (SD=8.6 months) at the time of recruitment (school Years 10 and 11; see Table 1). Participating schools nominated individuals that exhibited a high level of disruptive, aggressive, and/or antisocial behaviour, and/or conduct problems for participation in the programme. A total of 26 students were nominated by participating schools. Of these 25 nominated students were given consent to participate in the programme by their parents/caregivers (see sampling and recruitment procedures below). These students were screened for inclusion in the study by way of the Child Behaviour Checklist (CBCL) and Teacher Report Form (TRF; Achenbach & Rescorla, 2001). Of these 25 students all met inclusion criteria. One student opted out of the research programme during pre-assessment screening. One student opted out during the initial ART session. In total 23 students began the programme. Two of these students were excluded from the study due to failing to comply with the basic ground rules for participation (failing to attend sufficient sessions/excessive levels of disruption to the detriment of other participants). One student moved away from the school part-way through the programme. One student participated in the majority of sessions but, due to psychosocial difficulties toward the end of the research, was unable to complete final assessments. As a result this student's data was not included in the final analysis.

		Identified culture		
Gender	N	NZ European	Maori	Pacific Island
Male	12	7	5	0
Female	6	1	3	2

Table 1: Demographic information for final sample

Sampling and recruitment procedures

A list of schools (N=284) in the wider Wellington region (including the Hutt Valley and Kapiti Coast) was obtained from using The Ministry of Education's Te Kete Ipurangi (TKI) website. This list was filtered to include only composite and secondary schools with students in the appropriate age range (12-15 years) and exclude schools that were bilingual, health camp schools, model schools, regional health schools, restricted composite schools, schools for hearing or vision impaired, and schools for those with learning/social difficulties or physical disabilities. The remaining 52 schools were contacted by email and provided with information on the research, the intervention, and an invitation to participate (see information to schools Appendix A1).

Six schools in total expressed interest in participating in the research. Two of these were interested in the programme for students that would not meet the research inclusion criteria (e.g., were not in the correct age-group; wanted the programme to be delivered in Te Reo Maori) or were not able to commit to all the conditions of involvement and so no further action was taken with these schools. The current author (trainee psychologist) and a colleague (trainee psychologist) met with four schools that were interested in the research for students that met the inclusion criteria, and were able to commit to all of the requirements for involvement (see requirements in Appendix A1), to discuss further the possibility of running the programme with their students. Meetings included meeting with the principal (or similar) to explain the research and obtain permission to run the programme in their school. Meetings were also held with the deans and staff that were likely to be involved with assisting the researchers throughout the intervention (e.g., facilitating contact with families, helping with room bookings, collating school records etc) to provide them with information and discuss expectations for assistance. Of the four schools met with, one school decided not to participate as they were running a number of other programmes in the school and could not fit the programme into their timeframes. Three schools were able to met requirements, however one was unable to nominate

sufficient students for a group to be run and had to withdraw. Two schools were able to commit to the duration of the study and, of these of these schools, one was able to nominate enough students for two groups and agreed to have two research groups run. Several meetings were held with these schools in order to implement the programme (e.g. timetabling, room availability, sending out letters to participating parents, discuss screening of candidates).

Following approval from Massey University's Human Ethics Committee, participating schools sent home letters and information sheets to the parents or caregivers of the nominated students (see Appendices A2 and A3). These letters introduced the facilitators, explained the aims of the research project, and outlined the ART programme. Letters also requested consent for the screening of their child with the CBCL and TRF and, if their children met the inclusion criteria, for participation in the programme. The information included with the letter contained all information about the content and process for the programme, consent, confidentiality, and all other rights (e.g., withdrawing from the study). All parents were encouraged to contact the researchers if they had any queries or concerns. Parents were also given the option to attend an information evening (one for each of the participating schools) to provide them with an opportunity for a face-to-face meeting with the researchers, to ask questions of the researchers directly, and to provide parents with further information before consenting. In total, five parents/caregivers took this opportunity.

All consenting parents were given the option of completing the CBCL independently or having the questions read out to them and then answering them orally (as per the manual instruction, Achenbach & Rescorla, 2001). Oral administration was offered for parents who may have had difficulties with English literacy; however, this reason was not explicitly stated to parents to avoid any discomfort or embarrassment associated with admitting literacy difficulties. Consenting parents were asked to complete the CBCL for their child. One teacher of each participating student, who knew that student well, was asked complete the TRF. In some cases this was done by the students' Dean or an RTLB

that had worked with the student. If T-scores equal to or greater than 65 were obtained, on either the CBCL or TRF, the student was included in the programme. This ensured participants were exhibiting sufficiently high levels of disruptive and antisocial behaviours for the intervention to be of benefit to them. Students receiving other behavioural interventions during the research period were excluded to ensure that the pre-to-post-assessment measures were not confounded by any impact alternative interventions may have had; however, as none of the students were this criteria did not have to be enforced.

Design

The design of the research is a within subjects, repeated measures design. Repeated measures, analysis of variance (ANOVA) were used to assess the main effect of difference at each data collection time point (T1-T4).

Where significant main effects were found, post-hoc analyses with Tukey's HSD Test were also used to look for significant pairwise comparisons within each data set to ascertain where significant change, if present, occurred.

To examine the possible additional effects of the MRT component compared to the ACT and SST components alone, the magnitude of change between T1-T2 and T2-T3 was compared by looking at effect sizes.

Observational data of in-session behaviour was assessed throughout the intervention and change across course of the programme examined.

Measures

The following pen-and-paper questionnaires were administered to participants or parents and teachers within the present study, as outlined below.

Child Behaviour Checklist (CBCL) and Teacher Report Form (TRF; Achenbach & Rescorla, 2001).

The CBCL and TRF are both 113 item paper-and-pencil general screening measures of emotional and behavioural problems for children and adolescents. The Externalising syndrome scale of these measures was used to screen participants into the study and as an outcome measure for teacher and parent-rated behavioural outcomes[2]. The CBCL is designed to be completed by the child or young person's parent or caregiver and the TRF is designed to be completed by their teacher. Each follows has the same format and length. The four page questionnaire asks the parent/caregiver or teacher to rate the child's behaviour, based on the previous six months, on competence and problem scales in a standardised format. The measure can be completed by anyone with a NZ Year Seven and take an average of 15-17 minutes to complete. The scales for both the CBCL and TRF were derived from statistical analysis of co-occurring problems found in the data of CBCL/TRF scores for large numbers of clinically referred children (Achenbach & Rescorla, 2001). The results are scored to generate a profile of the child's standing on the competence and problem scales. When converted to T-scores the results can then be compared against averages for the age and gender of the child. In a New Zealand study with 11-15 year old high school students (2001) Le Roux found that the CBCL could be used with confidence with this New Zealand population.

The Externalising syndromes scale represents problem behaviors that are directed toward the external environment (Achenbach & Rescorla, 2001). This scale is a sum of three subscales, Attention Problems, Rule-Breaking Behaviour, and Aggressive Behaviour. These behaviours include antisocial

[2] Due to low numbers of return of the CBCL at follow-up and different raters completing the measures at pre-test and follow-up these measures were used to screen individuals into the research, but were not used as outcome measures at completion.

behaviours, disobeying rules, physical aggression, vandalism, and threatening others as examples of externalizing behaviors.

The following measures are outcome measures that were used to assess gains in variables of interest and more general behavioural gains. These were completed before the delivery of the intervention, after the ACT and SST sessions were completed, after all sessions were completed, and then again at 3 month follow-up.

How I Think (HIT; Barriga, Gibbs, Potter and Liau, 2001)

This measure was completed by participants to assess the presence and severity of cognitive distortions. The measure was administered to participants on four occasions: pre-intervention (T1), after the delivery of the Aggression Control Training and Social Skills Training components (T2), after the completion of the full intervention (T3), and at a three month follow-up (T4).

The HIT is a 54-item self-report questionnaire designed to measure the cognitive distortions regularly made by antisocial and chronically aggressive youth. Respondents rate their agreement with item statements (examples of items include “people need to be roughed up once in a while” and “everybody steals, you might as well get your share”) on a 6-point likert scale (from agree strongly to disagree strongly). The measure takes 5-15 minutes to complete and requires a NZ Year Five reading level. The items total to give an overall HIT Total score and map onto eight scales: four cognitive distortion scales (Self-Centred, Blaming Others, Minimising/Mislabelling and Assuming the Worst) and four Behavioural referent scales (Opposition-Defiance, Physical Aggression, Lying and Stealing). Scores are given for each of these scales as well as for three summary scales: An Overt Scale, which reflects behavioural referent items that usually involve direct confrontation of a victim; a Covert Scale, which reflects behavioural referent items that involve antisocial behaviours that

typically do not involve direct confrontation of a victim; and an Anomalous Responding Scale as a screen for unusual or suspicious responding.

The HIT has been supported by confirmatory factor analysis and internal consistency estimates are very high (α=.92-.96). Internal consistency for the Overt and Covert scales were also high (α=.83-.94). The cognitive distortion, behavioural referent subscales, and Anomalous Responding scales have also shown good internal consistency (α=.63 -.92). The measure has shown good convergent validity with self-report, parental report, and institutional indices of antisocial behaviour and has also shown good divergent validity not correlating with socioeconomic status, intelligence, or grade point average (Barriga et al, 2001).

Sociomoral Reflection Measure – Short Form (SRM-SF; Gibbs, Basinger & Fuller, 1992)

The SMR-SF measure was used in the current study to assess participants on their level of global stage of moral reasoning. The SRM-SF (Gibbs et al., 1992) is an 11 question measure of sociomoral reasoning that covers five sociomoral values: Contract and Truth; Affiliation; Life; Property and Law; and Legal Justice. Questions that require moral decisions or evaluations for each value are used to assess the overall stage of moral reasoning for the respondent. Participants respond to each question, (for example “Think about when you’ve made a promise to a friend of yours. How important is it for people to keep promises to friends?), by choosing whether the value at hand is very important, important, or not important and then write a short answer rationale as to why that is. The responses are scored and summed together to produce a score of overall socialmoral reasoning (SMRS). Higher scores represent higher stage reasoning. Scoring requires inferential assessment of the participant’s written answer, i.e., a content analysis of the justification against the criteria provided in the scoring manual.

Given the inferential nature of the scoring used in the SMR-SF raters must self-train in order to adequately score the measure. The manual outlines the training procedure and provides all necessary material for training. The authors state that training requires “at least 30 hours of study and practice” (p. 45, Gibbs, et al, 1992) over four to eight weeks. Upon completion of the self-training reliability of scoring is assessed against another trained rater by way of interrater reliability. Once training is completed, each questionnaire takes the average rater approximately 20-25 minutes to score.

The psychometric properties of the SRM-SF have been assessed with pre-school and high-school students, delinquent adolescents, university students, and adults (Gibbs et al, 1992; Palmer, 2003b). The SRM-SF has been shown to have good psychometric properties and provides an acceptable alternative to the traditional measures of moral reasoning (Gibbs et al, 1992). Correlations of the SRM-SF with the Moral Judgement Interview, the traditional method developed by Kohlberg, were acceptable (r=0.69, p<.0001) .Test-retest data (r=0.88, p<.0001) was good across all groups in the sample and high inter-rater reliability (r>.90). The SRM-SF has good internal consistency (α=0.92, N=374) and similar results were found using split-half reliability and factor analysis showing that the SRM-SF is measuring a homogenous construct. Moderate correlations have been found for age (r=0.66), verbal IQ (r=0.49), and socio-economic status (r=0.20); which reflects the theorised impact of these variables on moral reasoning ability (Gibbs et al, 1992; Palmer, 2003b).

The Interpersonal Reactivity Index (Davis, 1983)

To assess levels of perspective-taking and empathy the Perspective-Taking (PT) and Empathic Concern (EC) sub-scales of the Interpersonal Reactivity Index (IRI) were used. These subscales were used to assess participants’ levels of empathic concern and perspective-taking. Each subscale has six questions, (For example “When I see someone being taken advantage of, I feel kind of protective towards them” and “I believe that there are two sides to every question and try to look at them both”), that ask participants to rate how well a statement describes them on a five-point likert scale

from ‘does not describe me well’ to ‘describes me very well’. The subscales of interest have shown good internal reliability (α=.68-.75) and test-retest reliabilities (*r*=.61-.72). This measure and its subscales have been widely used in research (Lovett & Sheffield, 2007; Myyrya et al., 2010).

The Forms and Functions of Aggression measure (Little, Jones, Henrich & Hawley, 2003)

The Little et al. measure is comprised of 36-items designed to “disentangle” the forms of aggression (relational and overt) from the functions (proactive and reactive) of aggression. This measure was used to assess participants’ levels on the dimensions of proactive and reactive aggression. This measure consists of six subscales each comprised of 6 items designed to differentiate between pure overt aggression, overt-reactive aggression, overt-proactive aggression, pure relational aggression, relational-reactive aggression, and relational-proactive aggression. For this study only 24 items from the four subscales that measure reactive and proactive aggression (omitting the scales for pure overt and pure relational aggression) were used. Internal consistency coefficients for these subscales were adequate as found by Little et al., (α = .63 –.84).

Social Skills Improvement System (SSIS) student form (13-18; Gresham & Elliot, 2008)

The SSIS, a revision of the Social Skills Rating System (SSRS), was used to screen students suspected of having social skill deficits and to assess common social skills and behaviours in the domains of communication, cooperation, assertion, responsibility, empathy, engagement, and self-control. This measure was used to assess levels of social skill skills knowledge and use. Students indicated, on a four-point likert scale, how true of them (i.e., not true, to very true) a statement about a social skill or problem behaviour was (for example “I stay calm when I disagree with others”). They also rated how important they believed that statement to be on a three-point likert scale (i.e., not important, important, or critical). The SSIS has acceptable psychometric properties, including good internal consistency for all subscales (*α*=.71-.95), fair to good test-retest reliabilities for all

subscales (*r*=.59-.81), and is widely used in research with children and adolescents (Gresham & Elliot, 2008).

Other measures

The following measures will also be administered to participants as part of a separate research project that is using the same sample (see Smith, 2014). These measures will not be used in relation to the current study.

Difficulties in Emotion Regulation Scale (DERS; Gratz and Roemer, 2004)

The DERS (Gratz & Roemer, 2004) is a 36-item self-report questionnaire that assesses clinically relevant difficulties in emotion regulation (with a focus on negative emotions) on six subscales.

State-Trait Anger Expression Inventory -2 Child/Adolescent Version (STAXI-2 C/A; Brunner and Spielberger, 2009)

The STAXI-2 C/A is a 35-item self-report measure designed to assess anger in children and adolescents aged 9-18 years. The STAXI-2 C/A is based on the adult version (STAXI-2) and assesses state and trait anger, as well as how the individual expresses and controls anger.

Other data sources

School Behaviour Record data

School behaviour records were collected for all students in the study from the beginning of the school year until the final data collection point (T4). School behaviour records included attendance data and behaviour incidents that were entered into the school data base by school staff. These included disruptive behaviour in class, not complying with school rules (e.g., incorrect uniform, off school grounds, truancy), bullying, and fighting. Positive behaviour incidents could also be recorded by staff into the school behaviour record system. However, record keeping differed between schools

and was inconsistently used by staff members. As a result it was decided not to utilise this data in our research.

Observation data

Following each session, each participant was separately rated by both facilitators on their behaviour on five categories, including the perceived level of the participant's co-operation with facilitators; engagement and enthusiasm in the session; level of disruptive behaviour; volunteering/participation within the session; and apparent understanding of the material presented within each session. Each participant was rated on a five-part likert scale for each category. Scales were developed by the researchers in conjunction with their research supervisor (see Appendix B1).

Participant feedback

At T4 participants were asked for feedback regarding their experiences of the programme. This included an opportunity for group feedback and an anonymous survey. Participants were asked to give feedback about the programme, what they found most and least useful, and their experiences of changes in themselves and others. This data was collected to provide some qualitative information of the acceptability of the ART programme to participants and what they felt they had gained from their participation.

Procedure

The procedure for this research is briefly outlined in Table 5 below. All participants met one-on-one with the facilitators within the four weeks prior to the beginning of the intervention to have the purpose of the research, the ART programme content, rules for the sessions, and the limits of confidentiality explained to them prior to obtaining informed written assent from them. These sessions took approximately 40-50 minutes for each participant. Participants were told that the facilitators were university students who have to do research as part of their study and, as part of that

research, had decided to look at a programme developed in the United States to see how it works for students like themselves in New Zealand. Participation was optional and participants were also told that they could discontinue at any time, but that once they had done so they wouldn't be able to rejoin the programme. Participants were given information sheets regarding the research to take with them (see Appendix A4). They were told that if they did want to discontinue - or had any issues regarding their participation in the programme - they should talk to the facilitators, their parent/caregiver, the school liaison, or a teacher about that first. Assessments were administered to the participants individually so they could answer them in their own time and ask questions if needed, without pressure or distraction from the other participants. Facilitators were present at the assessment sessions to answer any questions that the students might have and to be available to administer the assessments orally if required.

The ART sessions were run on the grounds of schools where the participants attended usual classes. As ART is an evidenced-based manualised programme, the session formats are highly prescriptive and all sessions followed the instructions in the ART manual (Glick & Gibbs, 2011). The sessions were facilitated by two Doctoral level Clinical Psychology students: the current author and a second doctoral level student also completing research on the same sample (Smith, 2014). We were trained to deliver ART by a master trainer who also provided supervision during the programme. Session Evaluation Checklists (as provided in the manual; Glick & Gibbs, 2011) were completed for all sessions to ensure adherence to the programme and maintain treatment fidelity. Facilitators also met with school staff members on a regular basis (at least once per week for the duration of the intervention) to maintain good relations with the school and to discuss any difficulties regarding implementation (e.g., room bookings, timetabling) that either party may have had.

The manual recommends running the ART programme as three, hour-long sessions per week, one from each module of the programme, for a period of ten weeks; however, variations in this structure

can be made to accommodate time, resource, and other constraints (Glick and Gibbs, 2011). For this study the ART programme was delivered as a 10-week intervention with three sessions per week, as per author recommendations; however, the 20 Anger Control Training (ACT) and Social Skills Training (SST) sessions were completely delivered first (alternating components), followed by the delivery of all 10 Moral Reasoning Training (MRT) sessions (see Figure 5). This structure was chosen to allow evaluation of the additional impact of the Moral Reasoning component of ART separately from the cumulative effectiveness of all three components.

Where students missed a session all materials and worksheets from missed sessions were provided and time was given, either at the beginning of the subsequent session or at alternate time, to go over the session with the student and give them time to complete the relevant worksheets. This sometimes resulted in meetings with 2-3 students during lunch breaks.

Following the final session all students were provided with a certificate recognising their participation in the programme, as well as a pack that included all the material that was covered in the ART sessions for their future use.

Action	Procedure
Preparation	Meetings with schools and parents' information nights held. Consent for school participation and parental consent for screening and participation gained.
Screening	Screening with CBCL/TRF; students who meet criteria for participation met with to have study explained to them and expectations for participation outlined. Assent for participation requested
Participant assent	All students that met criteria for participation were met individually, provided information about the research and what participation in the research would involve and if the student was interested in participation, provided their assent for participation.
T1 -Pre-assessment	Students that met criteria for participation completed questionnaires over two sessions to assess their levels of proactive and reactive aggression[3], empathic concern and perspective-taking4, sociomoral reasoning stage[5], thinking-errors[6] and social skill abilities[7].
ACT + SST (3 x 20 sessions)	Participants complete Hassle Logs as part of ACT sessions and Social Skills homework note.
T2 – Mid-assessments	Participants repeat all self-report, pre-assessment measures over two sessions in the same order as they were initially administered. Participants complete problem-scenarios prior to MR session.
(MR 3 x 10 sessions)	Participants complete problem-scenarios prior to each session. Facilitators assess scenarios prior to each session to ascertain the most and least mature responses of participants.
T3 - Post-assessments	Participants repeat all self-report, pre-assessment measures over two sessions in the same order as they were initially administered.
T4 - 3 month follow-up	Participants repeat all self-report, pre-assessment measures in the same order as they were initially administered. Teachers complete TRF. Parents complete CBCL. School records of behavioural incidents for the previous school year examined.

Table 5: Outline of research procedure

[3] 23 items on Proactive/Reactive aggression questions from Little et al.'s 2003 self-report measure.

[4] 14 items on Empathic concern and perspective-taking subscales from the Interpersonal Reactivity Index (IRI) (Davis, 1980).

[5] 11 items of the SocioMoral Reflection Measure – Short Form (SMR-SF).

[6] 54 items of the How I Think (HIT) questionnaire

[7] 75 items of the Social Skills Improvement System (SSIS)

Results

Attendance

The mean attendance for all three participant groups over the course of the study was 81.8 percent. By component, attendance was 84.79% for the Social Skills component; 82.87% of the Anger Control Component; and 77.78% of the Moral Reasoning Component.

Preparation of Data

Data screening and analysis was completed using SPSS version 21. Data sets were examined for data entry errors, outliers, and violations of assumptions required for statistical analysis. To evaluate the normality of distribution the skewness and kurtosis were considered with a conservative *p* level of plus or minus three as recommended by Tabachnick & Fidell (2012). Data was found to be within a normal distribution at T1. For the remaining time points six outliers were identified. At T2 the Internalising and Problem Behaviour scales of the SSIS showed a positive skew and positive kurtosis. At T3 the Externalising, Internalising and Problem Behaviour scales showed positive skew and kurtosis. At T4 the Internalising scale of the SSIS showed positive skew and kurtosis. Outliers impacting the normality of these scales were replaced with the next highest score for that data set, which was not an outlier, plus one (Tabachnick & Fidell, 2012).

Scale reliability was assessed by calculating Cronbach's alphas for all scales at each assessment point. Values less than .70 fall below the cut-off recommended for scale reliability when conducting research. Pallant (2007) highlights that it is not uncommon to find low alpha values when measures have a low number of items (e.g., less than ten). Pallant (2007) recommends reporting the mean inter-item correlation for scales in such cases and cites Briggs & Check (1980) who recommend inter-item correlations ranging between .2 and .4. Inter-item correlations were calculated for all scales where alphas less than .70 were found. Relevant data are reported below.

Dealing with Missing Data

Missing item responses for individual self-report measures were dealt with according to the procedures for scoring missing data as outlined by the manual for each measure. Data was available for each participant included in the study for every time point with the exception of the SMR-SF for one participant at Time 4, which was lost. This participant was excluded in data analysis for the SMR-SF.

Statistical Analysis

To assess for change of dependant variables over time a series of repeated measures analysis of variance (ANOVA) were conducted. Where sphericity was met, as assessed by Mauchley's test of sphericity, the univariate main effect is reported. Where sphericity was not met the Greenhouse-Geiser corrections are reported. Post-hoc analyses with Tukey's HSD Test were also used to look for significant pairwise comparisons within each data set to ascertain where significant change, if present, occurred. Bonferroni's correction was used to control the familywise error rate that can result from multiple comparisons of the same data for post-hoc analyses.

Effect sizes were calculated for all ANOVA calculations and t-tests. Partial Eta Squared (η_p^2) was calculated as the effects size for all ANOVA calculations. Consistent with Cohen's (1988, 1992, as cited in Field, 2009 and Pallant, 2007) interpretive guidelines, the strength of an effect size are reported as small (.01), medium (.06), or large (.14) for partial eta squared. As recommended by Field (2009), effect sizes reported for t-tests are Pearson's correlation coefficient (*r*), the strength of an effect sizes for all Pearson's correlation coefficients are reported as small (.10), medium (.30) and large (.50).

Where available group means for participants in the present study were compared to normative data (i.e., standard scores, clinical cut offs, percentiles or T-scores) for each measure to provide an

indicator of the clinical significance of change as recommended by several researchers (Kazdin, 1999; Kendall, Marrs-Garcia, Nath & Sheldrick, 1999).

Given the small sample size, and the fact that important differences can be non-significant in small samples due to the low statistical power (Field & Hole, 2002), the Reliable Change Index (RCI) and clinical cut-off scores are calculated for all measures where the necessary alpha reliability and standard deviation information required for the calculations were available. The RCI is a measure of individual change that takes into account the reliability of the measure used (Jacobson & Truax, 1991). This statistic therefore, unlike change in the group mean, provides individual level information about change within an individual that is unlikely to be a result of variability within the measures (Zahra & hedge, 2010). Clinical significance, which is defined as change from a score typical of a clinical or dysfunctional population closer to a score typical of the "normal" population, was calculated by determining a cut-off point by which to tell if a score has shifted from dysfunctional to functional as per guidelines provided by Jacobson & Truax (1991).

To investigate research question two, the added contribution of the MRT component, the pattern of change as represented pictorially by graphs of means over time and the effect sizes between pre-test and time two testing and pre-test and post-test will be compared; with a particular focus on those interpersonal deficits theorised to be improved by the moral reasoning component. The expectation if the MRT component does result on an additional impact on these variables, over and above that of the Anger Control Training (ACT) and Social Skills Training (SST) components, is that we would see a steeper decrease in these variables following at T3 than at T2 as well as effect sizes of greater magnitude between T2 and T3 than between T1 and T2.

Results are divided by measure, with the results for each presented according to the relevant research question. All measures contribute to research question one, which looks at the change of variables from T1 to T3 and T4 to determine if improvement has occurred for the group mean and individual

change for each measure over the course of the intervention. Research question two looks at the pattern and magnitude of change over the course of the intervention to determine the added value of the Moral Reasoning Training (MRT component). Research question three is assessed by looking change from T1 to T3 and T4 on the subscales of the *Interpersonal Reactivity Index* (IRI). Research question four also looks at change from T1 to T3 and T4 using subscales of the *Forms and Functions of Aggression* measure. Finally, question five is assessed using information gained from in-session observations and finally data collected regarding the acceptability of the programme to students as measured by survey at follow-up.

Social Skills and Problem Behaviours – Social Skills Improvement System (SSIS)

One of the major aims of ART is to increase the social skills repertoire and competence of participants. Hypothesis one of the current research predicted that following ten weeks of ART participants would report significant gains in prosocial skills and decreases in problem behaviours associated with social skills deficits. The Social Skills Improvement System (SSIS; Gresham & Elliot, 2008), which includes scales measuring a range of prosocial skills and problem behaviours, was used to investigate change in variables associated with social competence over the course of this study. The results from this measure are as follows.

Characteristics of the SSIS Score Distribution

The majority of SSIS internal consistency values were acceptable to excellent (α=.70 - .94) for the majority of assessment points, however eight of the 13 scales showed poor alphas at one or more testing times (see Table 2). Values less than .70 fall below the cut-off recommended for scale reliability when conducting research; however this is not uncommon when scales have less than ten items (e.g. .5; Pallant, 2007). Given the low number of items in each subscale, the mean inter-item correlations were assessed (see Appendix C1 for a full table of these scores; Pallant, 2007). Of the eight scales that showed one or more lower than acceptable alphas, two of these (Cooperation and Bullying) had mean inter-item correlations within the optimal range at all time points (between .2 -.4; Briggs & Cheek, 1986, as cited in Pallant, 2007), suggesting that low alphas were a result of the small number of items in each scale. Three scales (Assertion, Empathy, and Hyperactivity) demonstrated good mean inter-item correlations for the first three data collection points, but were below optimal at T4. The three remaining scales (Communication, Responsibility, and Externalising Problems) showed both poor alpha reliabilities and sub optimal mean inter-item correlations for the majority of test points, suggesting that these scales demonstrated poor reliability in this study. This is

especially true of the reliability value found at T4 for the externalising subscale. Given the theoretical importance of this subscale to outcomes following ART this scale has not been excluded from analysis; however, given the large amount of unsystematic variance potentially found at this time point results must be interpreted with caution.

Analysis of Results

The overall pattern of change was as predicted with the group means for all SSIS scales improving from T1 to T4. The exception to this was the internalising subscale. Despite this apparent overall improvement, significant main effects for time were not found for any of the SSIS scales except the *Hyperactivity/Inattention* subscale. With the exception of the *Hyperactivity/Inattention* subscale, for which a large effect size was found, effect sizes for all other scales ranged from small to moderate based on Cohen's (1988) interpretive guidelines. A shift from below or above average to within the average range occurred for three scales at T4. Overall, results from the SSIS measure provide little support to suggest a significant shift in self-reported use of positive social skills following 10 weeks of ART. Some support was found for improvements in problem behaviours. These changes are further described below. SSIS total and subscale mean group scores, standard deviations and main effect ANOVA for each data collection point (T1-T4) are shown in Table 2.

Scale	α range (T1-T4)	*N* of items	Time 1		Time 2		Time 3		Time 4		Main effect			Normative Sample (*N*=127)	
			Mean	*SD*	Mean	*SD*	Mean	*SD*	Mean	*SD*	F(3.51)	p (0.05)	Partial η^2	Mean	SD
Social Skills															
Social Skills Total	.91-94	46	72.18†	*19.15*	75.24	*19.32*	75.11	*15.84*	77.67	*18.60*	1.14*	.330	.06	94.9	20.2
Communication	.44-.68	6	10.83	*2.83*	10.39	*3.47*	11.78	*2.56*	11.72	*2.39*	1.85	.150	.10	13.5	3.2
Cooperation	.67-.87	7	7.89†	*3.16*	8.44†	*3.82*	8.61†	*2.38*	9.33†	*3.92*	1.36	.265	.07	14.8	3.8
Responsibility	.49-.75	7	9.50†	*2.85*	10.11	*2.91*	10.17	*2.73*	11.11	*3.36*	1.64**	.209	.09	13.4	3.7
Empathy	.53-.77	6	10.56	*3.36*	12.17	*3.95*	10.78	*3.06*	11.33	*2.40*	1.52	.221	.08	14.6	3.6
Assertiveness	.60-.81	7	10.83	*4.10*	11.50	*3.15*	11.89	*3.10*	11.5	*3.11*	0.88	.457	.05	13.0	3.3
Engagement	.72-.82	7	12.72	*3.44*	13.11	*3.27*	13.67	*3.82*	13.22	*3.35*	0.56***	.572	.03	14.8	3.6
Self-Control	.71-.81	6	8.72	*4.20*	8.56	*3.77*	8.22	*3.11*	9.44	*3.58*	0.63	.601	.04	10.8	3.6
Problem Behaviours															
Problem Behaviours Total	.83-.91	30	37.39	*11.64*	35.61	*12.62*	34.94	*9.95*	32.50	*9.99*	1.49	.227	.08	19.3	14.5
Externalising	.20-.72	12	18.44	*5.39*	17.28	*3.32*	17.44	*4.16*	15.33	*3.05*	2.34	.084	.12	7.5	6.4
Internalising	.83-.91	10	8.33	*5.40*	8.50	*6.32*	8.17	*5.37*	8.61	*6.56*	0.07	.976	.00	7.0	5.7
Hyperactivity/Inattention	.61-.83	7	13.00‡	*3.53*	11.11	*4.11*	12.11‡	3.27	10.67	*3.25*	5.24	.003	.24	6.0	4.6
Bullying	.50-.69	5	4.61	*2.45*	4.50	*2.43*	4.00	1.88	3.44	*2.25*	1.71	.176	.09	2.0	2.6

*** = Greenhouse-Geiser Correction (df = 1.98, 33.73) reported due to lack of sphericity; ** = Greenhouse-Geiser Correction (df = 2.04, 34.77) reported due to lack of sphericity; *** = Greenhouse-Geiser Correction (df = 1.93, 33.73) reported due to lack of sphericity; †indicates scores are within the below average range; ‡indicates scores are within the above average range, all other scores within the average range.**

Table 2:Group mean scores (N=18) and ANOVA results for scales of the Social Skills Improvement System (SSIS) questionnaire (Barriga, Gibbs, Potter and Liau, 2001) at each testing time.

Problem Behaviours

Figures 6 – 8 show the direction of change for the Problem Behaviour total score and Problem Behaviour sub-scales from T1-T4.

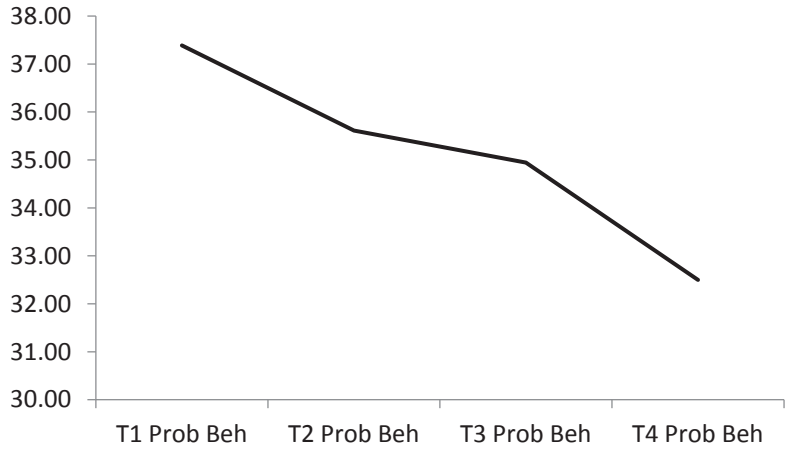

Figure 6: Social Skills Improvement System (SSIS) Problem Behaviour group mean scores from T1 to T4

At pre-test (T1) the scores of nine out of 18 participants fell within the above average/well above average range and this had fallen to seven participants at follow-up (T4). Group means for Total Problem Behaviour fell from within the above average range at T1 (87th percentile) to within the average range at T2 (85th percentile) and thereafter (85th and 80th percentiles at T3 and T4 respectively) according to the SSIS manual (Elliot & Gresham, 2008). Despite decreases seen for the mean group score, and a moderate effect size, ANOVA revealed no significant main effect for this subscale. Examination of the effect sizes of post-hoc analysis showed small magnitude changes for all assessment points between T1-T3 (r = .09-.21), however moderate changes between T1 and T4 (r = .39) and T3-T4 (r=.35).

A decrease in total self-reported problem behaviour was seen for 12 of the 18 participants from T1-T4. Reliable Change Index (RCI) calculations revealed that 33% of the group (six participants) showed statistically significant improvement from T1 to T4. Of those

who showed statistically significant improvement 50% (or 17% of the total group) showed clinically significant improvement.

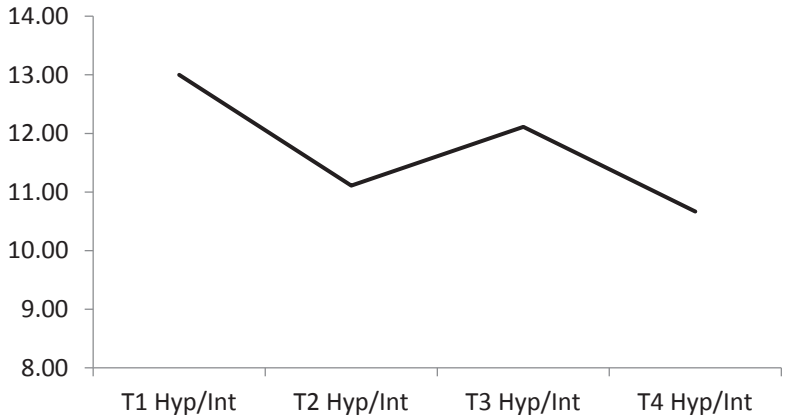

Figure 7: Social Skills Improvement System (SSIS) Hyperactivity/Inattention (Hyp/Int) subscale group mean scores from T1 to T4

At pre-test (T1) the scores of 11 out of 18 participants fell within the average/well above average range on this scale. At post-test (T3) eight participants' scores fell within the clinical/borderline-clinical range and this had fallen to six at follow-up (T4). Group means fell from the above average range at T1 and T3 to the average range at T2 and T4, according to cut off guidelines provided by the SSIS manual (Gresham & Elliot, 2008). The effect size for the main effect found for the hyperactivity subscale was large. Post-hoc analysis showed significant decreases occurred in the group means for the Hyperactivity scale between T1 and T2 (p=.031, r= .62) and T1 and T4 (p=.026, r= .62). A large effect size was also found for the difference between T3-T4 (, r= .52), however this change was not found to be significant in post-hoc analyses. A small increase in score from T2 was seen at T3; however this increase was not significant.

A decrease in total self-reported hyperactivity/inattention was seen for 12 of the 18 participants from T1-T4. Reliable Change Index (RCI) calculations revealed that 39% of the group (seven participants) showed statistically significant improvement from T1 to

T4. Of those who showed statistically significant only one showed clinically significant improvement.

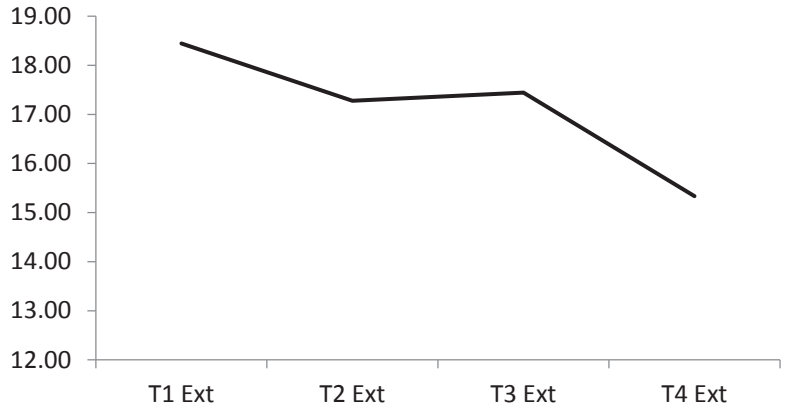

Figure 8: Social Skills Improvement System (SSIS) Externalising subscale group mean scores from T1 to T4

At pre-test (T1) the scores of 14 out of 18 participants fell within the above average to well above average range on this scale. At post-test (T3) 15 participants' scores fell within the clinical/borderline-clinical range, and this had fallen to 10 at follow-up (T4). The group mean score remained within the above average range at all assessment points (according to the cut off scores provided by the SSIS Manual (Elliot & Gresham, 2008).

Statistical analysis found no main effect for time, though a moderate effect size was found. Examination of the effect sizes of post-hoc analysis suggests a small magnitude of change between T1-T3 (r = .17), however moderate change between T1 and T4 (r = .46).

A decrease in total self-reported externalising problems was seen for ten of the 18 participants from T1-T4. RCI calculations revealed that 44% of the group (eight participants) showed statistically significant improvement from T1 to T4. Of those who showed statistically significant improvement 50% (or 22% of the total group) showed clinically significant improvement. Two participants showed statistically significant decreases.

No significant or clinically meaningful change was found for the remaining two Problem Behaviour subscales of the SSIS (change graphs in Appendix C2). A decrease in total self-reported Internalising problems was seen for 12 of the 18 participants from T1-T3, but at T4 levels had increased to above those reported at T1. Despite this variation, group means were within the average range across all time points, no significant change was found for any of the assessment points, and effect sizes ranged from very small to small (*r*= .03 - .11). A decrease in total self-reported Bullying was seen for 14 of the 18 participants from T1-T4. Statistical analysis found no main effect for time, though a moderate effect size was found for the ANOVA and from T1-T4.

Despite that only the group means for the Hyperactivity/Inattention subscale showed statistically significant change, moderate effect sizes and change in RCIs on the problem behaviour and externalising subscales suggest that, there is clear and meaningful change for some participants. While little change was seen for the internalising and bullying subscales, these were within in the average range at T1, compared to the other scales which were within the above average range. This suggests that those scales with greater deficits at T1 show more improvement at T4.

Social Skills

Figure 9 shows the direction of change for the SSIS Total Social Skills score from T1-T4.

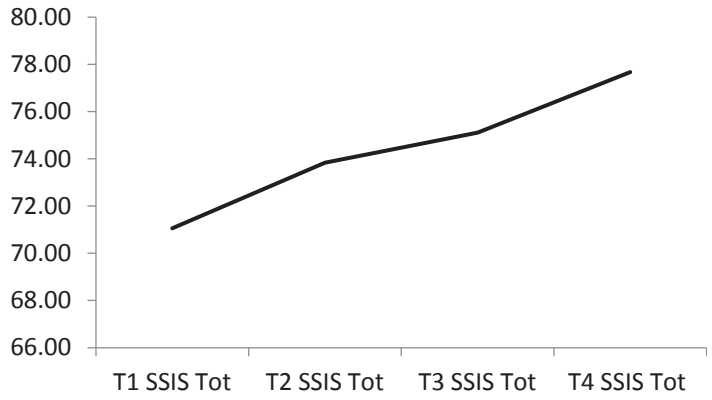

Figure 9: Social Skills Improvement System (SSIS) Total Social Skills group mean scores from T1 to T4

An improvement in the self-reported total social skills score was seen for 14 of the 18 participants from T1-T4. At pre-test (T1) the scores of 11 out of 18 participants fell within the below average to well below average range on this scale. At post-test (T3) 8 participants' scores fell within the above average to well above average range, and this had fallen to 7 participants at follow-up (T4). Mean standard scores for the group were within the below average range at T1 (as per the SSIS manual), but fell within the average range for all subsequent mean standard scores. Despite this apparent improvement, ANOVA revealed no significant main effects for this subscale and only a moderate effect size. Examination of the effect sizes suggests a small magnitude of change between T1-T3 (r = .26), however moderate change between T1 and T4 (r = .31).

Despite a lack of statistically significant change in group means the RCI calculations revealed that 50% of the group (nine participants) showed statistically significant improvement from T1 to T4. Of those who showed statistically significant improvement 44% (or 22% of the total group) showed clinically significant improvement.

All social skills subscales of the SSIS showed improvement in mean group scores from pre-test (T1) to follow-up (T4), however none of these improvements were statistically significant at the p=0.05 level. Overall, despite the lack of statistically significant findings for the overall group from ANOVA, a moderate effect size and statistically significant change at the individual level for 50% of the group suggests that social skills were positively impacted by ART for some participants. While this change may have been too small to be significant at the group level individually there are clear and meaningful improvements. All but three of the social skills scales (Total Social Skills, Responsibility and Cooperation) were within the average range at T1, which suggest as a group overall social skills deficits were not particularly low and therefore had less room to improve resulting in low overall group change. This point is covered further in the *Discussion* section.

Moral Reasoning – Sociomoral Reflection Measure – Short Form (SMR-SF)

One of the major aims of ART is to increase the motivation for use of prosocial behaviours by stimulating the development of participants' moral reasoning maturity. Research question one asked whether interpersonal deficits, such as moral reasoning delay, were improved following ten weeks of ART. Research question two asked whether the MRT component of ART appeared to result in increased treatment gains when compared to gains following the delivery of the ACT and SST components alone. The *Sociomoral Reflection Measure - Short-Form* (SRM-SF; Gibbs et al, 1992), which measures the dominant stage of sociomoral reasoning an individual uses to justify evaluations of importance across five moral domains, was used to assess change in moral reasoning maturity in the current study. Moral reasoning stage, as measured by the SMR-SF, is ranked on ten stages; four reasoning stages and six transition stages. The higher the score, the more developed sociomoral reasoning is considered to be. The results from this measure are reported below.

Characteristics of the SMR-SF Score Distributions

As scoring of the SMR-SF is done via inferential assessment of written responses to moral evaluations (see Method section for more detail) the authors recommend attainment of interrater reliability to ascertain scoring reliability. The author of this research trained as per the manual and rated all of the measures in this study. Interrater reliability was assessed as per guidelines of the SMR-SF manual[8] (p 57; Gibbs et al, 1992). Twenty of

[8] The authors outline the "minimal standards for acceptable interrater reliability" (p. 57, Gibbs et al, 1992) as: mean total score correlation $r = .80$; mean total score discrepancy .20 points; global stage agreement within one interval [e.g., 3 vs. 3(4)] 80%; exact global stage agreement 50%.

the questionnaires, selected at random, were independently rated by an impartial scorer who was not involved in any other aspect of the current research. Participant information and the point of assessment (i.e., T1, T2, T3 or T4) that the questionnaire was completed were concealed from the independent rater. The impartial scorer was a Registered Educational Psychologist who has a Master's level degree in Psychology and a Post-Graduate Diploma in Education Psychology. Interrater correlation of the mean total score was found to be strong (r =.91) and the mean total score discrepancy was low (=0.01). Global stage agreement within one interval was 73% and exact global stage 45%.

The total scores for the SMR-SF total scale followed a normal distribution at all assessment points (T1-T4). The SMR-SF internal consistency values were not able to be adequately calculated for the current research due to unscoreable responses[9] to items resulting in exclusion of the majority of data sets from the alpha calculations.

Analysis of Results

Global stage moral reasoning total, standard deviation, and main effect ANOVA for each data collection point (T1-T4) are shown in Table 3. As per the authors' recommendation, and consistent with other research using the SMR-SF, scores were multiplied by 100 to yield a range of scores from 100 to 400, with 100 representing the lowest stage of moral reasoning and 400 representing the highest stage (Gibbs et al, 1992).

[9] A response is classified as *unscorable* when it fails to provide a moral justification, i.e., it does not support the evaluation to which it refers. The authors state that providing at least seven of the 11 questions that make up the questionnaire are scorable, the overall score will be reliable, but those with less than seven scorable responses should be discarded from analysis (Gibbs et al, 1992).

Scale	Time 1		Time 2		Time 3		Time 4		Main effect		Partial η^2
	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	F(3.48)	p (0.05)	
Total	249.39	25.79	241.62	16.15	259.17	25.77	255.21	24.92	3.51	0.028	.17

Table 3: Group mean scores (N=17) and ANOVA results for scales of the Sociomoral Reasoning – Short Form (SMR-SF) questionnaire (Gibbs et al, 1992) from T1-T4.

By mid-adolescence an individual is considered to show moral development delay if they are reasoning below level three (Gibbs et al, 1992). At T1 the current sample was found to have an average score within the transition stage 2(3), equivalent to a sixth grade sample of American school students (equivalent to New Zealand Year 7). With ages ranging from 13-15 years, the majority of the current sample would be expected to be reasoning at Stage 3 - The average score on the SMR-SF for the norm sample of American high school students (equivalent to New Zealand school Years 10 to13). This represents a delay of approximately one-to-three years (based on age of participant). The mean moral reasoning stage had increased to transition stage 3(2) and post-test and follow-up (T3 and T4).

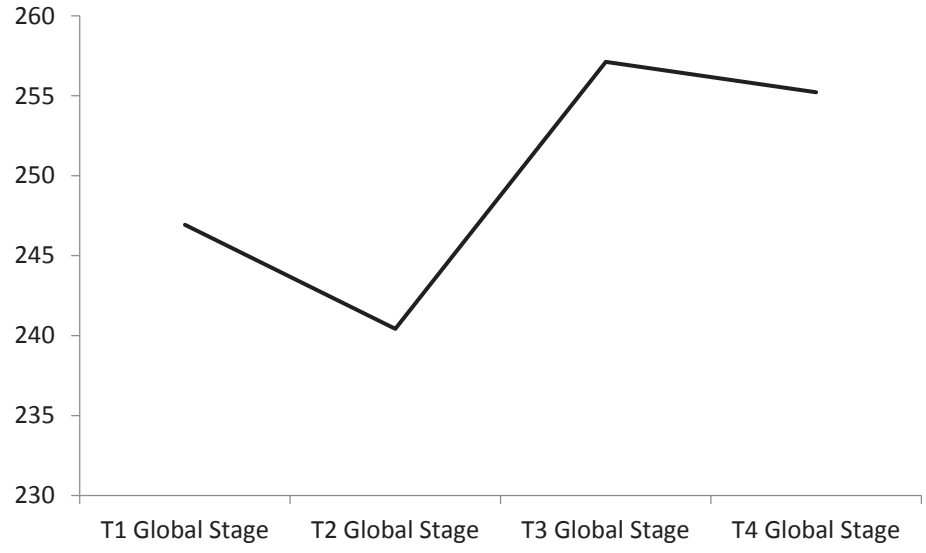

Figure 10: Group Means for the Sociomoral Reasoning – Short Form (SMR-SF) score

Significant main effects for time were found for the SMR-SF questionnaire. The effect size was large based on Cohen's (1988) interpretive guidelines; however, analysis with Tukey's HSD pos-hoc tests found no significant change. Examination of the effect sizes suggests moderate change between T1-T3 (r = .36) and large change between T2 and T3 (r = .53). Given the small sample size there may not have been sufficient statistical power to detect these changes using the conservative Bonferroni's correction (Field and Hole, 2002).

With regard to research question two, the added value of the MRT component, given the underlying theory of the components we would expect to see an increase in moral reasoning maturity following the delivery of the MRT component compared with little to no change following the delivery of the SST and ACT components. Consistent with this expectation the group mean decreased from T1-T2 (r =.35) and the group average moral reasoning level did not change. By comparison the group mean increased from T2-T3 (r =.53) and an increase in the group moral reasoning level from transition stage 2(3) to transition stage 3(2) was seen. The pattern of change and large increase seen between T2-T3 is consistent with the underlying theory of the MRT component, which aims to increase moral reasoning, and therefore suggests that the MRT component does result in increases in moral reasoning deficits.

Overall, the results show an increase in the group average of moral reasoning level from transition stage 2(3) at T1 and T2 to transition stage 3(2) at T3 and T4 suggesting an improvement in moral reasoning delay following ART and more specifically, based on the pattern and magnitude of change at each time point, after the delivery of the MRT component.

Cognitive Distortions – How I Think (HIT) Self-Report Questionnaire

Characteristics of the HIT Score Distributions

The total scores for the HIT total scale and 12 subscales follow a normal distribution at all assessment points (T1-T4), except for except for Lying at T2 and Stealing, Opposition-Defiance, and Overt at T4.

The HIT internal consistency values (see Table 4) were acceptable to excellent (α=.70 - .91) for the majority of assessment points. Five subscales (Self-Centred, Blaming Others, Minimising/Mislabelling, Assuming the Worst, and Physical Aggression) showed less than acceptable alphas (α=.62 - .68) for one out of the four testing times, but acceptable alphas for the three remaining testing times (α=.71 - .86). The Opposition Defiant subscale showed poor values at T2 and T3 (α=.52 and .66 respectively); however, showed good reliability at pre-test and follow-up (α=.75 and .85 respectively). The Lying subscale showed poor values at pre-assessment and second assessment (α=.51 and .45 respectively) but showed good reliability and post-test and follow-up (α=.78 and .76 respectively); however this is not uncommon when scales have few items (e.g. <10; Pallant, 2007).

Analysis and Results

The group means for all HIT scales decreased over the course of the intervention. Group means for nine out of the 11 HIT scales decreased from the clinical range to the borderline-clinical range according to the norms and cut-off scores provided in the HIT manual (Barriga et al, 2001). Analyses with ANOVA revealed a significant main effect of time for five of the 11 scales, with a sixth approaching significance (*p*=.054). ANOVA effect sizes were moderate to large based on Cohen's (1988) interpretive guidelines as outlined above. Overall these findings suggest, in line with the author's claims and

previous research findings (Currie et al, 2012; Gundersen & Svartdal, 2006), that ART has a positive impact on cognitive distortions as measured by the HIT. The HIT total and subscale alpha reliabilities, mean group scores, standard deviations, and main effect ANOVA for each data collection (T1-T4) point are presented below in Table 4.

Scale	α range T1-T4	*N* of Items	Time 1		Time 2		Time 3		Time 4		Main effect		Partial η^2	Normative Sample (*N*=412)	
			Mean	*Std Dev*	Mean	*Std Dev*	Mean	*Std Dev*	Mean	*Std Dev*	F(3.51)	p (0.05)		Mean	*SD*
Total HIT score	.82-.91	54	3.39	*0.70*	3.31	*0.66*	3.15	*0.63*	3.01†	*0.80*	5.81	.002	.26	2.39	*0.69*
Cognitive Distortions															
Self-centred	.64-.84	9	3.27	*0.70*	3.13†	*0.72*	3.01†	*0.63*	2.91†	*0.83*	2.23	.097	.12	2.42	*0.74*
Minimising/Mislabelling	.62-.76	10	3.30	*0.72*	3.25	*0.82*	3.14	*0.80*	2.95†	*0.79*	2.65*	.085	.14	2.31	*0.78*
Assuming the worst	.66-.81	9	3.49	*0.79*	3.32	*0.66*	3.21	*0.69*	3.06	*0.87*	4.48	.007	.21	2.35	*0.72*
Blaming others	.65-.80	11	3.41	*0.87*	3.46	*0.70*	3.17	*0.71*	3.04†	*0.87*	6.85*	.003	.29	2.42	*0.79*
Behavioural Referents															
Covert Referents Total	.82-.91	19	3.32	*0.73*	3.20	*0.65*	3.09	*0.74*	2.99†	*0.81*	2.72	.054	.14	2.34	*0.74*
Physical Aggression	.68-.85	8	3.34	*0.93*	3.27	*0.97*	3.05†	*0.65*	2.99†	*0.83*	2.61*	.061	.13	2.32	*0.78*
Oppositional Defiant	.52-.85	10	3.64	*0.72*	3.66	*0.69*	3.47	*0.67*	3.16†	*0.89*	9.63	.000	.36	2.55	*0.72*
Overt Referents Total	.83-.91	20	3.49	*0.77*	3.46	*0.74*	3.26	*0.63*	3.08†	*0.84*	6.71	.001	.28	2.44	*0.71*
Stealing	.81-.91	10	2.86	*0.93*	2.70	*0.81*	2.58†	*0.74*	2.52†	*1.04*	1.85	.150	.10	2.02	*0.75*
Lying	.45-.78	11	3.78	*0.63*	3.71	*0.60*	3.60	*0.86*	3.47	*0.80*	1.76	.167	.09	2.69	*0.83*

† Borderline range (all other mean scores within the clinical range as per normed referenced scores provided in the manual); *Greenhouse Geiser correction used F(2,34)

Table 4: Internal Consistencies (Cronbach's alpha), group mean scores (N=18) and ANOVA results for scales of the How I think (HIT) questionnaire (Barriga, Gibbs, Potter and Liau, 2001) at each testing time.

Figure 11 shows the direction of change for the *Total HIT* score.

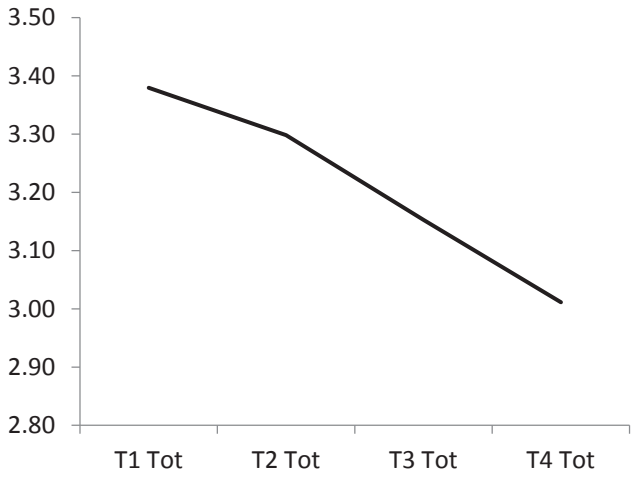

Figure 11: How I Think (HIT) Total group mean scores from T1 to T4

The Total HIT scale score is derived from all eight subscale scores of the HIT questionnaire. Total HIT scores within the clinical range (>84th percentile) are may be considered indicative of possible externalising psychopathology (Barriga et al, 2001). At pre-test (T1) the scores of 15 out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) 11 participants' scores fell within the clinical/borderline-clinical range, and this had fallen to nine at follow-up (T4). The mean Total Hit score for the group fell from the 92nd percentile at T1 to the 90th percentile at T2, the 88th percentile at T3, and at the 82nd percentile at T4; a drop from the clinical to the borderline-clinical range at T4 according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001).

ANOVA revealed a significant main effect of time for the overall HIT Total score, with a large effect size. Analysis with Tukey's HSD post hoc test indicated significant change occurred (p=.008, r =.68) between pre-test (T1) to follow-up (T4). Examination of the effect sizes found a large magnitude of change between T1-T3 (r = .57) and T1 and T4 (r = .68).

Fourteen of the 18 participants Total HIT scores decreased from T1-T4. RCI calculations revealed that 39% of the group (seven participants) showed statistically significant improvement from T1 to T4. Of those who showed statistically significant improvement 63% (or 28% of the total group) showed clinically significant improvement. Five participant's scores were already within the 'normal' range, as defined by the clinical cutoff score at T1. One participant showed a statistically significant worsening of scores based on their RCI.

With regard to Research Question Two, the added value of the MRT component, we would expect to see a greater impact on cognitive distortions and antisocial attitudes following the MRT component (T3) versus the social skills and anger control training component alone (T2). Examination of change on this scale, as represented pictorially by the graph, suggests a steeper decrease from T2-T3 than from T1-T2. This could suggest a bigger impact on variables measured by the HIT during this period. Calculation of the effect size of the difference between T1-T2 and T2-T3 shows an effect size of small magnitude between T1-T2 (r =.23) and an effect size of medium magnitude between T2-T3 (r =.38). Given the theoretical importance of the MRT component (delivered between T2 and T3) to the reduction of antisocial cognitive distortions (as measured by the HIT) this finding is consistent with expectation, that greater change in cognitive distortions would occur following the delivery of the MRT component than would occur after the delivery of the anger control and social skills components alone.

HIT Subscale Scores:

As well as looking at changes to the Total HIT score, individual subscales were examined to see which were significantly impacted by ART, to provide more information about the generally efficacy of the intervention on specific interpersonal deficits (research question one) and where significant change occurred (research question two).

Cognitive distortions - Figures 12 – 15 show the direction of change for the sub-scales measuring cognitive distortions.

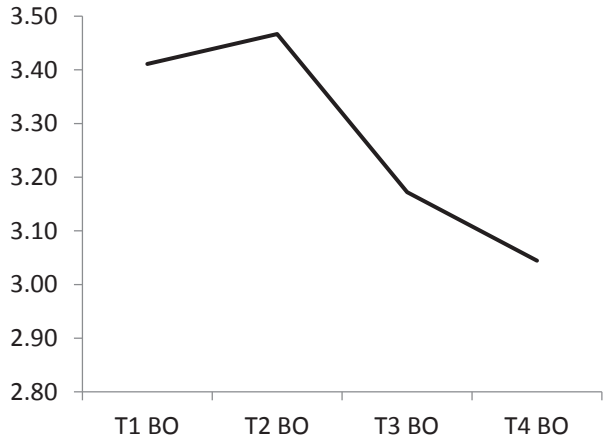

Figure 12: How I Think (HIT) Blaming Others (BO) group mean scores from T1 to T4

The *Blaming Others* (BO) subscale measures the cognitive distortion of misattributing blame for one's own actions or misfortune to external sources, such as other people. At pre-test (T1) the scores of thirteen out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) ten participants' scores fell within the clinical/borderline-clinical range and this had fallen to eight at follow-up (T4). Group means for the BO scale fell from the 88th percentile at T1, to the 84th percentile at T3, and the 82nd percentile at T4; a drop from the clinical to the borderline-clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001).

A significant main effect of time was found for the group mean of the Blaming Others subscale score, with a large effect size. Analysis with Tukey's HSD post hoc test indicated significant change occurred between T2 and T3 (p=.022; r = .71) as well as T2 and T4 (p=.004; r = .97).

Fifteen of 18 participants showed a decrease in score on the BO scale at T4. RCI calculations revealed that 11% of the group (2 participants) showed statistically

significant improvement from T1 to T4; however, neither of these participants showed clinically significant change at T4.

Significant change, with a large effect size, was seen between T2-T3 with post hoc analysis as well as an obvious sharp decline in BO scores on the graph. The significant decreases and large effect sizes found suggest that the intervention that followed the T2 assessment point, the MRT component, resulted in the improvements on this scale.

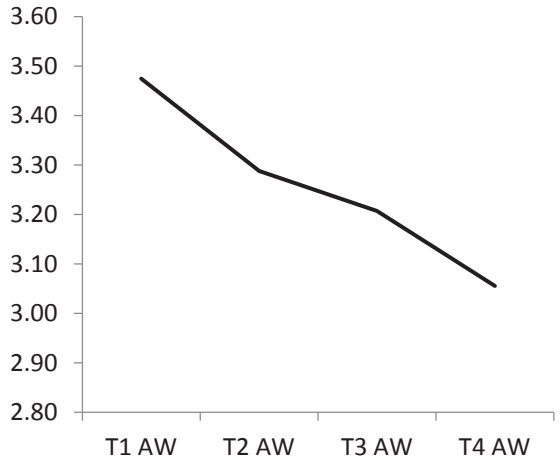

Figure 13: How I Think (HIT) Assuming the Worst (AW) group mean scores from T1 to T4

The *Assuming the Worst* (AW) subscale measures the cognitive distortion of assuming intentional hostility in others' actions and viewing social situations from the worst case scenario. At pre-test (T1) the scores of 14 out of 18 participants fell within the clinical/borderline-clinical range on this scale. Eleven participants' scores fell within the clinical/borderline-clinical range at both post-test and follow-up (T4). Group means for the AW scale shifted from the 94nd percentile at T1 to the 84th percentile at both T3 and T4, though the group mean score remained within the clinical range at all testing points.

A significant main effect of time was found for the Assuming the Worst subscale score, with a large effect size. Analysis with Tukey's post hoc test indicated significant decreases occurred in the group means for the Assuming the Worst between T1 and T4 (p=.017; r = .65).

From T1 to T4, 14 participants showed a decrease in scores. RCI calculations revealed that 11% of the group (two participants) showed statistically significant improvement from T1 to T4. Both participants that showed statistically significant improvement also showed clinically significant improvement.

Examination of change on this scale as represented pictorially by the graph, suggests a steeper decrease from T1-T2 than from T2-T3, which could suggest a bigger impact on variables measured by the HIT during this period. Calculation of the effect size of the difference between T1-T2 and T2-T3 shows an effect size of moderate magnitude between T1-T2 (r = .39) and an effect size of small magnitude between T2-T3 (r = .23). This suggests that the anger control and social skills components had more impact on this cognitive distortion of Assuming the Worst than the moral reasoning component.

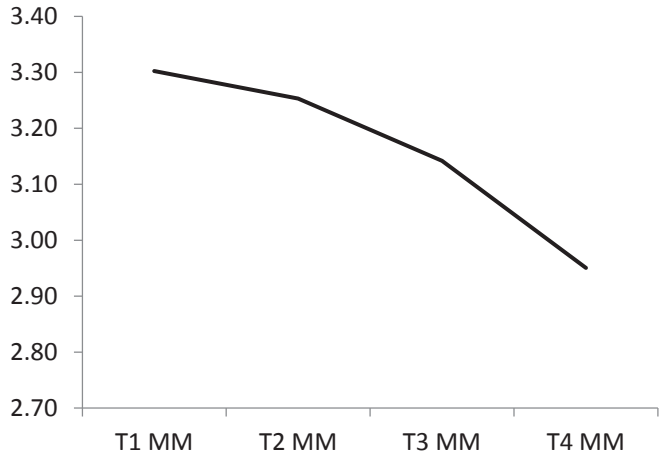

Figure 14: How I Think (HIT) Minimising/Mislabelling (MM) group mean scores from T1 to T4

The Minimising/mislabelling (MM) scale assesses the tendency to depict antisocial behaviour as acceptable or admirable, as causing little harm to others, and to belittle or dehumanise others. At pre-test (T1) the scores of 14 out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) 11 participants' scores fell within the clinical/borderline-clinical range, and this had fallen to eight at follow-up

(T4). Both of these scales fell from the clinical to borderline clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001). The group mean for MM fell from the 88th -90th percentiles at T1 to the 82nd percentile at T4.

Despite these changes, and a large effect size, the decrease in means for this scale did not reach statistical significance as found by ANOVA analyses. Examination of the effect sizes suggests a small magnitude of change between T1-T3 (r = .28), however a large magnitude of change between T1 and T4 (r = .64). Though 14 participants' scores decreased from T1-14, calculation of RCIs did not find significant change for any participant on the MM scale.

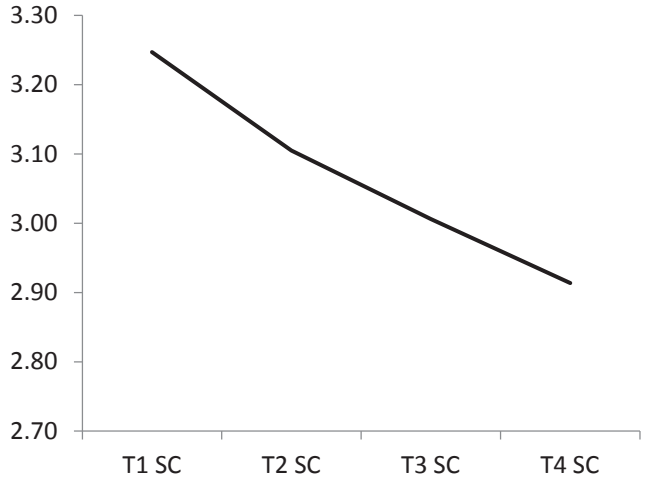

Figure 15: How I Think (HIT) Self-Centred (SC) group mean scores from T1 to T4

The Self-Centred (SC) scale assesses the tendency to put one's own needs, rights, views, and feelings ahead of other people. At pre-test (T1) the scores of 13 out of 18 participants fell within the clinical/borderline-clinical range on the SC scale. At post-test (T3) 13 participants' scores fell within the clinical/borderline-clinical range and this had fallen to eight at follow-up (T4). Both of these scales fell from the clinical to borderline clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001). The group mean for SC fell from the 86th percentile at T1 to between the 74th and 76th

percentiles at T4. However these changes did not reach statistical significance as found by ANOVA analyses, though a moderate effect size was found. Examination of the effect sizes suggests a large magnitude of change between T1-T3 (r = .53) and T1 and T4 (r = .51).

Twelve participants' scores decreased from T1-T4. RCI calculations for the SC scale revealed that 17% of the group (three participants) showed statistically significant improvement from T1 to T4. All of those who showed statistically significant also showed clinically significant improvement.

Calculation of the effect size of the difference between T1-T2 and T2-T3 revealed small effect sizes for both (r = .20 and .19 respectively). This makes it difficult to ascertain a greater influence on this scale from either portion of the intervention.

Overall, all scales of the HIT decreased from pre-test (T1) to post-test (T3) and continued to show decreases at three-month follow-up (T4). While only one of the cognitive distortion scales (Self-Centred) showed a decrease in mean score from the clinical to borderline-range at T3, by T4 three of the four cognitive distortions had moved from the clinical to borderline range. The Assuming the Worst scale, which remained in the clinical range at all assessment points, was the exception. ANOVA revealed main effects for only the cognitive distortions of Blaming Others and Assuming the Worst, as well as the Total HIT score. Overall, changes in cognitive distortions suggest support for Hypothesis One; that 10 weeks of ART lead to positive changes in interpersonal deficits associated with antisocial behaviour and attitudes. Further, in support of Hypothesis Two, that the MRT component will result in increased treatment gains when compared to gains from the SST and ACT components alone, all scales showed a continued decrease in means from T2-T3 and the effect size of this decrease was larger than that of T1-T2 for the majority of scales.

Behavioural Referents - Figures 16 -21 show the direction of change for each time point for the Behavioural referent subscales, which measure attitudes toward antisocial behaviours.

Overt Behavioural Referents

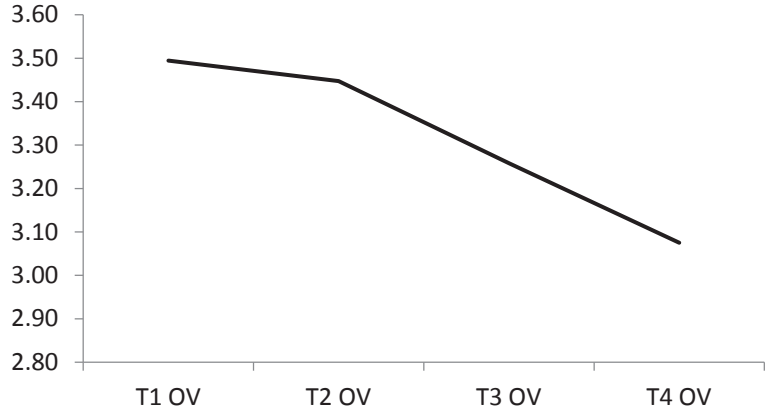

Figure 16: How I Think (HIT) Overt (OV) group mean scores from T1 to T4

The HIT Overt subscale measures agreement with behavioural referent items that usually involve direct confrontation of a victim such as "people need to be roughed up once in awhile". At pre-test (T1) the scores of 14 out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) 13 participants' scores fell within the clinical/borderline-clinical range and this had fallen to seven at follow-up (T4). Group means for the Overt scale fell from the 92-94thth percentiles at T1 to the 82th – 84nd percentiles at T4; a drop from the clinical to the borderline-clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001).

A significant main effect of time was found for the Overt subscale score, with large effect size. Analysis with Tukey's post hoc test indicated significant change from T2 to T4 (p=.016; r = .58).

Fourteen participants' scores decreased from T1-T4. RCI calculations revealed that 22% of the group (four participants) showed statistically significant improvement from T1 to

T4. Of those who showed statistically significant improvement 75% (or 17% of the total group) showed clinically significant improvement.

Examination of the slope of the line suggests a greater decrease between T2-T3 than T1-T2. Calculation of the effect size of the difference between T1-T2 and T2-T3 shows an effect size of very small magnitude between T1-T2 (r = .08) and an effect size of large magnitude between T2-T3 (r = .54). This suggests the first two components had little impact on agreement with overt antisocial behaviours at T2, whereas large change was seen after the delivery of the MRT component.

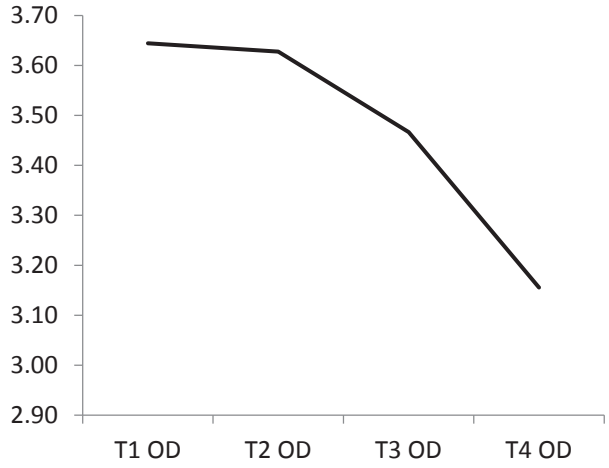

Figure 17: How I Think (HIT) Opposition-Defiance (OD) group mean scores from T1 to T4

At pre-test (T1) the scores of 14 out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) 12 participants' scores fell within the clinical/borderline-clinical range and this had fallen to nine at follow-up (T4). Group means for OD fell from the 92-94thth percentiles at T1 to the 82th– 84nd percentiles at T4; a drop from the clinical to the borderline-clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001).

A significant main effect of time was found for the Opposition-Defiance (OD) subscale score, with a large effect size. Analysis with Tukey's post hoc test indicated significant

decreases occurred in the group means for the OD scale between T1 and T4 (p=.006, r = .70), as well as T2 and T4 (p=.001, r = .76), and T3-T4 (p=.023, r = .63).

Thirteen participants' scores decreased from T1-T4. RCI calculations revealed that 28% of the group (five participants) showed statistically significant improvement from T1 to T4. All of those who showed statistically significant improvement at T4 also showed clinically significant improvement.

Calculation of the effect size of the difference between T1-T2 and T2-T3 shows an effect size of very small magnitude between T1-T2 (r = .03) and an effect size of medium magnitude between T2-T3 (r = .47). This suggests the first two components had a negligible impact on the OD scale at T2, but a moderate impact was seen following the addition of the MRT component.

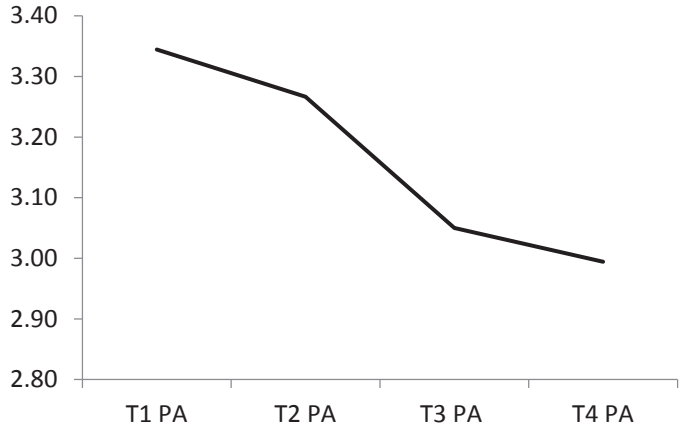

Figure 18: How I Think (HIT) Physical Aggression (PA) group mean scores from T1 to T4

At pre-test (T1) the scores of 12 out of 18 participants fell within the clinical/borderline-clinical range on this scale. Ten participants' scores fell within the clinical/borderline-clinical range at both post-test and follow-up (T4). No significant main effect was found for the Physical Aggression subscale despite a decrease in the average score from between the 86th and 88th percentiles at T1 to the 80th percentile at T4; a drop from the

clinical to the borderline-clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001).

Twelve participants' scores decreased from T1-T4. RCI calculations revealed that 17% of the group (three participants) showed statistically significant improvement from T1 to T4. Two of those who showed statistically significant improvement at T4 also showed clinically significant improvement. One participant showed a statistically significant increase at T4.

Calculation of the effect size of the difference between T1-T2 and T2-T3 shows an effect size of small magnitude between T1-T2 (r = .17) and an effect size of medium magnitude between T2-T3 (r = .38). This suggests a greater impact on agreement with statements endorsing the use of Physical Aggression from the MRT component.

Covert Behavioural Referents

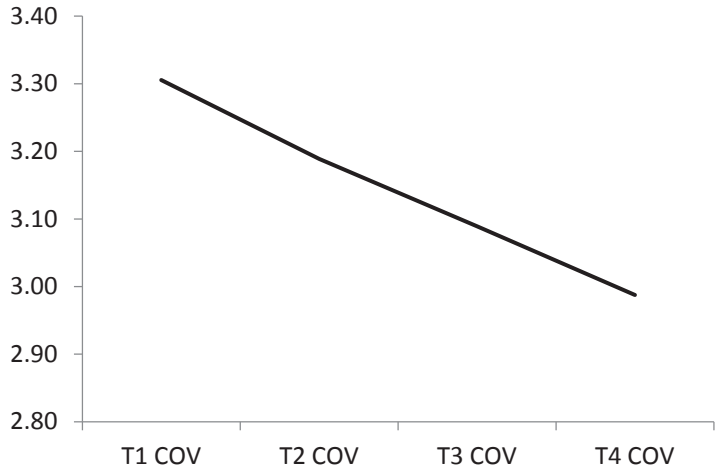

Figure 19: How I Think (HIT) Covert (COV) group mean scores from T1 to T4

The COV scale measures agreement with behavioural referent items that reflect covert behaviours that do not involve the direct confrontation of a victim such as lying and stealing. At pre-test (T1) the scores of 13 out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) 12 participants' scores

fell within the clinical/borderline-clinical range and this had fallen to ten at follow-up (T4). Group means for Covert scale fell from between the 90th and 92nd percentiles at T1 to between the 82nd and 84th percentiles at T4; a drop from the clinical to the borderline-clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001).

Although no significant main effect of time was found for the Covert subscale score, the decrease seen for the group mean of this scale approached significance at the .05 level (p= .054) and a large effect size was found. Analysis with Tukey's post hoc test indicated significant decreases occurred between T1 and T4 (p=.003, r = .72).

RCI calculations revealed that 11% of the group (two participants) showed statistically significant improvement from T1 to T4. Both these participants also showed clinically significant improvement at T4.

Calculation of the effect size of the difference between T1-T2 and T2-T3 small effect sizes between both T1-T2 (r = .27) and moderate effect size between T2-T3 (r = .38).

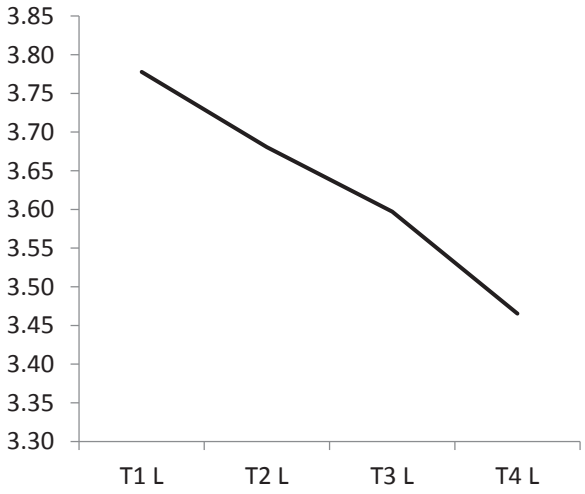

Figure 20: How I Think (HIT) Lying (L) group mean scores from T1 to T4

At pre-test (T1) the scores of 15 out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) 12 participants' scores fell within the

clinical/borderline-clinical range, and this had fallen to 13 at follow-up (T4). Despite a decrease in the group average from between the 90th and 92nd percentiles at T1 to the 84th percentile at T4, no significant main effect was found for the lying subscale.

RCI calculations revealed that 0% of the group showed statistically significant improvement from T1 to T4.

Calculation of the effect size of the difference between T1-T2 and T2-T3 shows an effect size of small magnitude between T1-T2 and between T2-T3 (*r* = .14 and .17 respectively).

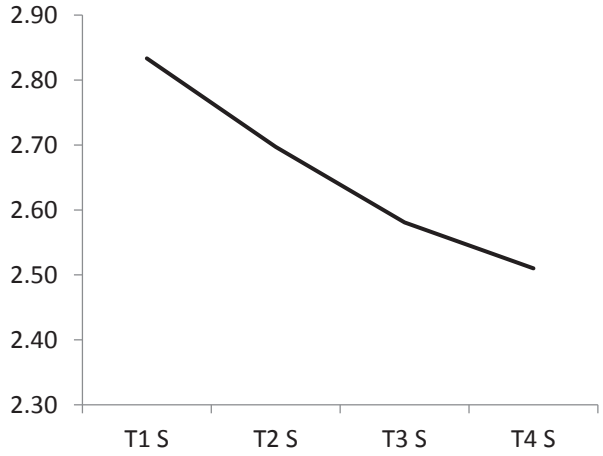

Figure 21: How I Think (HIT) Stealing (S) group mean scores from T1 to T4

At pre-test (T1) the scores of 12 out of 18 participants fell within the clinical/borderline-clinical range on this scale. At post-test (T3) 12 participants' scores fell within the clinical/borderline-clinical range, and this had fallen to seven at follow-up (T4). Despite a decrease in the average score from between the 86th and 88th percentiles at T1 to the 80th percentile at T4, a drop from the clinical to the borderline-clinical range according to clinical cut-offs as reported in the HIT manual (Barriga et al, 2001), no significant main effect was found for the stealing subscale.

RCI calculations revealed that 22% of the group (four participants) showed statistically significant improvement from T1 to T4. All of those who showed statistically significant improvement also showed clinically significant improvement.

Calculation of the effect size of the difference between T1-T2 and T2-T3 found small effect sizes between both T1-T2 and T2-T3 (r = .28 and .22 respectively).

Overall, all scales measuring antisocial behavioural referents decreased from pre-test (T1) to post-test (T3) and continued to show decreases at three-month follow-up (T4). However, ANOVA revealed main effects for only the behavioural referents of the Covert and Opposition Defiant. Behavioural referent scales showed a decrease in mean score from the clinical to borderline-range at T3, by T4 four of the six behavioural referent scales had moved from the clinical to borderline range. Overall this suggests that 10 weeks of ART lead to positive changes in interpersonal deficits associated with antisocial behaviour and attitudes. Further, the MRT component appears to have a greater impact on overt behavioural referents than the ACT and SST components alone.

Empathy – the Interpersonal Reactivity Index (IRI)

One of the aims of the current research was to investigate change in empathy over the course of the intervention. Research question three questioned whether following ten weeks of ART, in particular the MRT component, participants would report significant increases in levels of both affective and cognitive empathy. Subscales of the *Interpersonal Reactivity Index* (IRI; Davis, 1983), assessing empathic concern (affective empathy) and perspective-taking (cognitive empathy), were used to assess change in self-reported empathy levels in the current research. The results from this measure are as follows.

Characteristics of the IRI Subscale Score Distributions

The total scores for the IRI Empathic Concern (EC) and Perspective Taking (PT) subscales followed a normal distribution at all assessment points (T1-T4). Although the scale reliabilities for the PT and EC scales were acceptable at T2 and T4 (α=.70 -.71) and T2 (α=.71) respectively, the majority of alphas were low (see Table 5). Values less than .70 fall below the cut-off recommended for scale reliability when conducting research; however this is not uncommon when scales have less than ten items (Pallant, 2007). Given the low number of items in each subscale the average inter-item correlations were assessed (see table Appendix C3), however the majority of these were also below the recommended range of (Pallant, 2007).

As there are no standardised adolescent norms for the IRI, RCIs were calculated using the mean score of a group of American middle school students (n=137) in the eighth grade (13-14 years old) from a study that utilised the empathic concern and perspective taking scales of the IRI (Wentzel, Filisetti, and Looney, 2007). The mean scores and alpha reliabilities from this sample were 2.96 (SD=.51), α= .68 for the empathic concern scale

and 2.64 (SD=.57), $\alpha = .73$ for the perspective taking scale. This sample was chosen as a non-clinical comparison group due as they were of a similar age[10] and had not been recruited on the basis of high externalizing behaviour or other psychopathology. The sample was predominantly middle class, Caucasian (49%) and African American (44%) students.

[10] Though slightly younger than the current sample (mean age = 14 years, eight months) the comparison sample was selected as the closest age match from studies available.

Scale	α range (T1-T4)	N of items	Time 1		Time 2		Time 3		Time 4		Main effect		
			Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	Mean	Std Dev	F(3.51)	$p_{=}$ (0.05)	Partial η^2
Empathic Concern	.48-.71	7	2.25	0.46	2.29	0.61	2.37	0.51	2.32	0.67	.482	0.69	.03
Perspective Taking	.60-.71	7	1.77	0.83	1.78	0.57	1.95	0.61	1.94	0.63	.923	0.42	.05

* Greenhouse-Geiser Correction (df = 1.8, 31.13) reported due to lack of sphericity.

Table 5: Group mean scores (N=18) and ANOVA results for the Empathic Concern and Perspective Taking subscales of the Interpersonal Reactivity Index (IRI; Davis, 1983) at each testing time.

Analysis of Results

Mean scores increased at each testing time for both scales from pre-test (T1) to post-test (T3). These scores decreased somewhat at three month follow-up (T4), though still remained higher than at T1 and following testing after the delivery of the anger control and social skills components (T2). The biggest increase in means was seen following delivery of the MRT component for both empathic concern and perspective taking. Though the pattern of change from T1-T3 was consistent with what might be expected given the underlying theory of each component, these changes were not found to be significant by ANOVA and effect sizes were small. Overall these results do not provide sufficient support to suggest that there was a significant change in empathy following ten weeks of ART.

Figures 22-23 show the direction of change for the IRI scales from T1-T4.

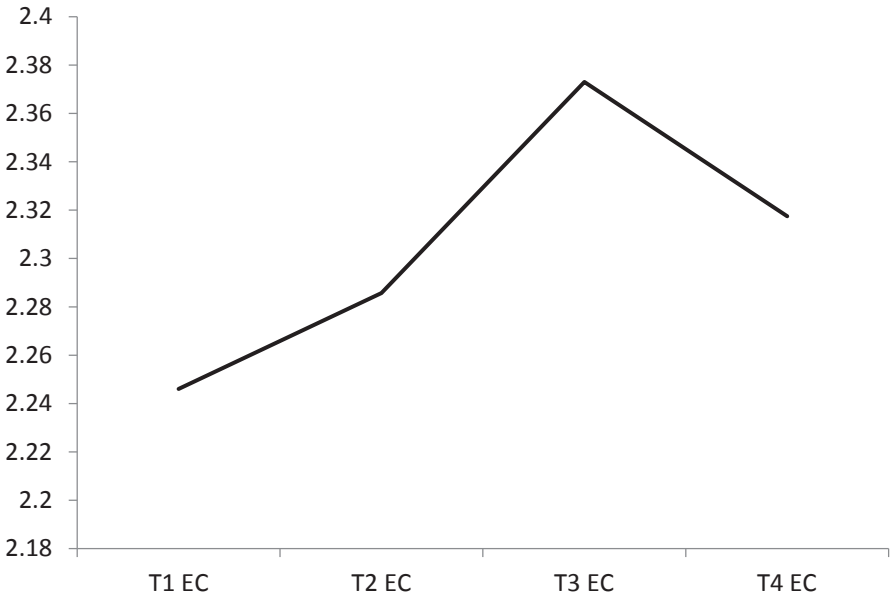

Figure 22: Interpersonal Reactivity Index (IRI) Empathic Concern (EC) group mean scores from T1 to T4

The group mean for the empathic concern score increased post-intervention, though had decreased somewhat by follow-up. No significant main effect was found with ANOVA analysis.

Reliable Change Index (RCI) calculations revealed that 11% of the group (two participants) showed statistically significant improvement from T1 to T4. Both of these participants also showed clinically significant improvement from T1 to T4. Five participants from the sample were already within the 'normal' range at T1 according to the clinical cut-off score derived from the Wentzel et al (2007) study.

With regard to research question two, while the magnitude of change between T2-T3 exceed that T1-T2, both were small (*r* =.22 and .12 respectively) and neither were statistically significant.

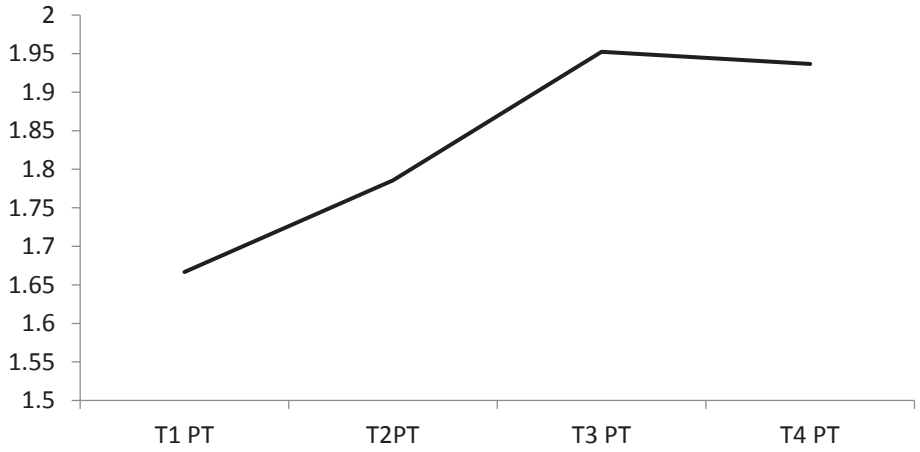

Figure 23: Interpersonal Reactivity Index (IRI) Perspective Taking (PT) group mean scores from T1 to T4

The group mean for the Perspective-Taking subscale score increased post-intervention, though decreased slightly at follow-up. Analysis with ANOVA found no significant main effect.

RCI calculations reveal that 11% of the group (two participants) showed statistically significant improvement from T1 to T4. One of these participants also showed clinically significant improvement from T1 to T4. Three participants from the sample were already within the non-clinical range at T1 according to the clinical cut-off score derived from the Wentzel et al (2007) study.

With regard to research question two, the magnitude of change between T2-T3 was medium (r =.34) compared to the small magnitude between T1-T2 (r = .12 respectively) neither was statistically significant.

Overall, though a small number of participants did show individual change on self-reported empathy, little change occurred overall. Though some participants were within the non-clinical range at pre-test according to the cut-off score used for comparison, there is little evidence from the current study to suggest that ART has a notable impact on either empathic concern or perspective taking.

Reactive and Proactive Aggression – The Forms and Functions of Aggression Measure

One of the aims of the current research was to investigate change in tendencies for reactive and proactive motivations for the use of aggression. Research question four queried whether, after 10 weeks of ART participants, would report significant reductions in levels of both reactive and proactive tendencies. The *Forms and Functions of Aggression Measure* (Little et al, 2003), which includes subscales for proactive and reactive tendencies, was used to assess change in self-reported tendencies in the current research. The results from this measure are as follows.

Characteristics of the Forms and Functions of Aggression Measure Score Distributions

The total scores for the Forms and Functions of Aggression Measure subscales followed a normal distribution at all assessment points (T1-T4). Internal consistency values (see Table 6) were acceptable to excellent (α=.71 - .92) at all assessment points, with the exception of Proactive Relational at T1 (α=.67) and Reactive Overt at T3 (α=.67). Values less than .70 fall below the cut-off recommended for scale reliability when conducting research; however, this is not uncommon when scales have less than ten items (Pallant, 2007).

Analysis of Results

One-way repeated-measures ANOVAs were conducted to determine if mean group changes over time (T1-T4) were significant for each of *Forms and Functions of Aggression Measure* scales. Though decreases were seen across all group means from T1-T4, ANOVA only indicated significant main effects of time for the Reactive Overt and Reactive Total scales with large effect sizes; however, no significant pairwise interactions were found with Tukey's post-hoc analysis. This suggests that, while there is a significant change in group means over the course of the intervention,

there may not be enough statistical power to detect the change possibly due to the small sample size (Field and Hole, 2002). No significant change was found for any of the subscales measuring proactive motivations for aggression. Increases at T2 were seen for all scales of the Forms and Functions of aggression measure, with the exception of the proactive overt scale, though increases at T2 were neither large nor significantly different from pre-test scores. Total and subscale reliabilities, mean group scores, standard deviations and main effect ANOVA for each data collection (T1-T4) point are shown in Table 6.

Scale	α range T1-T4	N of Items	Time 1		Time 2		Time 3		Time 4		Main effect		Partial η^2
			Mean	(Std Dev)	Mean	(Std Dev)	Mean	(Std Dev)	Mean	(Std Dev)	F(3.51)	*p* (0.05)	
Proactive Overt	.80 - .88	6	1.54	(0.55)	1.52	(0.51)	1.51	(0.54)	1.41	(0.50)	0.44	.72	.02
Proactive Relational	.67-.78	6	1.56	(0.47)	1.60	(0.49)	1.55	(0.57)	1.42	(0.48)	1.23	.31	.07
Proactive Total	.84-.88	12	1.55	(0.46)	1.56	(0.46)	1.50	(0.45)	1.41	(0.46)	0.89	.45	.05
Reactive Overt	.67-.80	6	2.47	(0.61)	2.53	(0.57)	2.45	(0.51)	2.12	(0.63)	3.67	.02	.18
Reactive Relational	.71-.84	6	1.96	(0.58)	2.05	(0.66)	1.92	(0.60)	1.79	(0.49)	2.08	.11	.11
Reactive Total	.80-.87	12	2.16	(0.62)	2.29	(0.52)	2.20	(0.54)	1.98	(0.53)	2.94	.04	.15
Total Aggression	.90-.92	24	1.89	(0.49)	1.93	(0.44)	1.87	(0.49)	1.70	(0.45)	2.56	.06	.13

Table 6: Group mean scores (N=18) from T1-T4 and ANOVA results for scales of the Forms and Functions of Aggression questionnaire (Little et al, 2003).

Figures 24 to 26 show the direction of change from T1 to T4 for the group means of the Reactive Overt, Total Reactive Aggression, and Total Aggression subscales on the Forms and Functions of Aggression Measure. Graphs for the remainder of subscales of the Forms and Functions of Aggression measure used in this research can be found in Appendix C4.

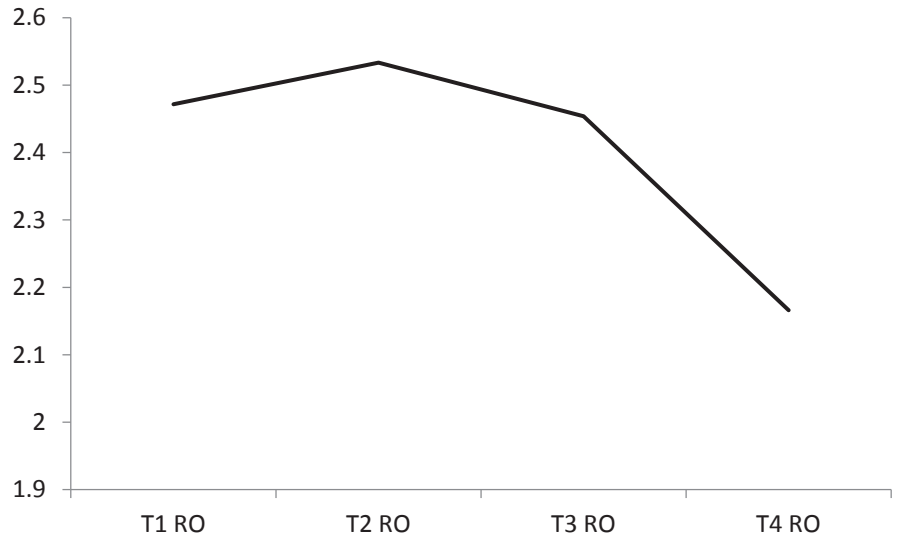

Figure 24: Reactive Overt (RO) subscale from the Forms and Functions of Aggression Measure (Little et al, 2003) from T1 through to T4.

Reactive Overt Aggression: The Reactive Overt (RO) subscale measures agreement with statements relating to retaliatory overt aggression such as fighting. Overall group means for this subscale decreased from pre-test to follow up, representing a decrease in score from T1 for 12 participants at T4. A significant main effect of time was found for the Reactive Overt subscale, though no pairwise interactions were found using Tukey's post hoc tests. Examination of the effect sizes suggests negligible change between T1-T3 (r = .03), however large change between T1 and T4 (r = .53).

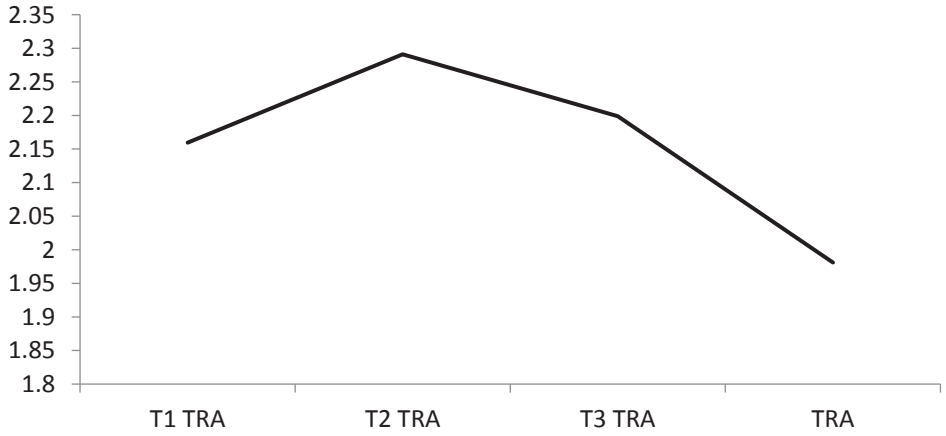

Figure 25: Group means for the Total Reactive Aggression (TRA) score from the Forms and Functions of Aggression Measure (Little et al, 2003) from T1 through to T4.

Total Reactive Aggression: The Total Reactive Aggression (TRA) subscale measures agreement with statements relating to retaliatory aggression both over and relational. Group means decreased from T1 toT4, representing a decrease in score for ten participants. A significant main effect for time was found, with a large effect size however no significant pairwise interactions were found. Examination of the effect sizes suggests negligible change between T1-T3 (r = .07), however moderate change between T1-T4 (r= *.42)* and large change between T2 and T4 (r = .53).

Reactive Relational: Group means decreased from T1>T4, representing a decrease in score from T1-T4 for ten participants, however no significant main effect was found for this change.

Overall these results suggest a significant improvement in reactive aggressive tendencies, particularly overt tendencies, as measured by participant self-report on the Forms and Functions of Aggression measure.

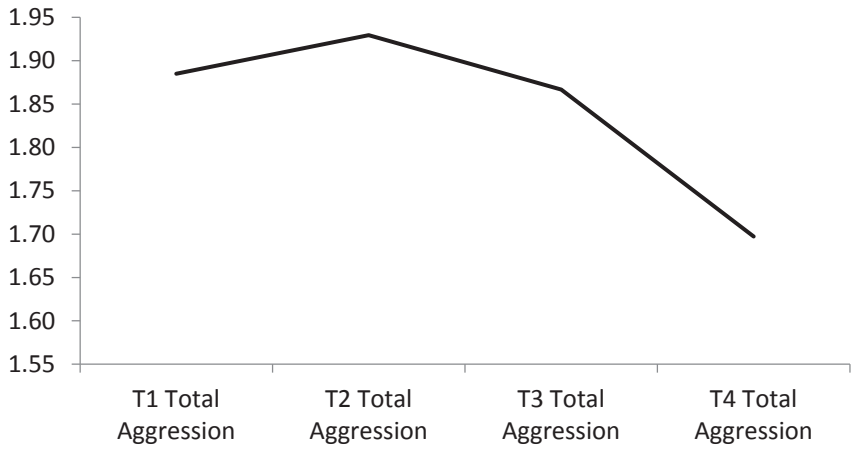

Figure 26: Group means for the Total score from the Forms and Functions of Aggression Measure (Little et al, 2003) from T1 through to T4.

Total Aggression:

Group means decreased from T1>T4, representing a decrease in total aggression score for 13 participants. At T3 ten participants had also shown a decrease in the Total Aggression score from T1. Though the main effect for the Total Aggression score approached significance and the effect size was moderate a significant main effect for time was not found. Examination of the effect sizes suggests negligible change between T1-T3 (r = .04), however a large change between T1 and T4 (r = .54).

Proactive Aggression:

None of the three scales that measured aspects of Proactive aggression (Overt, Relational, and Total) showed any significant change over the course of the intervention or at follow-up. Group means decreased at each testing time (T1>T2>T3>T4) for the Proactive Overt subscale, however despite half of the group showing decreased scores on this scale at T4 this change was not significant. The group means for the Proactive Relational and Total Proactive Aggression scales showed slight increases at T2, though had decreased at T3 and T4. The largest decrease for all proactive scales was

seen at T4. Results from scales measuring proactive aggressive tendencies do not suggest significant change for these tendencies following ten weeks of ART.

Overall, group means decreased from pre-test to post-test and follow-up for all scales. However, while a significant decrease was found for reactive aggression, particularly overt reactive aggression, no significant change was found for scales measuring proactive aggression. With regard to research question four, therefore, only reactive aggression can be said to be significantly reduced following ten weeks of ART based on these results.

In-Session Observational Data

As well as looking at improvement across the course of the intervention, the current research also aimed to investigate the acceptability of the ART intervention to a sample of New Zealand adolescents within a school setting (research question five). This was done by looking at how participants' behaved during the sessions of the ART programme as well as by asking participants for their feedback following the research. The results of in-session behaviour scales and feedback surveys collected for this purpose are presented below.

Observational data

Following each session, every participant was rated separately by both facilitators on their behaviour on each of five categories: the perceived level of the participant's co-operation with facilitators; engagement and enthusiasm in the session; level of disruptive behaviour; volunteering/participation within the session; and apparent understanding of the material presented within each session. Each participant was rated on a five-part likert scale for each category. This data was collected in order to provide an observational measure of behaviour across sessions.

Inter-rater agreement was assessed using intra-class correlation coefficients (ICCs) rather than Cohen's Kappa, as this requires absolute agreement between raters and doesn't take into account the ordinal nature of the data (e.g., similar but not identical ratings are treated the same as ratings with large disparity). As the ICCs takes into account the magnitude of difference between raters, it was selected as a better indicator of interrater agreement (Hallgren, 2012). A subset of three sessions (10%) was used to calculate the ICCs - one from each of the three components of ART selected on from the beginning, middle, and end. These were (Anger Control Training session four, Social Skills Training session seven, and Moral Reasoning Training Session nine. Results from the combination of all three sessions were used to calculate an overall ICC. The overall ICC was fair (ICC=.56)

Consistent with Chicchetti's (1994) reported strengths of effect sizes (small (<.40), fair (.40-.59), good (.60 -.74) or excellent (.75-1.0).

To look for change in in-session behaviour across the intervention the average group means of the first ten sessions was compared to the group means of the middle ten and final ten sessions for all scales (see Table 7).

In-Session Scales	Sessions 1-10		Sessions 11 - 20		Sessions 21-30	
	Mean	SD	Mean	SD	Mean	SD
Volunteering	2.71	1.27	3.36	1.25	3.07	1.13
Cooperation	3.18	0.97	3.49	0.77	3.49	0.89
Enthusiasm	1.58	0.95	2.75	1.17	2.85	1.08
Engagement	2.95	1.00	3.73	0.99	3.61	1.08
Understanding of Materials	3.14	1.01	3.82	0.93	3.77	0.97
Disruptive Behaviour	3.02	1.32	3.36	1.23	3.42	1.08

Table 7: Average means and standard deviations for in-session behaviour scales (1-5 likert scale) from the beginning middle and end of the intervention delivery.

As represented in Figure 27, means for all scales improved from the first third of the intervention to the second third, and remained relatively similar thereafter. The largest increase is seen for the enthusiasm scale. This suggests that the programme became more acceptable to the participants after the initial sessions and remained so for the duration.

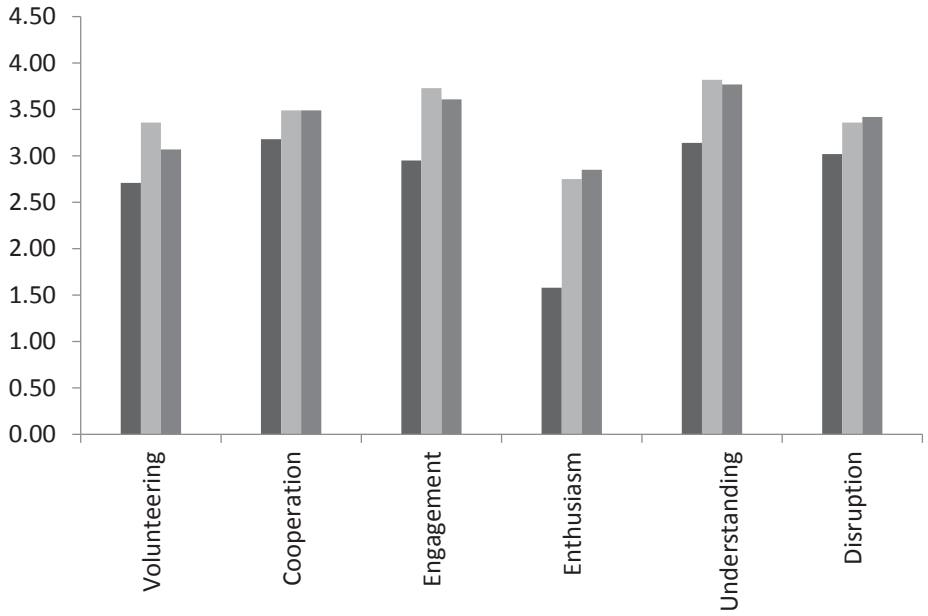

Figure 27: Mean scores of In-Session Behaviour Scales from beginning of intervention compared with the middle and end.

The first two thirds of the intervention are made up from alternate ACT and SST sessions that involve roleplays and practice, while the final third was composed of entirely discussion based MRT sessions. The consistency between scores in the last two thirds suggests that, despite the change in format of the sessions, participants still found this component acceptable. This stands in contrast to feedback data from participants, which found the MRT component to be the least enjoyed by participants.

Participant Feedback

Feedback data was collected by way of surveys that were collected in a final meeting with participants after all follow-up data had been collected. Surveys included likert scale style questions, multiple choice questions and questions that required written responses. Participants were asked to complete as much or as little of the surveys as they liked, with the option of doing so anonymously if they preferred. Several participants were absent on the day that data was collected or unable to

attend due to other school commitments. Only seven of the participants provided feedback at this time.

The majority of responses provided about the programme were positive and indicated that the intervention had a positive impact for participants. Figure 28 displays results for responses to likert scale questions. Responses regarding the helpfulness of the programme for participants ranged from three (somewhat helpful) to five (a lot helpful), with a mean score across the seven respondents of 4.29 (SD=0.76). Four of the seven respondents qualified this rating with statements about being better able to control themselves and their anger. The Anger Control component was identified by the most participants (five) as the component that they had found the most useful. One participant identified the Social Skill component as the most useful, while another identified all three as useful. Despite the ACT component being identified as the most useful of the three components the SST and MRT were still rated as being somewhat to a lot useful overall.

With regard to how much participants enjoyed the intervention responses ranged from three to five with a mean score of 4.43 (SD = 0.79). The group discussions were cited most often as the most enjoyable aspect of the intervention. Only one respondent stated that the roleplays were the most enjoyable aspect of the intervention for them, while two stated that the roleplays were the most disliked part of the intervention.

Further, for those participants that had to miss classes in order to attend the sessions, the majority indicated that this had not disrupted their learning at all[11]

[11] Prior to assenting to participation in the intervention all participants were informed that the school would provide material from missed lessons and extra learning support as required/requested.

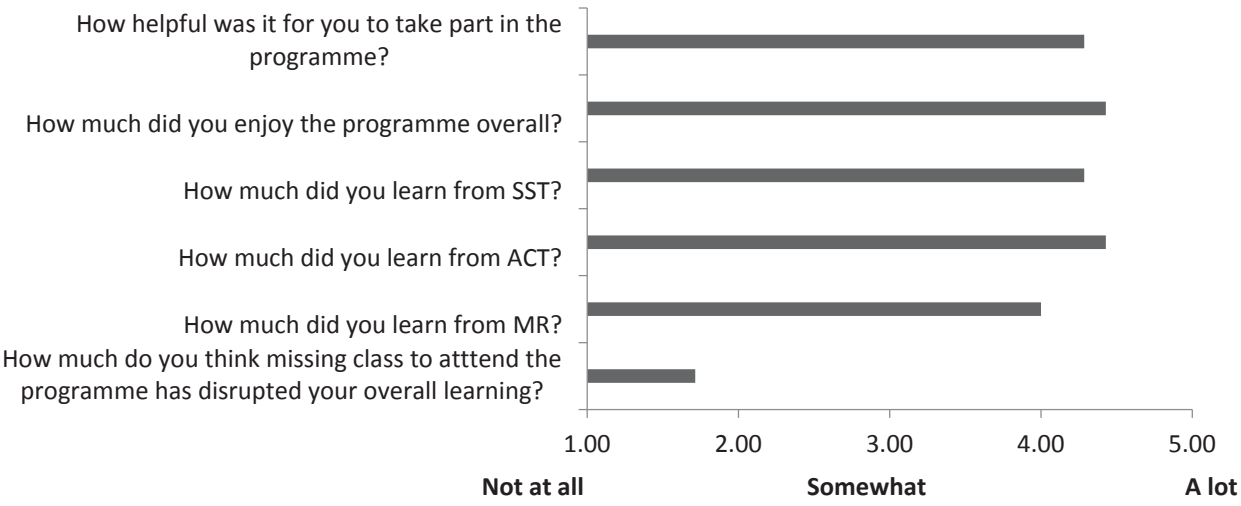

Figure 28: Mean responses to participant feedback likert scale questions

Given the low number of participants that provided feedback on the programme, the above results cannot be viewed as representative, however indicate that at least for some participation in the programme was for the large part enjoyable and believed to be of some benefit for them. Further the increasing enthusiasm and engagement over the course of the intervention suggest that participants found the ART programme to be an acceptable format for delivery of an intervention.

Discussion

Despite the growing number of outcome studies demonstrating the efficacy of Aggression Replacement Training (ART) in reducing antisocial behaviours, several gaps in our understanding of how ART operates to create positive change remain. The current research aimed to reduce some of these gaps by investigating improvements in interpersonal competence that the intervention is claimed to target (research question one). The current research also delves further by looking at the conceptually related variables of empathy (research question three) and proactive and reactive tendencies of aggression (research question four) in order to further understand how ART operates to create positive change. The current research also aimed to show the added value of the Moral Reasoning Training (MRT) component over and above that of the Anger Control Training (ACT) and Social Skills Training (SST) components, by delivering the MRT component last and assessing change in variables over the course of the intervention. Finally the current research assessed the acceptability of the ART intervention to high school students from New Zealand, given that it was developed in the United States of America for juvenile delinquents (research question five).

Research Question One – Interpersonal Variables

Does a 10 week programme of Aggression Replacement Training (ART) lead to an improvement in social competence [as assessed by (a) decreases in interpersonal deficits associated with problem behaviour and (b) increases in variables associated with pro-social behaviours] for 12-15 year old students identified as having aggressive/disruptive behaviours?

(a) Problem behaviour

Results showed several statistically and clinically significant reductions in participants' self-reported antisocial behaviours and attitudes following ten weeks of ART. A general trend for reduction in the majority of scales that assessed self-reported problem behaviours was also seen. Overall results

provided support for the efficacy of ART in reducing problem behaviours consistent with several previous ART outcome studies.

In order to assess antisocial behaviours and attitudes participants were assessed with the self-report problem behaviour scales of the SSIS, the HIT, and the Forms and Functions of Aggression measure. The externalising scale of the TRF (teacher rated), school behaviour records, and in-session behaviour records were also examined. TRF and school record data were unable to be used because of insufficient TRF return at follow-up (T4) and inconsistencies in school behavioural record data rendering it invalid. These issues are further discussed in this chapter in the section on implementation issues.

Overall, the group means of the SSIS *problem behaviour* scales (*Externalising, Internalising, Hyperactivity* and *Bullying*) decreased from T1-T4. Despite a decrease in the total mean score from the above-average range to the average range, and a moderate effect size, no statistically significant change was found for the overall Problem Behaviour scale. However, one-third of participants' scores did show statistically significant change from T1-T4, half of which also showed a clinically significant decrease. This shows that meaningful change did occur for some participants despite not being detected in analysis of group means.

Examination of the subscales that contribute to the Problem Behaviours scale found a significant ANOVA and large effect sizes for the decrease in the mean score for the Hyperactivity/Inattention subscale, with mean group scores shifting from the above-average range at T1 to the average range at T4 (Gresham & Elliot, 2008). According to Gresham and Elliot (2008) the *Hyperactivity/Inattention* subscale measures excessive moving about, high distractibility, and having impulsive reactions. Individuals with increased hyperactivity show similar social deficits to those that exhibit antisocial behaviour (Nijmeijer et al, 2008), with high co-morbidity between hyperactivity disorders (i.e., ADHD), Opposition Defiant Disorder, and Conduct Disorder (30 and 50% respectively; Harty,

Miller, Newcorn & Halperin, 2009; Nijmeijer et al, 2008). Although the current study did not set out to examine the applicability of ART to hyperactivity and/or attention difficulties, this finding supports other research that suggest ART may have some utility in treating problem behaviours in children with hyperactivity difficulties. Monyhan and Strømgren (2005) found ART reduced problem behaviours in an individual with a diagnosis of ADHD. Given the high co-morbidity of problem behaviours and social difficulties and attention/hyperactivity disorders it might be that ART could be used for individuals with co-morbid difficulties with hyperactivity. However, these findings need to be interpreted cautiously as, though post-hoc comparisons found a significant decrease from T1 to T2 and T2 to T4 the group mean for the H*yperactivity/Inattention* subscale increased at T3; though this increase was not found to be significant.

Though no significant main effect of time was found for the total group mean of the Externalising subscale, a moderate effect size was seen and 44% of the group showed statistically significant change following ART; 50% of which also showed clinically significant improvement. The externalising subscale measures being verbally or physically aggressive, failure to control anger, and arguing (Gresham & Elliot, 2008); behaviours for which participants were originally nominated for participation (see *Method* section). The positive change on the externalising scale provides some support for the hypothesis that ten weeks of ART will result in significant reductions in problem behaviours. This finding is consistent with findings from Langeveld et al (2012) who found a significant decrease in externalising problems on the SSRS (parent and teacher rating forms) following ART intervention with school students. Reductions in acting-out and externalising behaviours have also been following intervention with ART in other settings, such as correctional facilities (Currie et al, 2012) and runaway shelters (Nugent et al, 1999). The lack of statistically significant findings for group means suggests that there may not have been sufficient statistical

power in the current research to detect this change due to the small sample size (Field and Hole, 2002).

No significant change was found for the internalising or bullying problem behaviour subscales of the SSIS; however, these were within the average range across all time points. Consequently, deficits on these scales may not have been initially of a severe enough degree to result in significant improvements. This is consistent with findings from other researchers who have found more severe externalising problems at pre-treatment result in greater treatment benefits (Langeveld, 2012; Hemphill & Littlefield, 2006). An insignificant finding for the internalising scale is not unexpected given the programme was designed to tackle externalising behaviours and participants were selected on the basis of borderline-clinical externalising scores rather than internalising difficulties. Low scores on the bullying subscale at pre-test are more surprising given the behaviours the sample was selected for. This may be a result of under-reporting due to lack of insight or the desire of participants to appear good. The use of multi-informant measures would have provided an indication of possible under-reporting (see section on *Limitations*).

Overall, changes on the SSIS problem scales provide some support for the decrease of problem behaviours following ten weeks of ART. This support comes in the form of both statistical and clinically significant change, consistent trends in improvement across scales, and maintenance of these gains at follow-up.

Further support for a reduction in deficits associated with antisocial behaviour comes from participants' ratings on the Forms and Functions of Aggression measure, which measures tendencies for proactive and reactive aggression (Little et al, 2003). A significant mean effect for time was found for the Reactive Overt and Total Reactive Aggression subscales, and significant change was seen for these scales from T1 to T4. No significant change was found for proactive aggression. A discussion of changes in aggressive function subtypes follows later in this chapter in relation to

research question four. Significant changes in Reactive Aggression provide further support for a decrease in interpersonal deficits associated with problem behaviour following ten weeks of ART.

Cognitive Distortions

Significant change on measures of antisocial cognitive distortions indicates that ten weeks of ART led to decreases in thinking and attitudes associated with antisocial behaviours. Statistically significant decreases were found for the Total HIT score and the secondary cognitive distortion of Assuming the Worst from pre-test (T1) to post-test (T4). Statistically significant change was also seen for the Blaming Others mean group score from T2-T4. Results also showed significant decreases for the behavioural referent Overt and the Opposition-Defiance subscales. These changes suggest an overall decrease in attitudes to antisocial behaviours, particularly regarding overt or confrontational behaviours. This is consistent with, and provides support for, previous studies that have shown significant decrease of cognitive distortions following intervention following ART with adolescents in both school (Gundersen & Svartdal, 2006) and correctional settings (Currie et al, 2009). These results support the authors' claim that ART is an efficacious intervention in ameliorating the cognitive distortions associated with antisocial behaviour (Glick & Gibbs, 2011).

No significant change was seen for the primary self-centred cognitive distortion, though the group mean score for this scale did shift from the clinical to borderline-clinical range from T1-T4 and three participants showed both statistically and clinically significant improvement as assessed by the Reliable Change Index (RCI) and clinical cut-off scores. This suggests that positive change did occur for at least some participants. Given that secondary cognitive distortions are posited to maintain the primary egocentric bias, it may be that a longer timeframe, or stronger dose of intervention, is required for changes in the primary self-centred distortion to emerge.

Though no significant change was found for the Minimising/Mislabelling distortion or the Covert, Lying and Stealing covert behavioural referents, that the means for these three scales decrease across data selection points suggest that these scales were trending in the right direction. Greater changes in the overt scales of the HIT may suggest that ART is more effective at reducing antisocial beliefs about overt behaviours than those regarding covert ones, though there is not enough evidence to make a conclusion about this based on the current study.

Overall, these findings indicate that intervention with ART results in reductions in interpersonal deficits associated with problem behaviours, particularly difficulties with overt, angry or reactive aggression, and hyperactivity.

(b) Pro-Social Skills

In order to assess self-reported pro-social skills participants were assessed with the self-report social skills scales of the SSIS, the Sociomoral Reflection - Short Form (SMR-SF), and in-session behaviour records were also examined.

Partial support was found to indicate that ten weeks of ART results in increases in interpersonal variables associated with pro-social skills and attitudes. This includes significant increases in the overall level of moral reasoning for the group and in ratings of in-session behaviour. Less evidence was found, however, for an increase in social skills as measured by the SSIS.

Social Skills

Though an improvement across time for the majority of the social skills scales was seen, as measured by the SSIS, no statistically significant change was found for any of these scales; with effect sizes ranging from small to moderate. This finding differs from previous research, which found significant change in social skills following intervention with ART in high schools settings (Gundersen & Svartdal, 2006; Jones, 1990, as cited in Goldstein & Glick, 1998; Langeveld et al, 2012; Nordarse,

1998). Though the general trend toward improvement seen may have been a result of social desirability or regression toward the mean, looking at individual scores showed that 50% of the group did show statistically significant improvement, three of whom also showed clinically significant change. The small sample size may have meant that though change did occur the magnitude of change was too low and/or the power too weak for this to be detected by ANOVA (Field & Hole, 2002).

Secondly, the majority of group means on the SSIS social skills scales were within the average range at pre-test. Consequently, this may mean that participants' deficits were not low enough pre-intervention to result in a significant degree of change in these areas (Hemphill & Littlefield, 2006; Langeveld et al, 2012). Another consideration is the use of multi-informant ratings used in other studies. Langeveld et al (2012), found significant changes using an older version of the SSIS; the parent and teacher versions of the Social Skills Rating System (SSRS; Gresham & Elliot, 1990), but did not administer the student rated self-report version of this measure. Gundersen & Svartdal (2006) also found social skills increases on the parent and teacher versions of the SSRS following intervention with ART, but did not see significant changes on the youth version of the SSRS (2006). Aggressive and antisocial children and young people have been found to overestimate their levels of social competence (Dodge, 1991; Polman et al, 2007). These youth may have lacked insight into their own social deficits and therefore not rated themselves as having deficits on these scales initially, a factor that may also have been operating in the current study. Social desirability may also have impacted on these ratings. Without the use of an inbuilt social desirability rating or the use of multiple informants to verify self-reports, however, it is difficult to assess the impact of over-estimates of social competence or social desirability on participants' ratings (see *Limitations* section for further discussion).

Some researchers have suggested that social skills interventions maybe be more effective with younger children and early adolescents. Langeveld et al (2012) found moderate age effects following intervention with ART, with primary school aged participants demonstrating a greater improvement in social skills than for secondary school aged participants. These authors concluded that in terms of increasing social competence, ART may be more effective for students under the age of 12-13. Over the ten weeks that ART is recommended to run for, ten sessions focus on social skills that can be selected from a list of 50 (Glick & Gibbs, 2011). Though an attempt was made to target the ten social skills selected for use in this research, participants were not individually assessed prior to social skill selection in order to better inform the selection of social skills. In order to meet the possible needs of a wide range of social skill deficits, skills were selected from across the range of social skills. It may have been that some of the selected social skills were too basic for the current sample and that had more sophisticated social skills been selected a greater improvement in scores would have resulted. More accurately targeting social skills taught to social skills deficits, as recommended by the authors (Glick & Gibbs, 2011), may result in more significant changes.

Moral Reasoning

A significant increase in the global moral reasoning stage for the group indicates that ten weeks of ART resulted in an increase in prosocial thinking. A significant main effect of time was seen for change in moral reasoning and the effect size for this change was large. Overall group scores increased in global moral reasoning stage from transition stage 2(3) to transition stage 3(2). The gain from transition stage 2(3) to transition stage 3(2) shows that overall group participants are beginning to reason more abstractly and to think more about how moral behaviours impact relationships, and the feelings of others, over what they can personally gain from moral behaviour – that is less exchanging and instrumental and more mutual and prosocial (Gibbs et al, 1992). The increase in global moral reasoning stage found in this study provides support for the use of moral reasoning

discussions in the remediation of moral reasoning delay and is consistent with other research that has seen similar increases (Arbuthnot & Gordon, 1986). A discussion of change in moral reasoning across the course of ART in this study, in relation to research question two, follows later on in this chapter.

Positive In-Session Behaviour

In session observations also showed some improvement in positive in-session behaviour. This included observed increases in volunteering, engagement, and enthusiasm. Understanding also increased possibly as a result of increased engagement allowing participants to get more out of sessions and/or exhibiting to facilitators more of what participants were taking in; though these results must be viewed with some caution given the limitations of the in-session observations made. This is further discussed in the section on implementation issues and limitations.

Overall though there was no significant change in social skills as measured by self-report ratings on the SSIS, an increase in prosocial behaviours within session, and significant increase in global moral reasoning stage was found after ten weeks of ART.

In conclusion to the first research question –would ten weeks of ART result in a decrease in antisocial attitudes and behaviours and an increase in prosocial skills and attitudes – the conclusion is that ART does appear to result in positive changes for participants in terms of reduced antisocial behaviours and attitudes and increase in prosocial behaviours and attitudes. However the current research does not investigate whether these self-reported improvements then translate into improvements in behaviour.

Research Question Two - The Moral reasoning Component

Does the Moral Reasoning Training (MRT) component of ART appear to result increased treatment gains when compared with gains from Anger Control Training (ACT) and Social Skills Training (SST) sessions alone?

Results suggest support for the added value of the MRT component. The increase in moral reasoning from pre-test to post-test was found to be significant and Tukey's post hoc tests suggest that this improvement did not occur until after the MRT component was delivered (T3). This suggests that, consistent with the theory underlying of this component, the MRT component resulted in these gains. The majority of ART outcome studies have not investigated change in moral reasoning, making the current study one of the few.

In theory, given the negative association found between immature moral reasoning and antisocial behaviour, the increase in global stage moral reasoning should limit the opportunities that individuals encounter for which they justify the use of antisocial behaviours. This may prevent them from acting in antisocial ways and motivate them to utilise more pro-social skills for dealing with interpersonal conflict (Hollin et al, 2002). Studies that investigate the association between increases in moral reasoning maturity and subsequent changes in antisocial/prosocial behaviours over longer timeframes are required to investigate this further.

As well as increases in moral reasoning maturity, results from the current study also suggest the MRT component adds value to the overall programme by way of reductions in antisocial cognitive distortions and attitudes toward antisocial behaviour. These improvements are consistent with expectations of more mature moral thinking. The cognitive distortions of Blaming Others and the behavioural referent scales of Oppositional-Defiant and Overt showed the same pattern of change as

moral reasoning, i.e., not showing significant change until following implementation of the MRT component.

The improvements seen following the delivery of the MRT component provide support for its addition to ART overall for challenging cognitive distortions and antisocial attitudes. Given the growing amount of research that suggests a strong association between egocentric cognitive distortions and antisocial behaviours this is an important finding in the development of interventions that aim to target and reduce antisocial behaviours. It provides strong support for the inclusion of the MRT component, especially if a link between the decrease in cognitive distortions and a resulting decreasing in antisocial behaviour was found. However, the current research does not investigate the association between decreased cognitive distortions and decreased antisocial behaviour and further research is required to further explore this link.

The same pattern, of little change until after the MRT component, was not found for the cognitive distortion Assuming the Worst. This distortion is synonymous with a hostile attribution bias and is associated with reactive aggression (Dodge, 1991). While this distortion did show significant improvement from pre-test to post-test, no significant pairwise comparisons were found. This could suggest that improvement of this distortion occurred as a combined result of all components. Longmore & Worrell (2007; Worrell & Longmore, 2008) have suggested that it could be the combination of cognitive behavioural based interventions that make them effective, with each component/technique having influences on the other. Gundersen & Svartdal (2006) found that, even when only four to five sessions of MRT were delivered over the course of the intervention, positive

change in cognitive distortions still occurred[12]. They suggest this was a result of changes from one component generalising to others. This might be especially true, of all the cognitive distortions, for the hostile attribution bias given the focus of the other components (particularly ACT) on reactive type aggression control and the association between hostile attribution biases and reactive aggression (Dodge, 1991).

Research Question Three - Empathy

Does intervention with ART result in changes in empathy (examining both empathic concern and perspective taking as separate facets of empathy)?

Ten weeks of ART did not lead to any significant change in self-reported empathy. This finding was consistent for all measures of empathy used in this study. The IRI subscales looked at both cognitive and affective empathy however neither of these subscales indicated significant increases. Further, significant change was not found on the SSIS empathy subscale. In contrast to these findings, Langeveld et al, (2012) found significant increases in levels of empathy (as measured by the SSRS, following intervention with ART); though it should be noted that this was using the parent and teacher versions of the SSRS as opposed to the self-report version.

The lack of significant change in levels of empathic concern may be a result of participants already having sufficient empathic concern and perspective taking for moral reasoning to develop i.e., that no empathic deficit existed at pre-test. Scores on the SSIS Empathy scale at pre-test were within the average range, providing support for this. Such ratings need to be interpreted with caution, however,

[12] Gundersen & Svartdal (2006) only used the HIT Total scale; therefore it is not possible to know which, if any, of the subscales of the HIT contributed most to this change.

as social desirability is quite likely to have some influence on self-report measures of variables such as empathy give such traits are seen as virtuous or "fashionable" (Lovett & Sheffield, 2007, p. 10). Further, when compared to scores of research samples of non-aggressive individuals, the current sample is lower suggesting there may have been an existing deficit. Despite the theoretical importance of the construct of empathic concern to many clinical disorders, there is no measure for which standardised, widely normed scores exist for interpretations about possible deficits to be made (Lovett & Sheffield, 2007). Given the lack of standardised norms for these scales, it is difficult to conclusions about clinical severity of participants' levels at pre-test.

The lack of significant change in empathy is interesting given Gibbs' (2010) assertion that change in MR necessitates change in empathic concern and previous findings of associations between moral reasoning and perspective-taking (Mason & Gibbs, 1993). Langeveld et al (2012) found significant improvements in empathy following ART intervention with high school students; however, they did not find that this increase was associated with the decrease in problem behaviours also found for their sample. The association between empathy and antisocial behaviour is most often seen with adolescent samples, but the relationship is not robust (Lovett & Sheffield, 2007). This may be in part due to the above mentioned difficulties with measurement of this construct. Further research on the relationship between these variables is required to better understand how they might influence each other.

Research Question Four - Aggressive Function Subtypes

Does a 10 week programme of ART result in reduced levels of proactive and reactive aggression?

Ten weeks of ART appears to be effective for reducing reactive aggressive tendencies. The ART programme targets the deficits associated with reactive aggressive tendencies in several ways, including teaching improved emotion regulation, challenging faulty information processing biases,

and coaching more appropriate pro-social methods for dealing with conflict. Reductions in ratings of reactive aggressive tendencies, externalising problem behaviours, and endorsement of statements consistent with a hostile attribution bias suggest that ART is likely an effective intervention for reducing reactive aggression, both in terms of improvement in anger control and reduction of the cognitive distortions associated with this subtype.

Emotion processes play an important role in information processing (Arsenio & Lemerise, 2000) and difficulty regulating high levels of emotion is linked with poorer social functioning and problem behaviours (Eisenberg et al, 1996). Reactive aggression is associated with the first two steps of Crick & Dodge's (1994) Social Information Processing (SIP) model, including difficulty encoding social cues and a hostile attribution bias (Dodge et al., 1997; Dodge & Coie, 1987). It may be that having better control over emotions enables clearer thinking, such as better attention to cues in a social situation, making distorted interpretations of a given situation less likely. Alternatively less distorted thinking may result in less emotionality (as negative emotions are not triggered by faulty interpretations) eliminating the need for aggressive action. Or it may be a combination of both.

Given the association between poor anger regulation and reactive aggression the decrease found in this study is consistent with findings from Smith (2014), who, after intervention with ART in the same sample of high school students as the present study, found significant reductions on the DERS (Gratz & Roemer, 2004) in overall difficulties with emotion regulation (total scale) and significant reductions on the subscale measuring impulsivity when emotionally distressed; as well significant changes on the STAXI (Brunner & Spielberger, 2009) including decreases for trait anger and anger expression and an increase in anger control.

There is research evidence to suggest that reactive aggression is associated with underlying attention difficulties (Arsenio et al, 2009), therefore improvements seen on the Hyperactivity/Inattention subscale of the SSIS may also be related to improvements in reactive aggression. This finding may

further suggest that ART is a beneficial intervention for individuals with reactive aggressive tendencies. Overall, the reduction in hyperactivity, hostile attributions, and reactive aggression suggest that ART is a beneficial intervention for reactive type aggression.

While an improvement was found for reactive aggressive tendencies, no support was found in this study to suggest that ART is an effective intervention for proactive aggressive tendencies. Levels of proactive aggression did not show any significant improvement over the course of this study and nor did variables theoretically linked to the maintenance of this subtype of aggression (i.e., empathic concern[13] and self-centred distortions).

As with empathy, there are no standardised norms for which to interpret an individual's scores of proactive or reactive aggression. As a result it may be that scores of proactive aggression were not significantly high enough for the ART intervention to create a substantial change in these. Another possibility may be that as elements of the ART components are largely targeted toward reactive deficits, this subtype received a higher dosage of intervention and that a longer period of ART may have resulted in a greater change in proactive aggression. It may also be that changes in proactive aggression take longer to emerge; a longer follow-up period would have resulted in the decrease in means seen for proactive aggression increasing. Current findings, however, and the lack of significant change for either proactive aggression or empathic concern in this study casts the efficacy of ten weeks of ART for treatment of proactive aggression into doubt. This finding suggests that

[13] Though the association between empathic concern and aggression is not conclusive, deficits in empathic concern are thought to be more closely associated to proactive aggression, with relevant theory suggesting that empathic concern is more likely to be an inhibitor of proactive aggression than reaction aggression (Lovett & Sheffield, 2007).

further research on the efficacy of ART for proactive aggression should be conducted as this has important implications for the use of ART for treatment of aggression as a homogenous construct.

Overall this study's findings suggest that ART may be a more effective and appropriate intervention for individuals with anger control difficulties, who use aggression as a form of retaliation or to solve social conflict, than for those that use aggression for instrumental purposes.

Research Question Five - Acceptability

Is a 10 week programme of ART acceptable to NZ high school students?

Acceptance of treatment modality is considered to be a key aspect in promoting engagement and positive treatment outcomes in therapy (Constantino, Ametrano & Greenberg, 2012). As ART was developed overseas, initially for use with juvenile delinquents, assessing the acceptability of ART with students in a NZ high school setting was seen as an important part of investigating the use of ART in NZ.

Based on responses to the survey given to the participants following intervention with ART, ART appears to have garnered good acceptability from participants. Participants endorsed high agreement to statements including "How helpful was it for you to take part in the programme?" and "How much did you enjoy the programme overall?" By comparison ratings for the questions "How much do you think missing class to attend the programme has disrupted your overall learning?" were low overall, though one respondent indicated this was more of an issue for them.

When asked about the main benefit of the programme the majority of respondents described increased anger control and staying calm. Participants also mentioned staying out of trouble and being able to say no to peer pressure, such as wagging.

When asked about the individual components, overall the ACT component was the most enjoyed, was found to be the most useful, and was endorsed as the component that participants learnt the most from. It may have been that participants found this component to be the most overtly applicable to their own perceived deficits and therefore had the most face validity for them. The SST was the second most endorsed component, followed by the MRT component. Overall the MRT component received the least positive feedback, though ratings for the usefulness of this component were still relatively high. The timing of the MRT component, being run in the last few weeks of the intervention may also have influenced these scores and future research could investigate acceptability of the three components when run concurrently.

Though these findings suggest that the participants found ART acceptable overall, only seven of 18 participants completed the feedback surveys and therefore these findings should be considered with this in mind. While the questionnaire did ask about enjoyment, and what participants took from the sessions, the inclusion of questions that looked at participants' understanding of the applicability of each component to themselves (face validity) would have allowed a better consideration of acceptability. Overall the participants appeared to enjoy participation in the group and the opportunity to discuss some of these issues, such as their views on and justifications for certain behaviours. It may be that these are topics that individuals are not able to discuss in a frank manner in a formal setting due to their taboo nature or that such views are usually quickly invalidated by adults. My perception was that providing a formal and respectful space for young people to discuss these views may have been part of the programmes acceptability; however, no questions were specifically asked to ascertain this. Further, no questions asked about cultural acceptability to participants. As the intervention was designed in North America questions tapping into this aspect would help to understand the perceived cultural acceptability of ART for participants.

Other considerations

Several of the measures show increasing gains at T4, over those seen at T3, and for the majority of scales for which significant change is found, this is at T4. Previous research with ART, and similar interventions, has found a 'sleeper effect' (Kazdin, 1992; as cited in Martsch, 2005) resulting in a delay between the delivery of the intervention and noticeable change (Leeman, Gibbs & Fuller, 1993; Martsch, 2005; Gibbs, Potter, Barriga & Liau, 1996). Improvements may take time to accumulate. For example a decrease in hostile attributions may lead to more amiable social interactions, which in turn lead to increased opportunities to practice prosocial skills. Such changes may have cumulative effects resulting in continued improvement over time. Given the possibility of a sleeper effect it may be that the follow-up period was not long enough to account for this. Previous research has found sleeper effects at 6 month and 12 month follow-up periods (Leeman et al, 1993). Larger studies with longer follow-up periods are required to investigate this possibility.

One area for consideration about is the lack of improvement for some individuals. This could relate to the attitudes of significant adults in their lives. Although a parent/caregiver information evening was run prior to the implementation of this programme only four participants' parents/caregivers took the opportunity to attend. The take-home material for parents aimed at increasing generalisation of the programme to wider contexts was rarely completed and returned, which could indicate ambivalence about their child's participation. Alternatively this may have resulted from multiple other reasons such as other commitments that they may have had, poor understanding of the material, or participants not giving them the material in the first place or subsequently returning it. This reflects a real-world difficulty for participants who may not have adequate parental support or who may go home to stressful living environments, in which for some individuals their needs are not being adequately met. For individuals in such situations self-centred cognitions may in some way be protective or advantageous (Church, 2003). It may be that for some individuals three hours a week of

intervention compared to the long-standing and consistent attitudes and pressures of their home environments will not be a strong enough dose to create sustained change.

Implementation Issues

One issue of implementation of a group intervention, which may have impacted findings, was the challenge of pacing the sessions for individual learning needs. Some participants were quick to pick up the concepts discussed and able to work through the material rapidly, where others needed multiple repetitions of material and demonstrated poor learning of the material from session-to-session (e.g., forgot what the previous session was about, took considerably longer than peers to complete handouts, and required one-on-one assistance to do so). This meant that sessions were sometimes unable to be completed in the time available, which resulted in knock-on effects for future sessions and the requirement of catch-up sessions for some individuals. The difference between group members also meant that those individuals who were able to complete the material quickly or without assistance became frustrated by the slow pace of the sessions, became bored, and at times acted out (e.g., whined and complained loudly about other group members, distracted other group members). No data was collected on participants' academic ability, learning styles, or similar and therefore the impact this may have had is unknown. Smaller groups, the provision of activities for early completers, or peer buddy systems may have been helped to minimise the impact of different learning speeds and this could be considered for future implementations.

On top of dealing with the participants themselves this project also involved collaboration with school staff and interactions with parents. While some staff and parents were enthusiastic and helpful others were less helpful and demonstrated attitudes that were at times barriers to implementation (e.g., not completing assessment measures about students). Further research may benefit from investigating the acceptability of in-school interventions for staff as well as for participants.

School records were collected in the hope that these might be able to be used as a qualitative measure of behaviour change over the course of the intervention and through to follow-up. However, due to differences in record collection across schools, unsystematic, inconsistent, and potentially biased reporting by school staff the reliability of these records was questionable and therefore it was decided not to utilise these records.

While an attempt was made to create an objective, in-session behaviour scale with defined anchors for each response category there were several difficulties with this scale that impacted on its reliability and validity. These are reflected in an inter-rater reliability score that while acceptable was still lower than desirable for a research project. The scale was completed by facilitators after each session. In session observers, who were not involved in facilitation, or video recordings of sessions would have allowed for more accurate ratings of behaviour to occur that were less impacted by memory and bias.

An attempt to maintain fidelity to the ART programme as outlined in the manual was made by use of session checklists provided in the manual and completed after every session. Checklists ensured that each session was delivered as intended and enabled discussion between facilitators and within supervision. Checklists were completed by facilitators; however, the use of external observers may have produced a more robust measure of the fidelity to the programme. The Barnoski (2004) evaluation study demonstrated that treatment integrity, or a reliable delivery of the ART intervention to participants, is necessary for the programme to be successful. This is consistent with earlier meta-analyses which have found that the way in which a treatment is delivered or how closely delivered an intervention is to the way it is supposed to be delivered is critical to its efficacy (Cooke & Philip, 2000; Lipsey, 1995). Programme drift, programme reversal, and treatment non-compliance have all been identified as threats to treatment integrity (Hollin, Epps & Kendrick, 1995; Mocher & Prinz, 1991). While a strong theoretical base and a manualised protocol go in some way to preserve

treatment integrity other aspects such as the support for the intervention from staff members not involved in the intervention; the motivation, attitudes and experience of the facilitators; supervision to ensure fidelity and prevent burnout and decreasing motivation; and continuous monitoring and evaluation of delivery also play an important role in maintaining treatment fidelity (Hornsveld, 2004).

Limitations and recommendations for further study

Though commonly used in small scale exploratory social science research (Cook & Campbell, 1979) there are several limitations in this research of the one-group, pre-test-post-test design used in this case study that need to be acknowledged.

Given the stage of developmental transition inherent with adolescence it is possible that the trend to improve over the course of the study was an artefact of normal maturation, as ego-centric thinking has been shown to decline over the course of childhood and adolescence (Eisenberg et al, 2005). The use of a control group and a multiple baseline design would have increased the credibility of the findings. This was unfortunately not possible in the above described study due to timeframes of the research. Given the length of the programme (minimum of ten weeks when assessment administrations and school holidays are considered) it was not possible to offer a waitlist control option.

The small sample size (nature of the research) and non-random selection of participants (targeted intervention necessitates non-random sampling) means that findings cannot be generalised to other populations. Only two schools participated in the research. Future research should attempt to include a larger sample of students in high-school settings across New Zealand to allow for broader generalisation of these research findings.

No specific hypothesis were offered or explored in terms of age, gender, or cultural differences between participants. The limited sample size prevented the possibility of finding differences in gender, age, and cultural differences.

Despite the apparent acceptability of the programme to students, this study did not look at the cultural appropriateness of an intervention developed in the United States of America for use with a group of adolescents in New Zealand from different cultural backgrounds (e.g., Maori, Pakeha, and Pacifica). Further studies should more specifically investigate the appropriateness of ART for use in New Zealand and adaptations for both wider New Zealand populations, but also more specific cultural groups, such as Maori, as this may improve both acceptability and outcomes.

While the use of a community based sample increases the ecological validity of findings; participants are exposed to multiple environmental influences throughout the course of the intervention, which means there are potentially confounding and uncontrolled for factors. This may result in false positives, with change being credited to the programme that was in fact a result of something environmental. However testing programmes outside of a controlled environment is essential to the development of treatments that will be effective for the real-world individuals that inhabit real-world environments (Kazdin & Nock, 2003).

Due to the focus on interpersonal deficits of this research it was necessary to use multiple self-report measures, as many of the variables of interest are internally occurring and unobservable. The use of repeated measures could result in participants getting used to questions, which may influence their responding in future subsequent administrations. Further, as facilitators both implemented the intervention and administered the assessment measures the possibility of research allegiance, where by participants – who aware of the aims of the intervention – modify their answers in favour of beliefs of researchers' expectations or social desirability. Accuracy of self-report measures depends on the participant's level of self-awareness and honesty, two traits that young people with high

externalising behaviours my lack when compared to non-aggressive peers (Lovett & Sheffield, 2007). Greater validity of results could have come from the use of multi-informant data, such as the parent and teacher versions of the SSIS. Several authors (e.g., Moffitt et al, 2008) have stressed the importance of using multi-informant approaches to evaluate the effectiveness of interventions. While attempts were made in this research to do so by way of pre and post test TRF/CBCL measures and collecting school records, better efforts to do so would have resulted in more robust findings. The use of parent and teacher reports, for example, would have not only provided observer ratings of student behaviour, but would have also allowed an indication of the generalisation of changes within different settings (i.e., home and school).

While for the most part findings at follow-up were maintained, the relatively small timeframe means that it is difficult to confidently state that gains found from this programme will be maintained. Long-term longitudinal research is required to assess maintenance of gains. Longer follow-up times are particularly important given the findings of previous research that have not found gains for six to 12 months following delivery of the intervention. This sleeper effect may mean that important gains are not found in the current study due to the limited follow-up time frame.

Though an attempt to separate out the MRT component from the overall ART intervention was made it is impossible to rule out the impact of the first two components or to ascertain any cumulative effects from all three components with the current methodology. While it was not possible to completely separate and compare all components with each other, in the current study, future studies should continue to explore the relative contribution each component brings to the overall intervention in order to create more potent and targeted treatments.

Studies with improved methodology are required to replicate the findings found in the current study. Future studies should also aim to improve the methodology of the research to be able to draw firmer

conclusions from findings. This should include the use of multiple informants, larger samples, non-treatment control groups, randomisation, and longer post-treatment follow-up times.

Conclusion

Overall, while there were several limitations that call into question the robustness of the above findings, the current research found multiple improvements in participants across a range of measures that were consistent with theoretical expectations following ART. This research suggests that ART could be a valuable intervention for the reduction of interpersonal deficits associated with antisocial behaviours and increases in interpersonal variables associated with pro-social behaviours. Further, findings from the current study also suggest that ART may be a particularly useful intervention for reducing reactive aggressive tendencies and deficits associated with reactive aggression including hostile cognitive distortions and hyperactivity. However, less evidence was found to support the use of ART with proactive aggression and caution should be taken when using ART for individuals with high levels of proactive aggressive tendencies until further investigation in this area is done. No significant improvements in empathy were found. This research also found changes across the course of the intervention that suggest the MRT component, consistent with theory and the authors' claims, is a valuable addition to the overall intervention. Findings suggest that the MRT component may be particularly valuable in reducing the cognitive distortions associated with antisocial behaviour, as well as increasing global stage moral reasoning. ART seems to be an acceptable intervention for students and warrants further investigation for use with students in New Zealand. Though there are several methodological limitations that prevent strong causal conclusions to be drawn from the findings of this study, the positive trend toward improvement suggests that ART is a promising intervention that is acceptable to participants, which could provide a cost-effective method of reducing antisocial behaviours in schools and the wider community.

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Appendices

Appendix A

Appendix A1: School Information Sheet

Teaching pro-social skills in New Zealand schools: Aggression Replacement Training

Researcher(s) Introduction

Thank you for taking the time to read this information sheet about our research of Aggression Replacement Training (ART), a positive behaviour programme. This research is being undertaken by Jessica Mills and Freya Smith as part of their qualification in Clinical Psychology Doctorate. The research will be supported by Dr Ruth Gammon, Clinic Director at Massey University's Wellington Psychology Clinic, who will provide programme assistance and clinical supervision. Ruth has extensive experience in youth programmes, including ART, in the USA. We would like to invite you to take part in this research in your role as a participant's teacher and, if you agree, to sign the consent form attached.

Proposal for New Zealand schools

Currently in New Zealand the Ministry of Education endorses several programmes for the early-middle school years for reducing antisocial behaviour. The intention of this evaluation of ART would be to provide support for the use of intervention programmes with at-risk adolescents aged 11-14 years. ART has been successfully implemented with youth up to 18 years old. Although more established antisocial behaviour patterns are generally considered more difficult to change, it is never too late to intervene.

Massey University intends to run an ART evaluation across several schools in the wider Wellington region. The programme facilitators are two Doctorate students of Clinical Psychology, trained in ART implementation, supported by Dr Ruth Gammon, who will provide technical programme assistance and clinical supervision. Ruth has extensive experience in implementing youth

programmes, including ART, in the USA. Ruth is now a lecturer and the Clinic Director at Massey University's Wellington Psychology Clinic.

Participant Identification and Recruitment

Your school will select students for participation through a process of identification involving teachers, Resource Teachers: Learning and Behaviour, parents, and school management. By agreeing to participate you consenting to school staff and students participating as set out by the conditions of the teacher and student information sheets. Teachers and parents will complete an evaluation of the student before (and if the student completes the training, after the programme) as one way of helping us to measure the programmes efficacy. These evaluations are in checklist format and involve rating the student's behaviour for each question on a scale of 1-3. The measures can usually be completed within 15-20 minutes.

Project description

ART aims to reduce antisocial and disruptive behaviours and increase positive behaviour. Research has shown that children and young people with a higher rate of antisocial behaviour tend to experience more peer rejection, academic failure and delinquency at school-age. This often leads to difficulties in adulthood including poor interpersonal relationships, unemployment, psychiatric disorders, substance abuse and criminal offending.

Students who participate in ART go to three types of sessions. Social skills sessions teach positive alternatives to destructive or aggressive responses that a young person would usually make. The second type of session is anger control training which teaches techniques to reduce and mange anger in anger provoking situations. The third type involves moral reasoning sessions designed to have participants understand viewpoints other than their own and develop more mature reasoning abilities given specific problem situations they discuss during each session.

We hope that our research will provide support for the use of ART in NZ schools and help us to understand some of the factors influencing its effectiveness and change within individuals.

Project Procedures

The 10-week programme involves three hour-long sessions per week with a group of 6-8 students. Students would take part during normal school hours. While this means some students may miss some class time we believe that the likely benefits far outweigh the loss of class time. The ART sessions comprise a three part programme focusing on teaching social skills, anger control strategies and developing moral reasoning ability. Children would be expected to be involved in peer group discussions, role play activities, performance feedback, diary keeping and small homework assignments. Individual assessments to assess the development of the students are part of the process before, partway through the sessions, after the ART programme, and at a 3 and/or 6 month follow-up session. As part of the research and with school permission we will require access to student records (e.g. attendance, referrals for bad behaviour, detention, sent to dean/principal's office) where available.

Although the learning programme is designed to improve children's understanding of positive behaviour and we do not expect any negative influence of the programme, there are potential risks involved in implementing any new educational course. Some students may find the programme to be a negative experience through becoming more aware of their own difficulties. We will be available to answer questions and provide support throughout the programme. An email address will also be provided for children to anonymously provide feedback, ask questions or raise concerns outside of sessions. In terms of verbal and physical aggression between students within sessions, we do not consider the risk of harm to be any greater than that of normal school time. If a student experiences any discomfort due to the nature of the group intervention a referral to the school counsellor will be made or our supervisor, a registered Clinical Psychologist, can do an evaluation of that student to assess their needs if desired.

Data Management

The information that provided to us by participants will be used for the purposes of this research project. It will be kept in a secure place within the Massey University Wellington Psychology Clinic and only named researchers will have access to these records. Records will not contain the school's name. Any publication resulting from this research will not identify the participants or schools involved. Upon completion of the research project the data will be kept for a period of 5 years.

Confidentiality

To protect the privacy of all the participants involved in the study there is a policy of confidentiality. We will be informing students that any of the personal information discussed during the sessions is not allowed to be discussed with non-participants. This confidentiality policy also extends to any members of school staff that may be present during the sessions. Students can discuss their own experiences with their parents/friends but they must respect and keep private the information shared by others. As with any group research we cannot guarantee that participants will keep this rule but we will take any breach of this policy very seriously. Teachers are asked to help ensure participating students are respecting this rule.

Participant's Rights

You are under no obligation to accept this invitation however if you decide that you would like your school to participate and understand that participants have the right to:

- decline to participate in any activity during the programme;
- withdraw from participating in the research at any point (or for information collected to be withdrawn within 1 month of completing the programme);
- ask any questions about the research at any time during participation;
- provide information on the understanding their name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

You are welcome to have a friend, family or whānau support to help understand the risks and/or benefits of this study and any other explanation that may be required. If you have any queries or concerns regarding your rights and your child's rights as a participant in this study, you may wish to contact an independent health and disability advocate:

Free phone: 0800 555 050

Free fax: 0800 2 SUPPORT (0800 2787 7678)

Email: advocacy@hdc.org.nz

Ethics Approval

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 11/51 and 11/52. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Acting Chair, Massey University Human Ethics Committee: Southern B, telephone 06 350 5799 x 87295, email humanethicsouthb@massey.ac.nz.

Benefits for schools:

- Empirically supported intervention for at-risk or disruptive students at no cost to the school.
- Trained facilitators with appropriate clinical support and supervision.
- Regular training notes to keep teachers and other school staff informed of the skills and activities students are learning each week**.**
- Information, resources and contacts for schools and parents for the full duration of the study.
- Results of the study shared with the school.
- Providing skills to teachers, other staff and parents to encourage the transfer of programme behaviour across multiple settings.
- Possible long-term reductions in aggressive/disruptive behaviour in the students involved.
- Students who have improved social functioning and hopefully more positively!

Benefits for participating students and their families:

- Regular training notes/updates sent home to parents to keep them informed about what the students are doing/achieving in sessions each week.
- Parent information session.
- Opportunity to develop skills for integrating with peer groups and associated peer-pressures.
- Skills to manage relationships with teachers and other adults.
- Skills for self-managing behavioural and academic requirements.
- Improved methods of communication about common adolescent challenges with parents, peers and other trusted adults.

- Skills and methods for dealing with and controlling anger.
- Increased moral reasoning ability.

Requirements from Schools:

- Schools would need to provide a space for the intervention to be run for 1 hour, three times a week for 10 weeks.
- Schools would need to be able to refer six or more students to the programme who would be absent from their normal school programme for one hour, three times each week for 10 weeks.
- Schools would need to be able to assist with the administration of the programme.
- School would need to consent to the involvement of their cultural advisor or units for consultation during the programme.
- Schools would need to consent to the involvement of guidance counsellors for providing advice and support to students involved in the programme if required.
- Schools would ideally provide school achievement and behavioural records of the involved students for the 3 months prior to and 6-12 months following the intervention.
- Teachers would need to be available for a 1-2 hour information session prior to the intervention and for follow-up interviews regarding their perceived changes in the students following the intervention.

Project Contacts

If you wish to ask any questions or to notify us if you wish to withdraw consent please contact us at nzartresearch@gmail.com or one of the following people:

Dr Ruth Gammon	Freya Smith	Jessica Mills
(number supplied)	(number supplied)	(number supplied)

Appendix A2: Letter to parents

Dear Parent(s)

[School Name] has been given the opportunity to be involved in a New Zealand first research study of a programme that looks to reduce challenging behaviours and increase pro-social skills in disruptive students. Whilst the school is collaborating on this study the research is being led by Doctoral students from Massey University.

Young people, who participate in Aggression Replacement Training, or ART, go to three types of sessions. The first type is social skills training in which a series of useful skills are taught. Each one of which is a positive alternative to a destructive or aggressive response a young person would usually make. A second type is anger control training which teaches techniques t o reduce and manage anger in provoking situations. A third type involves reasoning sessions designed to have participants understand viewpoints other than their own and develop more mature reasoning abilities given specific problem situations they discuss during each session. This programme has been shown to increase positive attitudes and behaviours, both at school and home, in international studies.

[Child's Name) has been selected as a potential participant for this research and if you agree to this they will be assessed and may go on to be involved in this 10 week programme.

There will be an information session for parents/caregivers on [DATE/TIME] in Room XXXX at XXXX College. The session will start with a brief presentation but researchers will be available for the full hour so parents are free to drop in at any time during this hour to meet the researchers and ask questions.

Attached is an information sheet outlining the programme in more detail. lf you agree to [Student's Name]'s assessment and participation please sign the attached consent form and return by [Close off date]. Alternatively you are welcome to attend the parent information session before deciding. If you have any queries or concerns please feel free to contact myself, or contact the researchers at nzartresearch@gmail.com. If we do not hear back from you we will contact you to ensure that you have received this.

Yours sincerely

[School's Name] in collaboration with Freya Smith and Jessica Mills

Please tick one of the following options:

- ☐ I am happy for my child to participate in this research and have signed the attached consent form.
- ☐ I would like to attend the information meeting, [DATE/TIME], before deciding whether to consent to my child participating in the research.
- ☐ I do not wish for my child to take part in the research or to attend an information meeting about this research.

Appendix A3: Parent/caregiver information sheet

Teaching pro-social skills in New Zealand schools: Aggression Replacement Training

Researcher(s) Introduction

Thank you for taking the time to read this information sheet about our research of Aggression Replacement Training (ART), a positive behaviour programme. This research is being undertaken by Jessica Mills and Freya Smith as part of their qualification in Clinical Psychology Doctorate, although it is in collaboration with the school it is being led by theses researchers. Dr Ruth Gammon, Clinic Director at Massey University's Wellington Psychology Clinic, will provide programme assistance and clinical supervision. Ruth has extensive experience in youth programmes, including ART, in the USA. We would like to invite your child to take part in this research and, if you agree, to sign the consent form attached. Please take your time to consider whether to consent and discuss this with your child. You are welcome to wait to give consent until after the parents' information session. You can return the consent form to school with your child or post it to.....If you decide to consent and your child meets the criteria for inclusion in this study then your child will then meet with the researchers and be asked to provide their own consent after this meeting. If your child does not provide consent they will not be included in the study therefore it is important to have discussed this with them. If you do not wish your child to take part in the research this will not have an impact on any further educational support or school services your child might receive in the future.

Participant Identification and Recruitment

We have contacted schools in the wider Wellington region asking them to identify students who display disruptive behaviours in the classroom. As a parent or guardian of a child who may benefit from participating in this programme we ask that you read and consider consenting on behalf of your son/daughter. We intend to run 3-4 groups across several schools with 6-8 students per group. If you would like your child to participate in the programme we will complete an initial assessment to ensure that they are appropriate for inclusion in the study i.e., that they are displaying a high level of disruptive behaviours. If

they are, they will be included in the study and if they are not we will inform you in writing. Information sessions will be run for students' parents/guardians to meet the researchers and have the opportunity to ask questions.

Project description

ART aims to reduce antisocial and disruptive behaviours and increase positive behaviour. Research has shown that children and young people with a higher rate of antisocial behaviour tend to experience more peer rejection, academic failure and delinquency at school-age. This often leads to difficulties in adulthood including poor interpersonal relationships, unemployment, psychiatric disorders, substance abuse and criminal offending.

Students who participate in ART go to three types of sessions. The first type is social skills training in which a series of positive skills is taught. Each one of which is a positive alternative to a destructive or aggressive response a young person would usually make. The second type is anger control training which teaches techniques to reduce and mange anger in anger provoking situations. The third type involves reasoning sessions designed to have participants understand viewpoints other than their own and develop more mature reasoning abilities given specific problem situations they discuss during each session.

We hope that our research will provide support for the use of ART in NZ schools and help us to understand some of the factors influencing its effectiveness and change within individuals.

Project Procedures

The 10-week programme involves three hour-long sessions per week with a group of 6-8 students. Students would take part during normal school hours. While this means students may miss some class time we believe that the likely benefits far outweigh the loss of class time. The proposed times for these sessions are [scheduled time for student's group]. The school is committed to ensuring that support is available for students to make up lessons from missed class time.

The ART sessions comprise a three part programme focusing on teaching social skills, anger control strategies and developing mature reasoning ability. Children would be expected to be involved in peer group discussions, role play activities, performance

feedback, diary keeping and small homework assignments. Individual assessments to assess the development of your child are part of the process before, partway through the sessions, after the ART programme, and at a 3 and/or 6 month follow-up session. As part of the research and with school permission we will have access to student records (e.g. attendance, referrals for bad behaviour, detention, sent to dean/principal's office) where available.

Although the learning programme is designed to improve children's understanding of positive behaviour and we do not expect any negative influence of the programme, there are potential risks involved in implementing any new educational course. Some students may find the programme to be a negative experience through becoming more aware of their own difficulties. We will be available to answer questions and provide support throughout the programme. An email address will also be provided for children to anonymously provide feedback, ask questions or raise concerns outside of sessions. In terms of verbal and physical aggression between students within sessions, we do not consider the risk of harm to be any greater than that of normal school time. There will be two facilitators at each session and on occasion there may be a school staff member such as the school counsellor or RTLB present. If your child experiences any discomfort due to the nature of the group intervention a referral to the school counsellor will be made or our supervisor, a registered Clinical Psychologist, can do an evaluation of your child to assess their needs if desired.

If after the programme you decide you do not want the information collected to be used you can let us know. However this must be within one month of the end of the programme. If you do decide to withdraw at any time this will not have an impact on any further educational support or school services your child might receive in the future. If at any time you have questions about the research please ask us, it is for your own and our benefit that you are fully informed about the research and its purpose.

Data Management

The information that you provide to us will be used for the purposes of this research project. It will be kept in a secure place within the Massey University Wellington Psychology Clinic and only named researchers will have access to these records. Records will not contain your child's name. Any publication resulting from this research will not identify the participants or schools involved. Upon completion of the research project the data will be

kept for a period of 5 years. You may also wish to receive feedback about your child's assessment before and after the programme, this can be arranged for you. A summary of the project findings will also be provided if you wish to receive it upon completion of the project.

Confidentiality

To protect the privacy of all the participants involved in the study there is a policy of confidentiality. We will be informing students, and any others present at the sessions, that any of the personal information discussed during the sessions is not allowed to be discussed with non-participants. Students can discuss their own experiences with their parents/friends but they must respect and keep private the information shared by others. Researchers are also bound to keep individual information private. As with any group research we cannot guarantee that participants will keep this rule but we will take any breach of this policy very seriously.

Participant's Rights

You are under no obligation to accept this invitation on behalf of your child. If you decide that you would like them to participate, you or your child have the right to:

- decline to participate in any activity during the programme;
- withdraw from participating in the research at any point (or for information collected to be withdrawn within one month of completing the programme);
- ask any questions about the research at any time during participation;
- provide information on the understanding their name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

You are welcome to have a friend, family or whānau support to help understand the risks and/or benefits of this study and any other explanation that may be required. If you have any queries or concerns regarding your rights and your child's rights as a participant in this study, you may wish to contact an independent health and disability advocate:

Free phone: 0800 555 050

Free fax: 0800 2 SUPPORT (0800 2787 7678)

Email: advocacy@hdc.org.nz

Ethics Approval

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 11/51 and 11/52. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Acting Chair, Massey University Human Ethics Committee: Southern B, telephone 06 350 5799 x 87295, email humanethicsouthb@massey.ac.nz.

Project Contacts

If you wish to ask any questions or to notify us if you wish to withdraw consent please contact us at nzartresearch@gmail.com or one of the following people:

Dr Ruth Gammon	Freya Smith	Jessica Mills
(number supplied)	(number supplied)	(number supplied)

Appendix A4: Student information sheet

Teaching pro-social skills in New Zealand schools:
Aggression Replacement Training

Researcher(s) Introduction

Our names are Jess and Freya and we are doing a project on a programme developed in the United States that teaches you better ways of interacting with others. We want to see if this programme is useful for students like you to attend. We would like you to take part in this research and, if you agree, to sign the form attached. Your parents have agreed that they are happy for you to take part in this research and may have spoken to you about this already. You are welcome to take the consent form away and think about whether you want to take part, if you do not wish to take part you do not have to. Consent forms may be returned to your form teacher.

Project description

Our project has three different types of session. In some of the sessions you will learn new ways of communicating with your friends, classmates and adults. In other sessions you will learn new ways to deal with angry feelings so that you can deal with problems without fighting or getting into trouble. The last type of session will involve group discussions about the different types of situations people can find themselves in and how you might deal with them.

Timetable

The programme involves 30 sessions (about three sessions per week) with a group of 6-8 students from your school. The sessions will be run during normal school time. Your teachers and parents/guardians know that you might have to miss some class time to attend these sessions and they have already agreed to this. The proposed times for these sessions are xxx. The school is committed to ensuring that support is available for you to make up lessons from missed class time. As part of the programme we would like you to be involved in group discussions, role play activities, diary keeping and very small (5 minutes!) homework assignments.

Before, during and after the programme starts we will ask you to fill in some questionnaires about your actions, thoughts and feelings. We will be there to answer any questions you have or to help you with filling these in.

We hope you will enjoy the sessions however if you feel uncomfortable, unhappy or worried at any point during the project then we would like you to talk to us about it. We have set up an email that you can use to ask any questions or tell us anything about the project that you want us to know. If you do not want to carry on with the sessions at any point during the project, you are allowed to return to normal classes. There will be two facilitators at each session and on occasion there may be a school staff member such as the school counsellor or RTLB present. If you experience any discomfort due to the nature of the group please let us know and we will make sure you receive appropriate help such as from your school counsellor or our supervisor.

Data Management

Any information you give us will only be used for this research project. Your name will be removed from this information and it will be kept safe, only we will have access to these records. Any publication resulting from this research will not identify you or your school. You or your parents can ask for a summary of results from the study. You and your parents also have the right to access your assessment results.

Confidentiality

To protect your privacy and the privacy of all the other students involved in the study there is a strict rule about talking or sharing in any other way any of the personal information discussed during the sessions with non-participants. While you can discuss your **own** experiences with parents/friends you must respect and keep private the information shared by others. As with any group research we cannot guarantee that participants will keep this rule but we will take any breach of this policy very seriously.

Participant's Rights

You do not have to take part in this project, however if you do, you have the right to:

- decline to participate in any activity during the programme;
- withdraw from participating in the research at any point (or for information collected to be withdrawn within 1 month of completing the programme);
- ask any questions about the research at any time during participation;
- provide information on the understanding your name will not be used unless you give permission to the researcher;
- be given access to a summary of the project findings when it is concluded.

You are welcome to have a friend, family or whānau support to help understand the risks and/or benefits of this study and any other explanation that may be required. If you have any queries or concerns regarding your rights and your child's rights as a participant in this study, you may wish to contact an independent health and disability advocate:

Your School Counsellor: xxx

Youthline: xxx

Ethics Approval

This project has been reviewed and approved by the Massey University Human Ethics Committee: Southern B, Application 11/51 and 11/52. If you have any concerns about the conduct of this research, please contact Dr Nathan Matthews, Acting Chair, Massey University Human Ethics Committee: Southern B, telephone 06 350 5799 x 87295, email humanethicsouthb@massey.ac.nz.

Project Contacts

If you wish to ask any questions or to notify us if you wish to withdraw consent please contact us at nzartresearch@gmail.com or feel free to talk to us before or after any of the sessions.

Appendix B

Appendix B1: Post-session notes template

Participant name:	Date:
Session:	
Arrived on time?	
Marks for good behaviour (bad)?	
How was the participant's general appearance and affect?	
Completed homework prior to session?	
How well did the student participate?	
Did the student volunteer or need to be asked?	
Describe the student's attitude.	
Did the student annoy/provoke others? How? How often?	
Did the student show enthusiasm for the material taught?	
Did the student show understanding of the material taught?	
Was there any change from the student's normal behaviour/appearance?	
Comments: School personnel comment:	
Completed by:	

Appendix B2 - In session Behaviour Scales:

Volunteering/participating

(volunteering to role play, volunteering to be co-actor, raising hand to answer questions, volunteering feedback to others on their role plays, calling out sensible answers to questions, volunteering to help with anything to do with the session)

1	**2**	**3**	**4**	**5**
No volunteering	Minimal volunteering (one or twice).	Volunteered occasionally	Volunteered often	Volunteered for almost question/task.

Participating/engagement

(listening, attending, asking relevant questions, completing worksheets sensibly, talking about personally relevant situations – to other students or to the facilitator)

1	**2**	**3**	**4**	**5**
No engagement	Minimal/Passive engagement	Minimal/active engagement	Variable engagement (inconsistently throughout session)	consistent engagement for most part of session

Enthusiasm

(interested – asking relevant questions of others and the facilitators, excited – making noises to attract facilitator attention when answering question, sharing – applying content to self in role play, recalling relevant situations, showing pride in using the skills, encouraging others)

1	**2**	**3**	**4**	**5**
no		sometimes		yes

Understanding of material

(correctly answer questions in own words, being able to give relevant examples of a concept, being able to define a

concept, being able to apply the concepts to others, being able to apply the concept to self)

0	1	2	3	4	5
Unclear to facilitator	no	Poor (parrots answers, can't give examples, can't define)	yes, average (superficial, basic examples, cannot define or weak definition)	yes, good (can give examples, and basic definition)	yes, excellent (gives relevant examples and can clearly define)

Disruptive behaviour

(making noises - tapping desk, random noises, banging, talking, shouting, singing, talking over others, fidgeting, playing with objects, tipping desk, getting out of seat, moving around the room, touching other students, distracting other students – calling names, provoking, making derogatory comments about them, stupid facial expressions, stupid voices, asking irrelevant questions of facilitators or others)

1	2	3	4	5
high level, majority of session	Variable/high	Variable/low	low	No/very minimal

Cooperation

(responding to requests to stop a behaviour, responding to requests to do a behaviour, helping without being asked, helping in response to group expectation, how many times they need to be asked, how coercive the request needs to be)

1	2	3	4	5
No cooperation	Minimal (doesn't respond immediately needs much cocercion)	Variable (between 3 & 4)	Some (cooperation on request)	High cooperation (doesn't need to be asked, shows initiative)

Appendix C

Appendix C1: Inter-item correlation scores for the Social Skills Improvement System *(SSIS; Gresham & Elliot, 2008).*

Scale	Pre-test	Time 2	Post-test	Follow-up
SSIS Total	.24	.24	.20	.25
Communication	.26	.26	.13	.20)
Cooperation	.25	.37	.24	.49
Assertion	.39	.20	.24	.14
Responsibility	.12	.13	.19	.30
Empathy	.35	.40	.31	.16
Engagement	.33	.33	.40	.27
Self-Control	.31	.42	.30	.34
Problem Behaviours	.19	.28	.16	.14
Externalising	.20	.18	.11	.02
Internalising	.44	.51	.38	.53
Bullying	.24	.32	.23	.25
Hyperactivity	.26	.42	.23	.17

Table 8: Inter-item correlation scores for the SSIS scales

Appendix C2: Change graphs for SSIS subscales

Figures 29 - 36 show the change in mean scores from T1-T4 for the remainder of the Social Skills scales of the Social Skills Improvement System (SSIS; Gresham & Elliot, 2008)

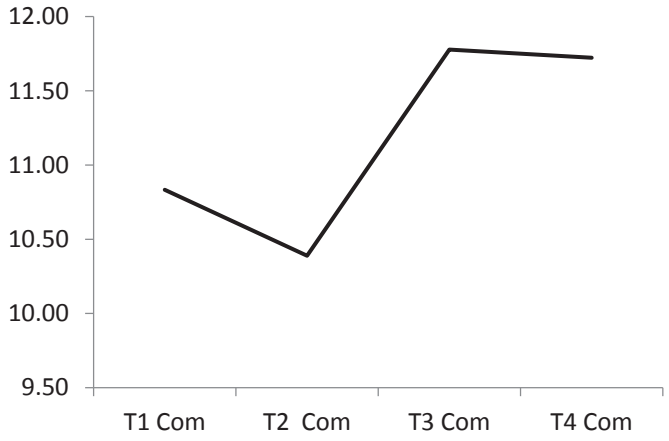

Figure 29: Communication (Com) scale mean group scores of the SSIS T1-T4

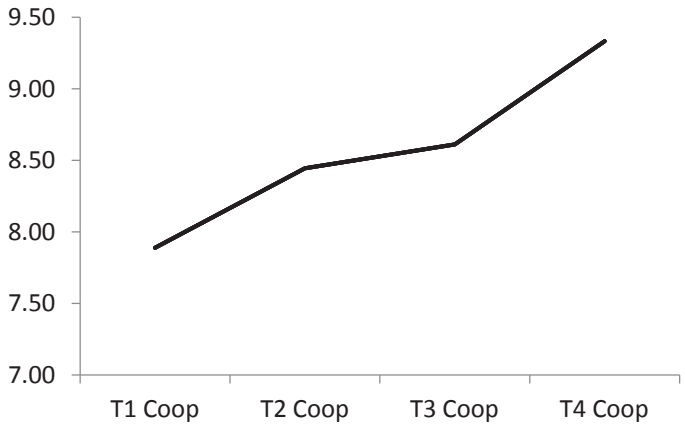

Figure 30: Cooperation (Coop) scale mean group scores of the SSIS T1-T4

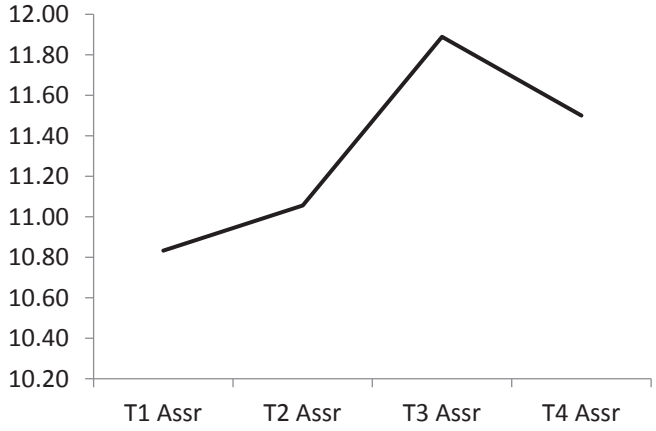

Figure 31: Assertion (Assr) scale mean group scores of the SSIS T1-T4

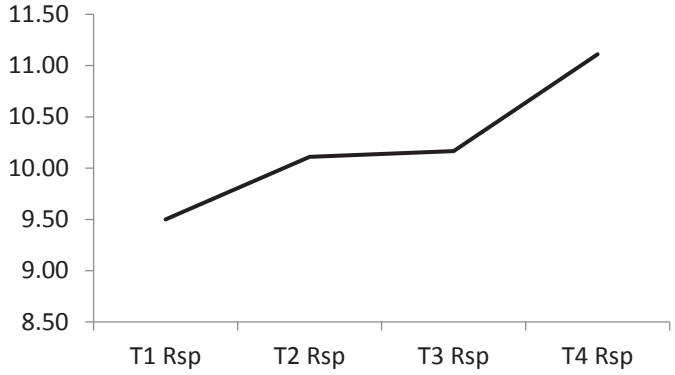

Figure 32: Responsibility (Rsp) scale mean group scores of the SSIS T1-T4

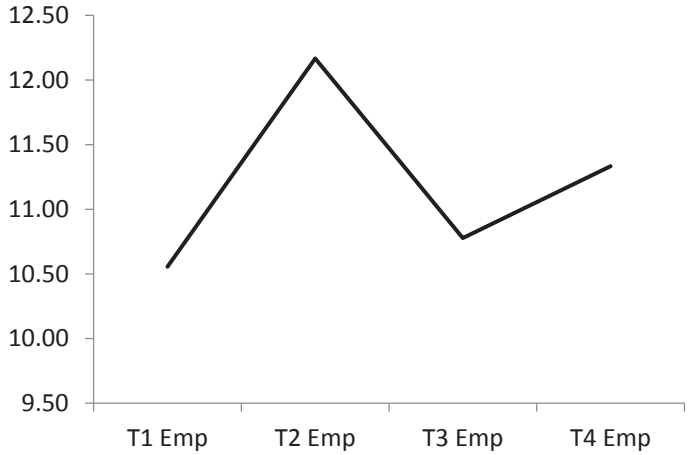

Figure 33: Empathy (Emp) scale mean group scores of the SSIS T1-T4

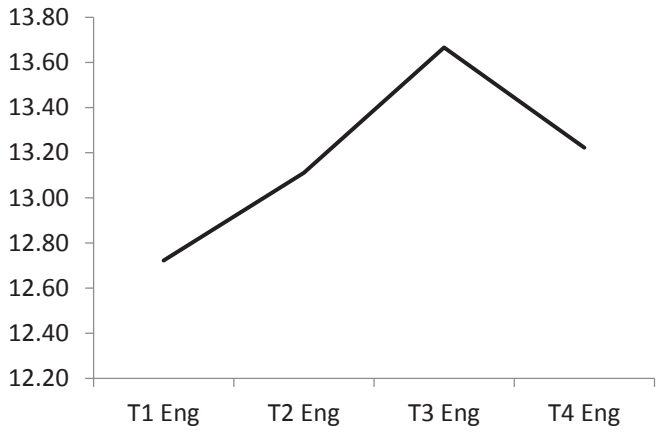

Figure 34: Engagement (Eng) scale mean group scores of the SSIS T1-T4

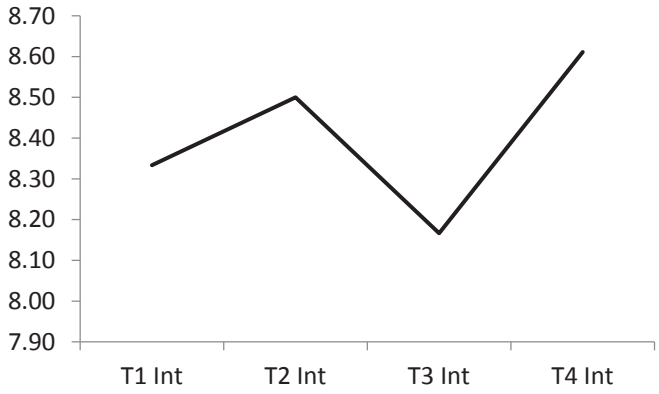

Figure 35: Internalising (Int) scale mean group score of the SSIS T1-T4

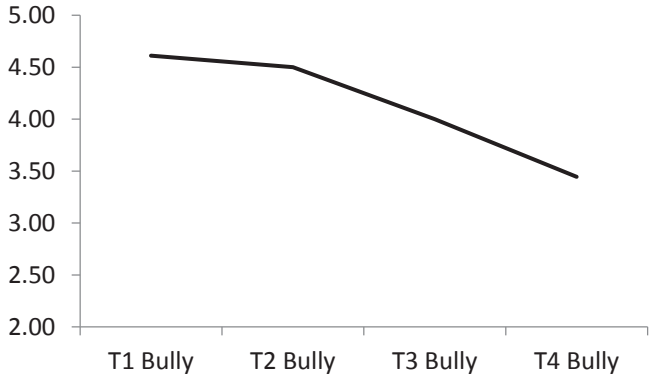

Figure 36: Bullying (Bully) scale mean group scores of the SSIS T1-T4

Appendix C3: Inter-item correlation scores for the Interpersonal Reactivity Index (IRI)

Scale	Pre-test	Time 2	Post-test	Follow-up
Empathic Concern	.11	.26	.14	.24
Perspective taking	.14	.21	.24	.24

Table 9: Average Inter-Item Correlations for the Interpersonal Reactivity Index (IRI; Davis 1983) subscales

Appendix C4: Change graphs for remainder of the Forms and Functions of Aggression Measure

Figures 37 – 41 show change in mean scores from T1-T4 for the remainder of the subscales of the Forms and Functions of Aggression measure (Little et al, 2003b).

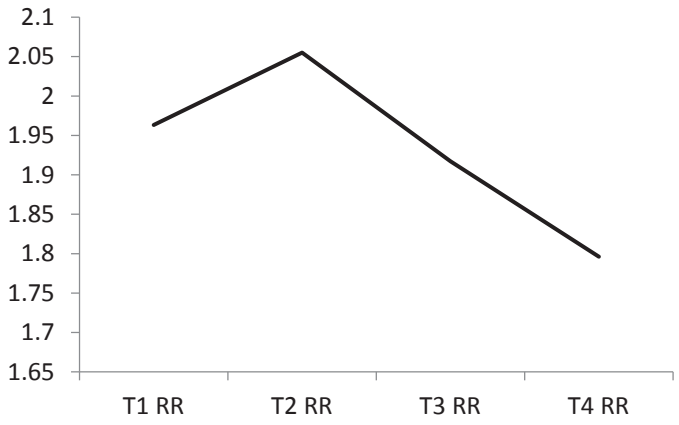

Figure 37: Reactive Relational Aggression group mean scores from T1 to T4

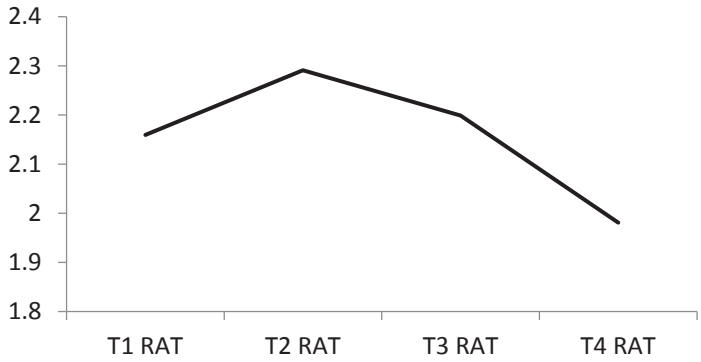

Figure 38: Reactive Total Aggression group mean scores from T1 to T4

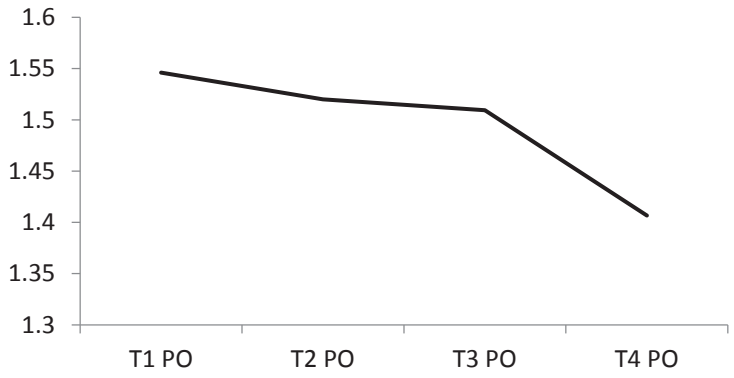

Figure 39: Proactive Overt Aggression group mean scores from T1 to T4

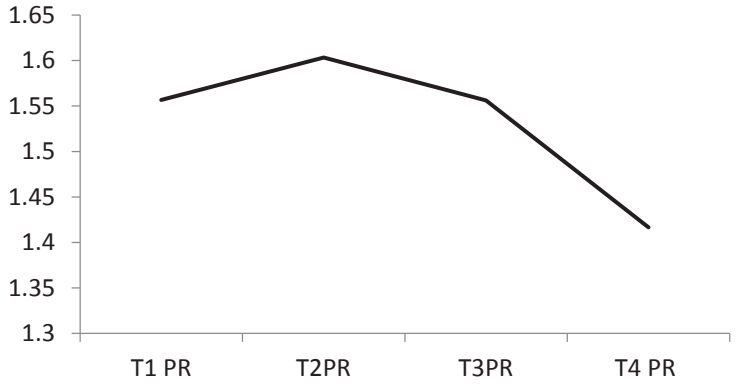

Figure 40: Proactive Relational Aggression group mean scores from T1 to T4

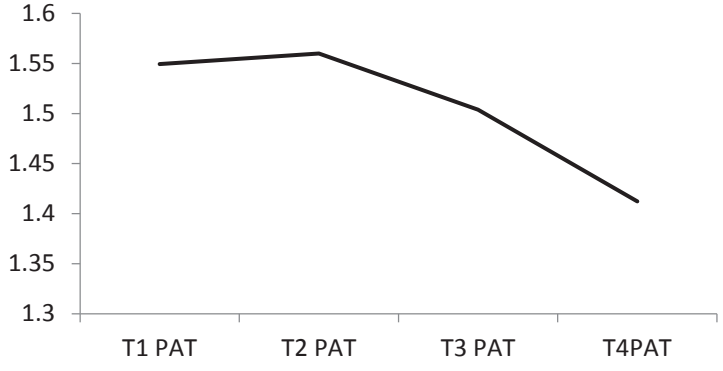

Figure 41: Proactive Total Aggression group mean scores from T1 to T4