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The Impact of School-Based Aggression Replacement Training on Emotion Regulation and  
Aggressive Behaviour

A thesis presented in partial fulfilment of the requirements for the degree of

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## ABSTRACT

This research evaluates the effectiveness and implementation of Aggression Replacement Training (ART) with a group of New Zealand (NZ) students aged 13-15 years (n=18). Aggression is a significant problem in NZ schools and despite recent progress with school-wide and individually targeted interventions, there are few evaluations of interventions with these adolescents. Deficient emotion regulation is a major risk factor in youth aggression. Although emotion regulation skills are targeted by many aggression interventions, outcome measures less frequently assess these skills than other social information processing abilities. This thesis links research evidence of the role of emotion in aggression, to the techniques taught in ART, to support the hypothesis that ART improves emotion regulation and reduces aggression. Analyses of the change in mean group scores and individual-level analyses indicate improvements in ART participants' emotion regulation, anger control and social skills over the course of intervention and follow-up. These analyses also indicate reductions in ART participants' externalising, problem behaviours and cognitive distortions. These findings support the use of ART as effective in reducing the risk of aggressive behaviour, and as an alternative to exclusionary discipline, in NZ schools. ART appears to be culturally acceptable and may offer a less resource intensive intervention than individual intervention plans.

*Keywords:* aggression, emotion regulation, adolescence, social information processing,  
aggression replacement training

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## INTRODUCTION

Aggressive behaviour is a significant problem in the youth of New Zealand (NZ). Despite indications of a reduction in youth crime over the three years to 2013, 25% of youth prosecutions were for violent offences in 2012/2013 (Statistics New Zealand [SNZ], 2013). Aggressive behaviour within educational settings continues to be a problem, with almost a quarter of students in NZ high schools reporting causing intentional physical harm to another person in the last year (Adolescent Health Research Group [AHRG], 2013). School-based interventions in NZ favour younger students and a systematic evaluation of adolescent aggression interventions in NZ schools is lacking (Advisory Group on Conduct Problems [AGCP], 2013). Emotion regulation is increasingly identified as a crucial risk factor for aggressive behaviour in adolescence (e.g., Garnefski, Kraaij & van Etten, 2005; Garnefski et al., 2002; Neumann, van Lier, Gratz & Koot, 2010; Silk, Steinberg & Morris, 2003; Vasilev, Crowell, Beauchaine, Mead & Gatzke-Kopp, 2009) and as such warrants attention in intervention research. Aggression Replacement Training (ART; Goldstein, Nensen, Daleflod & Kalt, 2004) directly addresses deficits in emotion skills and appears to be effective in reducing aggression and increasing prosocial skills in international studies (Jones, 1992; Nodarse, 1998; Gunderson & Svartdal 2006). The case for trialling ART with adolescents in NZ schools is presented here, with the intention to advance understanding of the role of emotion regulation in aggression.

Several main areas of literature relevant to this research will structure the introductory chapters; these are aggression, emotion regulation, the role of emotion in social information processing (SIP), and interventions aimed at reducing aggression. In chapter one the discussion of developmental theory, and SIP theory, demonstrates the importance of age-specific aggression intervention research, and the usefulness of aggression models that

incorporate emotion processes. Lerner and Arsenio's (2000) model, integrating emotion processes into SIP (E-SIP), is presented as the most appropriate for hypothesising about the impact of improved emotion regulation on aggression. E-SIP informs the use of a skills-based framework of emotion regulation, which also guides the use of the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004) to measure emotion regulation. E-SIP outlines emotion-related skills that translate directly to those taught in ART and provides an excellent structure for examining how ART's intervention techniques may improve emotion regulation.

With the E-SIP model in mind, chapter two focuses on our understanding of emotion regulation. The definition of emotion regulation used in this research is explained, followed by a brief discussion of how emotion regulation skills are learnt. Discussion of the relationship between dysregulated emotion and aggression in adolescence supports the need for research into effective interventions, and the hypothesis that ART will improve emotion regulation. Chapter three reviews research evidence of the role of emotion processes in SIP, and directly links deficits in emotion skills and regulation to the techniques used in ART. Finally in chapter four, current interventions that aim to reduce aggression are evaluated with regards to their impact on emotion regulation. As many aggression interventions do not measure change in emotion regulation, this discussion aims to highlight the need for interventions that are explicit about how emotion skills are taught, and the impact of individual-level changes in these skills on aggression. The current research examines the impact of the ART intervention on specific difficulties in emotion regulation and how this relates to aggressive behaviour. The method, results and discussion following these introductory chapters fully describe the implementation and outcomes of a trial of ART with NZ students.

## CHAPTER 1

### AGGRESSION

Aggression is any behaviour directed toward another individual with intent to cause harm, and that the target is motivated to avoid (Anderson & Bushman, 2002). Aggression may have offensive or defensive purposes. Aggression can be overt, as in physical or verbal aggression, or covert, as in relational aggression. A distinction is also made between reactive and proactive aggression. Reactive aggression is characterised by an angry emotional reaction due to negative appraisal of an event, and is more strongly associated with impulsivity and emotion dysregulation; whereas proactive aggression is deliberate behaviour in the context of a strong drive to meet one's own needs or goals (Calvete & Orue, 2012; Crick & Dodge, 1996; de Castro, 2010; Arsenio, Adams & Gold, 2009). Anger refers to a negative emotional state of varying intensity, duration and frequency, often associated with physiological arousal, negative cognitions and behavioural responses (Dahlen & Deffenbacher, 2001). Although to some extent anger and aggression can be adaptive, the current research focuses on maladaptive experiences of anger and aggression. Maladaptive anger and aggression are the result of unregulated and disinhibited internal mechanisms resulting in negative consequences for the individual (Connor, 2002).

Research into aggression often identifies risk factors and interventions for individuals with conduct disorders or externalising problems, rather than aggression alone, due to the co-occurrence, shared etiology and trajectory of individuals displaying this group of behaviours. Conduct disorder describes a pattern of behaviour, that violates the basic rights of others or major age-appropriate societal norms or rules (American Psychiatric Association [APA], 2013). Aggressive behaviour is one of the four categories of conduct disordered behaviours. The other categories are destruction of property, deceitfulness or theft and violation of rules,

and relate to antisocial behaviour (APA, 2013). Externalising problems are characterised by disturbed regulation of behaviour such as rule breaking, aggression and delinquency (Achenbach & Rescorla, 2001).

Adaptive expression of anger is socialised during childhood such that aggressive behaviour in young children is accepted as a typical developmental phase (Connor, 2002). Aggression becomes less acceptable with age such that young children's aggression predicts later peer rejection (Coie, Lochman, Terry & Hyman, 1992), and older children are expected to display self-regulation (Yap, Allen & Sheeber, 2007). Aggression is a significant predictor of later criminal behaviour (Fergusson, Horwood & Ridder, 2005), and early intervention can reduce the likelihood of developing more serious offending behaviours (Church, 2003; Goldstein et al., 2004). In New Zealand (NZ), research into interventions that effectively reduce aggressive behaviour has focused on children rather than youth. The decision to focus this research on youth aggression was made because opportunities for preventative intervention with adolescents have not yet been optimised within the NZ context (AGCP, 2013).

### **Aggression in Youth**

Youth aggression is associated with long-term negative outcomes both for society and the individual, including poor mental health and interpersonal relationships, academic underachievement, delinquency, unemployment, substance abuse and eventually adult criminal offending (Fergusson et al., 2005). Physical and relational aggression in adolescence can have a serious detrimental impact on the mental health of victimised individuals (Arseneault, Bowes & Shakoor, 2010) and is a precursor to intimate partner violence in young adulthood (Fergusson, Boden & Horwood, 2008), demonstrating the effect adolescent

aggression may have on others. Conduct disorders in later childhood and adolescence have also been associated with future parenting behaviour and thus play a role in inter-generational transmission of conduct disordered behaviour (Raudino, Fergusson, Woodward & Horwood, 2013) and antisocial behaviour (Thornberry, Freeman-Gallant, Lizotte, Krohn & Smith, 2003), perpetuating violence within families and communities. Although childhood interventions are found to be more effective, fewer studies target adolescent interventions therefore their potential is less well understood. Youth aggressors are largely an untreated cohort despite elevated rates of aggressive incidents in school and violent offending.

Aggression contributes to many criminal acts including physical assault, domestic violence, armed robbery, property damage and many other reportable offences. The best indicator of youth offending is the number of apprehensions<sup>1</sup> made by Police, as many reported crimes by youth do not result in charges or prosecutions (MoJ, 2012). In NZ, 14-16 year olds had the second highest rate of apprehensions of any age group, with only those aged 17-20 years exceeding this in 2012/2013 (Statistics New Zealand [SNZ], 2013). Although annual Police apprehension rates for violent offences steadily increased between 2000 and 2010, more recent statistics show a decrease across most offence categories between 2010 and 2013 (SNZ, 2014). The number of apprehensions by 14-16 year olds for the year ending June 2013 was 21,089, of these apprehensions 14.3% were for violent offences (SNZ, 2014). Apprehension and prosecution statistics only capture reported and recorded offences, and are therefore likely to under-represent the occurrence of violent acts behaviours committed by youth (SNZ, 2014).

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<sup>1</sup> An apprehension is an alleged offence recorded and dealt with by the police.

It is known that exposure to violence is related to increases in aggression (Herts, McLaughlin & Hatzenbuehler, 2012). NZ school students who reported more exposure to violence, or violent victimisation in the home, school or community, also reported instigating more violence (Clark et al., 2009). Domestic violence notifications indicate that high numbers of youth are exposed to aggression within New Zealand homes, with 61,877 notifications of incidents involving youth requiring further action in 2012/13 (Child Youth & Family [CYF], 2014). It is not clear however, how often the youth instigates or is involved in these events, and incidents are often not reported (CYF, 2014). The ambiguity in this data prevents associations being made between the decrease in youth apprehensions mentioned above, and any change in the number of notifications of violence within the home.

Within NZ schools, the rate of self-reported physical aggression suggests violence is a significant problem. Approximately 1 in 3 male students, and 1 in 6 female students, reported intentional physical harm to another person in the previous 12 months (AHRG, 2013). Males reported double the rate of more severe behaviours, with 20% reporting involvement in a serious physical fight and 5% having carried a weapon with intent to harm someone in the last year (AHRG, 2013). Based on this survey physical aggression appears to have decreased from 2001 (AHRG, 2013), following the same trend as youth apprehensions; however the survey may underestimate school aggression due to the vulnerability of self-reports to social desirability effects. These effects may be greater given the recent introduction of Positive Behaviour for Learning (PB4L) a prosocial promotion programme within schools, and anti-bullying campaigns, within the NZ education system (Ministry of Education [MoE], 2010).

Bullying and disciplinary statistics also indicate that aggression is a significant issue within NZ schools. Self-reports of bullying suggest a large proportion of individuals are

victimised, with 13% of students feeling unsafe at school (AHRG, 2013). Similarly, nearly half of 1,169 students aged 15 years surveyed online reported being bullied at school, with 15% of incidents involving physical injury (Marsh, McGee, Nada-Raja & Williams, 2010). Both students and staff are the victims of aggressive behaviour in schools. In 2012 physical assault of another student accounted for 26% of the 16,712 stand-downs recorded in NZ schools, equating to approximately 4,300 incidents with an additional 485 incidents of staff assault per year (MoE, 2013). Although students aged 13-15 years are responsible for 58% of the stand-downs relating to physical assault of other students, continual disobedience and verbal assault on staff, few interventions are aimed at those aged over 13 years (MoE, 2013; AGCP, 2013).

Adolescent aggression has a negative impact on individuals and those around them. Despite reduced rates of adolescent offending, a high proportion of crimes committed by this age group involve violence. Aggression at school continues to be an issue for students and staff although some reductions in self-reported aggression have been recorded since 2001, possibly due to school-wide positive behaviour interventions. Students in early- to mid-adolescence are at highest risk of exclusionary discipline action and receive least educational intervention. The next section describes the current intervention context to identify the research needs in relation to youth aggression.

### **What is Being Done about Youth Aggression in NZ?**

In 2009 the AGCP (Advisory Group for Conduct Problems) was established by NZ government to provide advice to the Ministries of Social Development, Education, Health and Justice, on the delivery of behavioural services in NZ. The AGCP has released a series of reports with recommendations for delivering and evaluating evidence-based conduct disorder

programmes to 3-7 year olds, 8-12 year olds and adolescents (AGCP, 2009; 2011; 2013). The reports identify the progress with implementing and evaluating interventions with younger ages but states evidence based interventions for adolescents is limited, and that there has been “little investment in evaluating the effectiveness of existing services” (AGCP, 2013, p. 60).

School-based aggression interventions are an essential part of ensuring youth wellbeing. Over the last four years implementing new interventions has been part of a “major shift in the management of disruptive behaviour in the NZ education system” (MoE, 2013). Currently for ages 3-12 year olds there are evidence based treatments involving multi-systemic parent and teacher training for at-risk children, supported by school-wide approaches to improve the school environment (MoE, 2010). Recently intensive wraparound services for complex and challenging behaviour (where multiple social agencies are involved in a coordinated plan), and mentoring programmes to improve school engagement, were extended up to age 14 years (MoE, 2012). Adolescents over age 14 years who attend school may benefit from school-wide approaches to improving prosocial behaviour, but most targeted interventions are only provided up to age 14 years (MoE, 2012). The cut-off for services at age 14 years seems particularly important given this is at the peak of risk for exclusionary discipline (MoE, 2013). A large proportion of 13-14 year olds will also not receive interventions targeted at behavioural problems due to limited resources. The target of 285 students per year receiving intensive wraparound service (MoE, 2014) equates to just a small percentage of the thousands of students who received exclusionary discipline in 2012 (MoE, 2013).

After rates of violent offending in 14-16 year olds peaked in 2008, interventions aimed at reducing these extreme behaviours were given a priority (MoJ, 2008). Youth

involved in any apprehension by the Police enter a justice system process, and often receive multi-disciplinary involvement to reduce their risk of reoffending (MoJ, 2008). There is a dearth of preventive support however, for adolescents who have not yet offended, but who display aggressive behaviours and are at-risk of offending. The service gap is for adolescents over age 14 years who do not qualify for intensive support from other social agencies due to severity of behaviour (i.e. mental health, social or youth correctional services). For individuals demonstrating aggressive behaviour that has either not responded to intervention before age 14 years, or that developed in adolescence, evidence based interventions are still needed. This requires research into adolescent interventions to assess their feasibility within the NZ school context.

The AGCP's (2013) report on conduct problems in adolescence highlighted the lack of evidence based interventions, and identified 11 recommended or promising interventions. Of the four school based interventions identified, two are universal programmes (School-Wide Positive Behaviour Support; Sailor et al., 2010, and Good Behaviour Game; Tingstrom, Sterling-Turner & Wilczinski, 2006) and two are intensively resourced individual programmes (Check & Connect; Christenson et al., 2008, and Prevent-Teach-Reinforce; Dunlap et al., 2010). These programmes are described further on page 75. ART (Goldstein et al., 2004) was identified as a promising programme for 13-17 year olds and has been implemented in schools outside of NZ. ART is a targeted multi-modal group psychoeducational programme with potential to deliver a more intensive programme to a larger number of individuals, therefore the feasibility and effectiveness of ART within NZ schools should be evaluated. A brief overview of school context explains the benefits of school-based psychoeducational interventions.

## **The School Setting**

Schools have the capacity to exert a large influence on social behaviour and they provide a learning environment for both prosocial and antisocial behaviour. Certain conditions of the school environment, such as experiencing peer rejection, exposure to antisocial peers and academic failure, can perpetuate aggressive behaviours and attitudes (Goldstein et al., 2004). During older childhood and adolescence, peer relationships exert greater influence on behaviour than family (Zeman & Shipman, 1997), and school and community settings become more influential (Calvete & Orue, 2011). By the time most NZ adolescents leave secondary education, they will have spent approximately 15,000 hours at school. The dominance of the school environment during adolescence suggests that a school-based intervention may be particularly appropriate.

School experiences are often the learning ground for managing emotions and behaviours (Macklem, 2008). A youth with limited social skills, or who is unable to regulate their emotional response to negative experiences, is more likely to rely on aggressive behaviour (de Castro, 2010; Eisenberg et al., 1997; Laible, Carlo, Panifile, Eye & Parker, 2012) to deal with peer conflicts that often arise in the school context. Aggression increases peer rejection even from early childhood, and peer rejection in turn further increases aggression (Lansford, Malone, Dodge, Pettit & Bates, 2010). Aggressive youth who instigate aversive or antagonistic interactions are also more frequently the target of provocation than their non-aggressive peers (Perry, Kusel & Perry, 1988). Bullies and victimisers are also less accepted by non-aggressive peers (Prinstein & Cillessen, 2003), which may reduce opportunities for positive socialisation. Aggression also increases exposure to less socially skilled classmates and this affiliation with antisocial peers may reinforce antisocial behaviours (Dishion & Tipsord, 2011). Overt group pressure and peer modelling of antisocial

peers may reinforce aggressive behaviours and hostile attitudes (Barnow, Lucht & Freyberger, 2005). These social and peer processes are arguably best addressed by school-based interventions that take account of the group dynamics in which aggressive behaviours occur (Bruyn, Cillessen & Wissink, 2010) and utilise peer processes in skills training and role-play.

Teachers are often overwhelmed by the dual tasks of teaching and class discipline, and cannot give due attention to all occurrences of aggressive and antisocial behaviours (McGinnis, 2003). The pressures of teaching disruptive students and large class sizes are barriers to effective discipline in most schools. Exclusionary practices are ineffective in producing long-term positive change in aggressive or disruptive behaviour by failing to teach alternative behaviours, and often have long-term negative outcomes such as academic failure (McGinnis, 2003). Ambiguous sanctions and punitive teacher attitudes can also increase rates of problem behaviours (Mayer & Leone, 1999). This suggests that alternatives to exclusionary discipline are sorely needed, especially for adolescents.

School-based interventions offer the opportunity to deliver a behavioural change programme in the context within which behaviours are problematic and where the skills learned are immediately applicable. Within the school environment teachers can assist students to generalise the skills learnt during interventions by offering reinforcement and guidance, and teachers' knowledge of the intervention aims may provide alternatives to punitive discipline. The benefits of peer involvement in interventions are discussed in chapter three. School-based targeted group interventions can compliment school-wide approaches and do not need to rely heavily on the involvement of other parties (i.e., family, other social services). As the parents of those with behavioural problems are not always willing or able to

participate in treatment programmes (e.g., Nelson-Gray et al., 2006), the goals of some interventions are more directly focused on the adolescent him or herself, rather than attempting to achieve family or community-based change. As the above research suggests, interventions such as ART, that target emotional understanding and regulation, may benefit youths who tend to respond aggressively due, in part, to a lack of social and emotion skills. As a group programme ART is also able to teach prosocial skills within the peer context and use relevant peer conflict situations within sessions to motivate the use of new skills.

The feasibility of implementing ART in NZ schools is yet to be researched; this would involve exploring the acceptability of ART to students and schools, and the practicalities of implementing and integrating ART into schools (refer to Bowen et al., 2009, for a discussion of feasibility study guidelines). ART has been trialled as a school-based programme in the US, Norway and Australia (Jones, 1992; Gunderson & Svartdal, 2006; Nodarse, 1998), however research has not assessed the feasibility of the expansion of ART to NZ. ART is based on the premise that cognitions and emotions influence an individual's behaviour across various situations, and that by modifying these processes that precede or accompany behavioural responses, social behaviours will change (Goldstein et al., 2004). ART consists of three modules that address different skill deficits; social skills training, anger control training, and moral reasoning development (Goldstein et al., 2004). Although each type of ART session has a different focus they all aim to increase participants' self-awareness of social information processes and how they can exert control over the situation. The next section reviews relevant aggression theory with reference to ART (the ART intervention will be fully described in chapter three).

## **Aggression Theory as Relevant to Intervention**

A combination of individual and situational factors contribute to any act of aggression (Anderson & Huesmann, 2003; Connor, 2002; Herrenkohl et al., 2007). Epidemiological and developmental research has identified factors that either increase or decrease the risk of aggressive behaviour (risk and protective factors<sup>2</sup>). Contemporary theories leading the research in this field incorporate the interaction between person and environment, and between risk and protective factors (Gilbert & Daffern, 2011). Table 1 contains individual, family, school, peer and community risk factors for youth violence at mid-late adolescence (Office of the Surgeon General, 2001).

Both developmental theories and social information processing (SIP) theories of aggression have particular relevance for school-based interventions with adolescents. A surge in research into emotion regulation (strategies used to influence and modulate emotional responses; Gross & Thompson, 2007) also indicates that any model of aggression would be incomplete without considering the role of emotion (Herts et al., 2012). Emotion has long been recognised as an important component of interventions (Fiendler & Baker, 2004), although the impact of interventions on emotional functioning has not typically been evaluated. Some researchers have responded to this by explicitly incorporating the role of emotion into models of aggression (i.e., Lemerise & Arsenio, 2000, which will be discussed further on p.23).

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<sup>2</sup> Kraemer et al., (1997) define a risk factor as a measurable characteristic of a subject that precedes and is associated with higher likelihood of an outcome, whereas protective factors are associated with lower likelihood of an outcome. Risk and protective factors can occur at multiple levels, including biological, psychological, family, community, and cultural levels.

## **How Does Developmental Theory Inform Aggression Interventions?**

Developmental theories suggest that intervening early and across multiple systems is most effective in reducing aggressive behaviour. Developmental theory also suggests the need to adapt interventions to address risk factors that are prominent during particular developmental stages, and that factors that moderate aggressive behaviour may be effective targets for intervention. Individual progression, and the function of behaviour at certain ages, is explained within the environmental context (i.e. Dodge & Pettit, 2003; Patterson, 2002; Sameroff, 2000; Sameroff, 2009); as such developmental theory and research often underpins interventions where the environment is the target of change. Developmental research therefore explains what constitutes competent or disordered behaviour at different ages, and what the developmental challenges are of particular ages, thus helping to identify individuals who diverge from this and may therefore benefit from intervention (Cicchetti & Toth, 1992; Institute of Medicine and National Research Council [IMNRC], 2009). For example, by adolescence, individuals are expected to be able to regulate their behaviour and refrain from aggression, therefore those who display increased levels of aggression relative to their peers may benefit from intervention (Goldstein et al., 2004).

### **Aggressive Behaviour has Multiple Risk Factors**

Developmental research has identified modifiable risk and protective factors for aggressive behaviour at different ages, indicating where interventions could be targeted (IMNRC, 2009). Dodge and Pettit's (2003) biopsychosocial model encompasses biological predisposition, sociocultural context, parenting and peer factors, along with cognitive (mental) and emotional processing (see Figure 1.1). This comprehensive developmental model explains how a child's capacities interact with environmental pressures at different life stages to influence social behaviour patterns. The model depicts how predisposition may have

Table 1

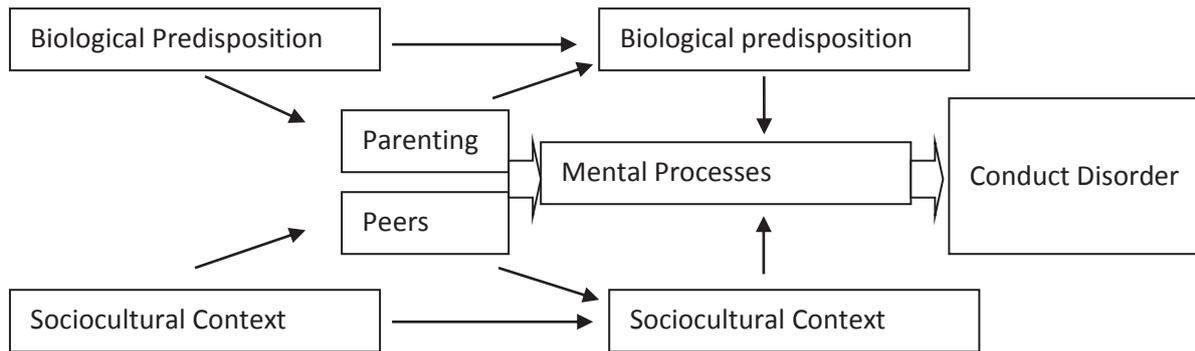
*Risk factors for violence at age 15-18 years by domain*

Individual	Hyperactivity and impulsivity
	Low intelligence and cognitive impairment
	Poor emotion regulation
	Psychological condition
	Substance use
	Being male
	Early conduct/behaviour problems
	Exposure to media/domestic violence
	Antisocial attitudes or positive beliefs about aggression
	Risk taking behaviours
Family	Low socioeconomic status/poverty
	Antisocial parents
	Poor parent-child relations
	Harsh/lax disciplining: poor supervision, monitoring,
	Low parental involvement
	Broken home
	Separation from parents
	Abusive/neglectful parents
Family conflict	
School	Academic failure
	Poor attitude/performance
	Truancy
	Bullying
Peer group	Antisocial/delinquent peers
	Weak social relationships
	Gang membership
Community	Neighbourhood crime
	Neighbourhood disorganisation
	Drug availability
	High population turnover, lack of neighbourhood attachment

*Note:* From "Youth violence: A report of the Surgeon General" by Office of the Surgeon General, 2001, Retrieved from <http://www.ncbi.nlm.nih.gov/books/NBK44293/>

a more or less direct influence on outcome. Importantly, there are multiple potential action points for intervention, for example relationship building with parents, teachers or peers, education about physical changes, skills training in emotional awareness or social skills. Examples of these transactional relationships are discussed later, for example Patterson's (2002) coercive discipline.

Developmental interactional models are the basis for systemic interventions that aim to alter multiple learning environments, which may be the source of maladaptive behaviour (Anderson & Bushman, 2002). As diversity of risk factors increases with age, intervening early is more successful than intervening later, when aggressive behaviours are reinforced and entrenched by multiple factors. Single-component interventions are thought to be less successful as they target only one of many influences acting to maintain aggressive behaviour (Dodge & Pettit, 2003). Multi-Systemic Therapy (Borduin, 1999; Henggeler, Schoenwald, Borduin, Roland & Cunningham, 1998) and Functional Family Therapy (Sexton, 2010) are promising systems-based approaches designed to address youth offending by influencing change in the wider social environment within which a person functions (i.e. working with family, peers, community networks, schools, employees, social services, youth social/justice workers). The NZ education sector's Intensive Behavioural Support Service is a school-based multi-systemic programme for individual students requiring support (MoE, 2012).



*Figure 1.1.* The biopsychosocial model of the development of conduct disorder. From “A biopsychosocial model of the development of chronic conduct problems in adolescence” by K.A. Dodge & G.S. Pettit, 2003, *Developmental Psychology*, 39(2), p. 351.

Although systemic programmes arguably have the largest evidence base for adolescents (AGCP, 2013), many multi-component interventions target a host of individual-level risk factors. Programmes combining behavioural and cognitive aspects can successfully influence multiple outcomes related to antisocial behaviour (Weare & Nind, 2011; Wilson & Lipsey, 2007). For adolescents, identifying and intervening in individual factors that lead to antisocial behaviour may be more successful than attempting to remove multiple risk factors from the environment (Prinstein, Boerger & Spritio, 2001, relate this specifically to peers). Thus developmental theory identifies multiple risk factors, which can be addressed by focusing on multiple domains, or by focusing on multiple individual-level factors. ART takes account of the diversity in risk factors across domains and within individuals. Firstly, ART is a multi-component CBT intervention that includes training in social skills, emotion regulation and moral decision making. Secondly, ART is a group programme therefore addresses aggressive behaviour within peer contexts, and also utilises parents and teachers in increasing generalisation of these skills across behavioural contexts.

## **Risk Factors Vary with Age**

As highlighted by developmental theory, preventive interventions should take account of new risk factors that emerge at different ages as the strength of different risk factors also changes over time. In early childhood, harsh physical discipline is a strong risk factor for developing aggressive behaviour in older childhood (Keiley, Howe, Dodge, Bates & Pettit, 2001), whereas in adolescence, exposure to school and community violence appear to be stronger risk factors (Calvete & Orue, 2011). The impact of peers also differs with age group, for example at younger ages peer acceptance is a strong risk factor for aggressive behaviour, but at older ages peer acceptance is less important than the amount of time spent with antisocial peers (Vitaro, Tremblay & Bukowski, 2001). As prominent risk factors change with age, effective interventions are those targeting variables at the age during which they are most influential. For example, parent training interventions are more effective with young children, whereas cognitive behavioural treatment (CBT) programmes are more effective with adolescents (Bennet & Gibbons, 2000; McCart, Priester, Davies & Asen, 2006; Sukhodolsky, Kassinove, & Gorman, 2004). This supports the choice of CBT interventions and interventions that include peers, when working with adolescents.

Deficient emotion regulation is thought to be particularly influential during adolescence and has been associated with increases in aggression at this age (McLaughlin, Hatzenbuehler, Mennin & Nolen-Hoeksema, 2011). Although the relationship between emotional regulation and aggressive behaviour during adolescence is consistently reported (Laible et al., 2012; McLaughlin et al., 2011; Neumann et al., 2010; Robertson, Daffern & Bucks, 2012; Vasilev et al., 2009) very few aggression interventions, including CBT interventions, report their impact on emotion regulation (see chapter two). This highlights the

need for research that investigates emotion regulation as a risk factor for adolescent aggression.

As there are multiple risk factors for aggressive behaviour, it should also be expected that there are multiple pathways to the development of aggressive behaviour. By studying at-risk children over time, researchers have proposed developmental trajectories that help explain these pathways (e.g., Connor, 2002; Dodge & Pettit, 2003; Moffit, 1993; Sameroff, 2009). Sameroff's (2009) transactional-ecological model explains that developmental trajectories to aggressive behaviour depend on multiple transactions between environmental variables that moderate genetic predispositions and biological maturation processes. For example, firstly punitive parenting moderates the relationship between temperamental vulnerabilities and externalizing behaviour in young children (e.g., Bates, Goodnight, Fite & Staples, 2009). Secondly, parent-child interactions reciprocally exacerbate aversive behaviour and coercive discipline (Patterson, 2002) and thirdly, a child's oppositional behaviour patterns may generalise to relationships with peers and teachers. Research into transaction processes help explain how intervening early may help to avoid exacerbation of problematic behaviour patterns that become reinforced in more diverse environmental contexts over time. Early intervention is not always possible however, and the most useful interventions at younger ages are not always successful, suggesting that research into what works for aggressive adolescents is needed.

Adolescent-limited conduct problems suggest that early intervention alone is insufficient to address aggressive behaviour in schools. The risk factors and processes involved in adolescent-limited conduct problems are thought to be different to those involved in the aggressive behaviour of adolescents whose behaviours began in early childhood

(Moffit, 1993). Whereas early-onset conduct problems are characterised by temperamental and neuropsychological differences beginning in early childhood<sup>3</sup>, adolescent-limited conduct problems emerge during the time at which social processes are prominent in normative development (i.e. those involving peer influence and risk taking) and may require different interventions than those with early-onset difficulties (Moffit, 1993). Given the multiple risk factors underlying aggressive behaviour, a one-size-fits-all intervention is unlikely to be effective across a group of adolescents displaying similar behaviours. This supports the use of multi-modal interventions. Research into transactions and risk factors are useful in highlighting potential moderators that may influence the effectiveness of interventions and should therefore be considered as potential targets for interventions. Emotion regulation is one such potential moderator of aggressive behaviour investigated in the current research.

### **Summary of Developmental Theory Implications**

Risk factors for aggression indicate who may benefit from intervention, the context in which an intervention may be effective and the optimal timing of such an intervention. Developmental trajectories to aggressive behaviour depend on multiple transactions between the person and environment, which provide many potential intervention points. Although developmental models guide interventions toward prevention, early- and multi-systemic intervention, it is clear from the statistics on youth aggression discussed above that many individuals do not appear to receive sufficient prevention or early intervention. Risk factors for aggression change and diversify with age (Dodge & Pettit, 2003), therefore researchers

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<sup>3</sup> Individuals who display early behaviours tend to have difficult temperaments, neurological abnormalities, low intellectual ability, reading difficulties, hyperactivity, poor scores on neuropsychological tests (Moffit, 1993).

must be able to respond to individuals who either continue to demonstrate aggressive behaviour into adolescence, or whom develop aggressive behaviour at this time.

CBT interventions focused on individual-level risk factors may be more effective with older children, and group interventions involving peers may be appropriate to investigate further. This does not reduce the importance of interventions targeting environmental risk factors in families, schools and communities, but may provide useful adjuncts to school-wide interventions. If interventions can reduce cognitive and behavioural deficiencies or biases that contribute to aggressive behaviour across contexts and situations, aggressive behaviour may not depend on modifications being made to the environment. The ART intervention takes account of risk factors that are of particular relevance in adolescence and focuses on individual-level changes that may reduce adolescents' aggressive behaviour. ART acknowledges the multiple environmental contexts that are likely to influence adolescents' behaviour by equipping the individual to transfer skills across contexts, and by using parents and teachers to encourage generalisation of skills. Most CBT interventions involve children or pre-adolescents and do not report on their impact on emotion regulation, which has been increasingly recognised as a critical factor contributing to aggressive behaviour (Arsenio, 2010; Calvete & Orue, 2012, de Castro, 2010; Herts et al., 2012; Robertson et al., 2012).

The following section, which describes SIP theory (Crick & Dodge, 1994; Lemerise & Arsenio, 2000), is particularly relevant to intervention literature because it outlines how cognitive and emotional processing differences contribute to aggressive behaviour, and therefore identifies potential targets for intervention. The focus of advancing SIP theory over the last decade has been to incorporate research demonstrating the role of emotion in SIP (de Castro, 2010; Fontaine, 2008; Lemerise & Arsenio, 2000).

## **The Relevance of SIP Theory to Aggression**

Over the past several decades, research into aggressive behaviour in children has focused on information processing in social interactions (de Castro, 2010). SIP theory identifies socio-cognitive deficits and biases that may contribute to an individual's aggressive behaviour, guiding development of interventions that aim to modify these deficits. Interventions based on SIP address *interpersonal* and *intrapersonal* differences and direct change to intrapersonal factors when changing the demands of the environment is not possible. For example, identifying and understanding typical triggers of aggression is useful even when those triggers cannot be removed from the environment. SIP provides a coherent process for investigating specific cognitive, emotional, behavioural and situational factors involved in aggression that can be targeted in interventions.

SIP describes, in six stages, how aggressive behaviour results from our perceptions of the immediate social environment and appraisals of social cues (Crick & Dodge, 1994). The six stages of SIP are: encoding information, interpreting information, goal definition, generating possible responses, evaluating consequences of responses, and enacting that behaviour. These sequential stages use information stored in schema and scripts as databases for 'on-line' or real-time processing (Crick & Dodge, 1994). Rapid appraisal of a situation results from parallel and interactive processing between stages of the model. Experiencing diverse social stimuli increases an individual's knowledge of possible behaviours and their outcomes, social goals, the causes of events, others' intentions and of the appropriateness of social behaviours (Crick & Dodge, 1994). Frequent exposure to hostile and aggressive environmental cues requires frequent processing of aggression-related information; this is reflected in more extensive aggression-related knowledge structures and increased speed of accessing and processing this information when faced with potentially aggressive

environmental cues (Crick & Dodge, 1994). A hostile attributional bias describes a tendency to interpret ambiguous situations as hostile, due to repeated exposure to environmental cues of this type (Crick & Dodge, 1994). The SIP model explains that certain cognitive biases can increase the likelihood of aggressive responses at each stage of processing and that well-practiced types of processing occur automatically.

### **The Role of Emotion in SIP**

Lemerise and Arsenio's (2000) model integrates emotion processes into SIP. This model is referred to from here as enhanced-SIP, or E-SIP for brevity. E-SIP details the communicative and motivational function of emotion information used at each stage of information processing (see Figure 1.2, with emotion processes boxed). E-SIP incorporates the role of the following emotion processes across SIP stages: 1) temperament-based emotional style or emotional reactivity (biological predisposition to intensity of experience and expression of emotion), 2) temporary emotional states, and 3) capacity to regulate emotions (Lemerise & Arsenio, 2000). E-SIP predicts that higher emotional reactivity and poorer capacity to regulate emotion, impedes SIP (Lemerise & Arsenio, 2000) and as such is implicated in less competent social behaviour (i.e. maladaptive aggression).

E-SIP posits that internal and external affective information is assimilated through experience and stored along with socio-cognitive representations (Arsenio & Lover, 1995; Lemerise & Arsenio, 2000). Repetition of a specific emotional response, and the associated perceptions, thoughts and behaviours, will consolidate over time into stable affective-cognitive patterns to produce behaviour (Izard, 1991; Schultz, Izard & Bear, 2004; Zahn-Waxler, Klimes-Dougan & Slattery, 2000). The strength of particular patterns may bias

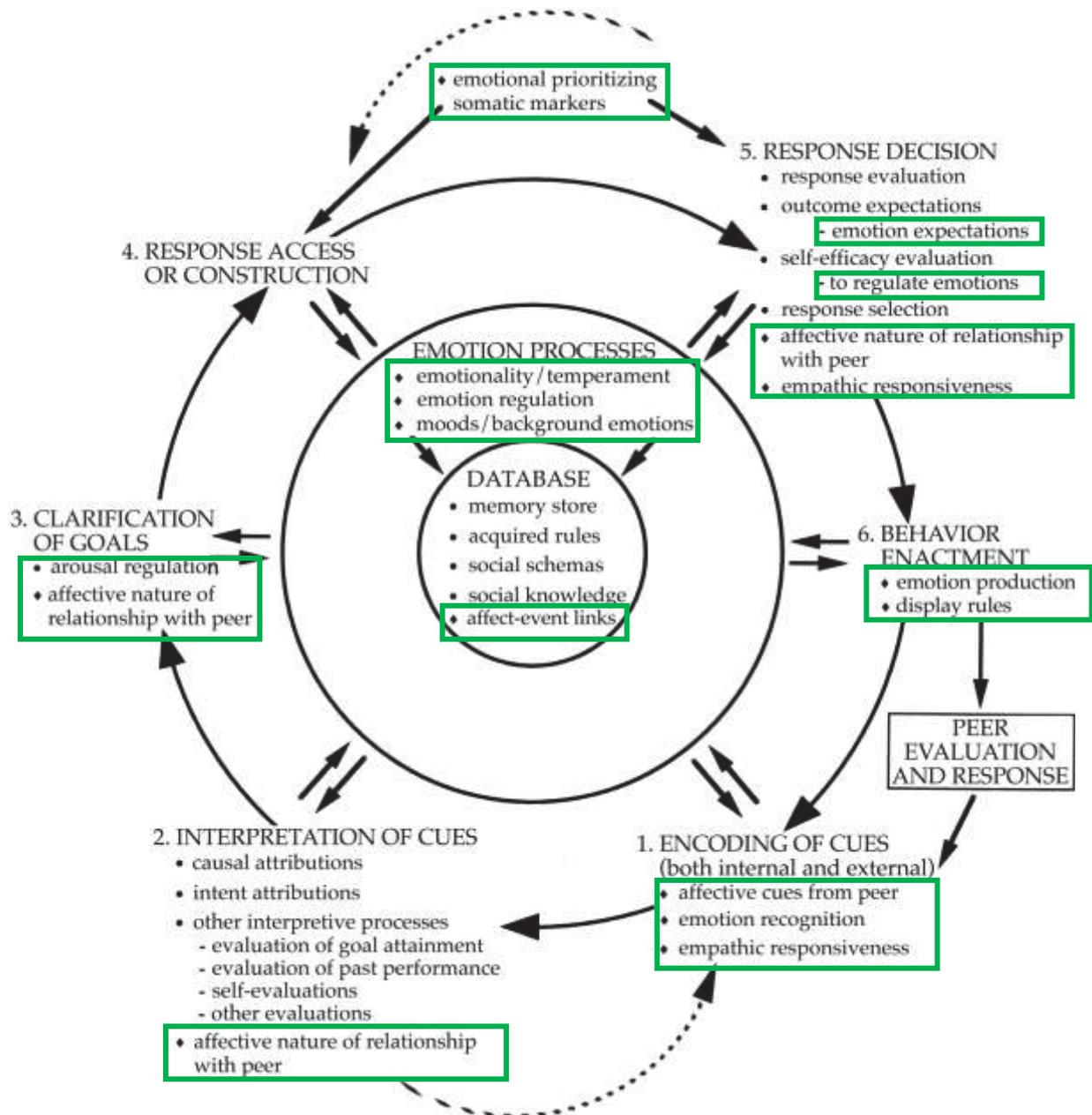


Figure 1.2. An integrated model of emotion processes and cognition in social information processing. From “An integrated model of emotion processes and cognition in social information processing” by E.A. Lemerise & W.F. Arsenio, 2000, *Child Development*, 71(1),p. 113. Copyright 2000 by Wiley Blackwell. Reprinted with permission.

information processing and emotional responding, increasing the likelihood of, for example, anger and aggressive behaviour. Emotion processing deficits contribute to aggressive behaviour (Lemerise & Arsenio, 2000), and indeed children with such deficits (e.g.,

difficulties identifying emotion cues) and less sophisticated emotion regulation strategies, tend to have higher rates of externalising problems (e.g., Casey, 1996; Cook, Greenberg & Kusche, 1994; Silk et al., 2003). Experience and skill therefore influence the extent and quality of an individual's emotion-related knowledge (Gratz & Roemer, 2004; Lemerise & Arsenio, 2000), which is necessary for accurate and adaptive interpretation of situations, and emotion regulation (Gratz & Roemer, 2004).

E-SIP suggests that reducing emotional reactivity, or improving emotion regulation, could lead to more adaptive SIP and reduced aggression (which is discussed in detail in the chapter two). E-SIP indicates multiple emotion-related skill deficits contribute to aggressive behaviour, pointing toward potential intervention. E-SIP would therefore support hypotheses that improving emotion regulation skills may reduce aggressive behaviour (Lemerise & Arsenio, 2000). Many aggression interventions address the affective aspect of aggression without explicitly linking intervention techniques or strategies to a specific emotion theory (e.g., Goldstein et al., 2004; Lochman & Wells, 2002a; 2004). The current research examines the effect of ART on emotion regulation, and links intervention techniques to emotion skills (see chapter three).

### **Evaluation of E-SIP**

E-SIP provides a detailed description of affective-cognitive processes contributing to aggressive acts, and identifies capacities necessary for adaptive emotion regulation and prosocial behaviour (de Castro, 2010; Lemerise & Arsenio, 2000). Research supports that deficits or biases at each stage of SIP can contribute to aggressive behaviour (e.g., Crick & Dodge 1994; de Castro, 2010; Fontaine et al., 2010). As a skill-deficit model, E-SIP can be used to determine an individual's characteristic difficulties and indicate areas for

improvement (Lemerise & Arsenio, 2000) and inform the design of interventions. E-SIP also explains how qualitatively different socio-cognitive styles can lead to aggressive behaviour by demonstrating the potential interactions between stages, rather than assuming aggression results purely from deficits at any one stage (de Castro, 2010).

E-SIP provides a comprehensive framework for deconstructing processes into steps to provide a structure for learning and applying these new skills in an individually focused intervention. Many CBT interventions have had success in addressing deficits and improving aggressive behaviour and prosocial understanding, such as ART (Goldstein et al., 2004), Second Step (Frey, Hirschstein & Guzzo, 2000) and Coping Power Programme (Lochman & Wells, 2002a; 2004). These interventions encourage active reflection to improve individuals' understanding of the relationship between their typical processing styles and their behaviour. Several studies have even demonstrated that interventions can result in modified information processing and in reduced aggressive behaviour (e.g., Lochman & Wells, 2002b). E-SIP is an excellent fit for testing hypotheses regarding ART as emotion education and awareness is a core component of ART, with a focus on emotion regulation strategies. ART also systematically addresses SIP steps in a comprehensive manner to provide new remedial learning experiences (refer to chapter two and three for further information specifically linking ART methods with improving emotion regulation).

SIP is sometimes criticised for the narrow focus on an individual's socio-cognitive representations rather than wider systems level analyses of behaviour (Ferguson & Dyck, 2012). Except to acknowledge that learning experiences across a variety of contexts contribute to socio-cognitive representations, SIP does not directly explain how poverty, social or cultural norms, or the media (macro-level factors) affect aggressive behaviour, nor

how family, community, teachers or peers (micro-level factors) affect aggressive behaviour (Ferguson & Dyck, 2012). Interactional developmental models, such as the biopsychosocial model (Dodge & Pettit, 2003), guide multi-systemic interventions to target multiple risk factors for aggression, however the single-components that comprise a multi-systemic intervention still need to be evaluated prior to their incorporation into a wider programme (Dodge & Pettit, 2003). So although SIP maintains a narrow focus, this is a strength when testing hypotheses about socio-cognitive skills necessary for prosocial behaviour, and for testing predictions about the benefits of individual-level changes with populations at risk of developing aggression problems.

SIP research highlights how individual-level factors manifest during on-line social interactions however SIP represents only one part of a dynamic system involved in aggressive behaviour (Dodge & Pettit, 2003). Developmental models can inform and contextualise SIP theory by indicating the different factors that may be particularly relevant for socio-cognitive processing at different ages (Anderson & Huesmann, 2003) and by indicating the developmental challenges of different ages (Crick & Dodge, 1994). The disproportionate amount of SIP research with younger children restricts understanding of how SIP changes with age and whether cognitive-affective patterns become increasingly difficult to modify with age (which might explain the reduced effectiveness of aggression interventions with older individuals). Initial SIP developmental research shows that maturational improvements in executive functioning may produce qualitative changes in SIP patterns. For example evaluative processes only begin to mediate the relationship between hostile attribution and antisocial responses in adolescence (Fontaine et al., 2010), therefore SIP research should not be generalised from one age group to another. Interventions based on SIP can be adapted to address developmental challenges at different ages. Modifications

might include adolescent interventions that emphasise emotional regulation and relational goals, to account for increased emotional intensity and lability (Spear, 2000), and increased importance of peers (Zeman & Shipman, 1997), at this age. In this way adolescent interventions could also address aggression in the context of peer relationships, academic pressures, increasing autonomy and parent-child conflicts.

### **Summary of E-SIP**

E-SIP explains how deficits and biases in processing cognitive and affective information contribute to aggressive behaviour. Although E-SIP is limited in the scope of aggressive behaviour it explains (single interaction episodes), this enables specificity in the skills required to reduce aggressive responding. Research indicates that risk factors influencing aggression vary with age, and emotion regulation is thought to be particularly influential during adolescence, therefore using E-SIP responds to the need for awareness of developmental stage in intervention research. E-SIP enables research into the effect of ART on emotion regulation and aggression, because it provides opportunity to assess and improve emotion regulation skills as defined by the model. As there is less SIP research with adolescents than children, and as adolescence is an important developmental stage for emotion regulation (Calvete & Orue, 2012; Lee & Hoaken, 2007), using E-SIP to guide intervention research with adolescents could significantly contribute to research in this field. Emotion processes and SIP are still frequently studied independently, which constrains understanding of their interrelatedness (de Castro, 2010). E-SIP provides a useful theoretical basis for researching the relationship between emotion regulation and aggression. As such this research is an example of closing the knowledge gap between SIP and emotion research, which is essential in our understanding of aggressive behaviour in adolescence.

## Chapter Summary

Adolescents may perpetuate aggressive behaviour into personal relationships, their own family and community if their difficulties go unaddressed. Currently youth aggression remains problematic within schools and communities, despite recent improvements. The education system in NZ is implementing and evaluating preventive interventions with younger ages, and has recently introduced several universal and targeted programmes for older ages. Targeted programmes are unlikely to meet the needs of many adolescents and require intense resources; group interventions have yet to be systematically evaluated in NZ schools. The ART programme is identified as a promising programme with potential for school application, alongside universal interventions. The ART programme takes account of the prominent risk factors and developmental challenges during adolescence.

Deficits in emotion regulation is increasingly identified as an important risk factor in adolescence, however few interventions have examined their impact on emotion functioning. To improve effectiveness of interventions with adolescents, it is important to understand the mechanisms of change. E-SIP explains the contribution of emotion processes to aggressive behaviour, and as such is a useful model for hypothesising about the skills necessary for adaptive emotion regulation. If ART is able to teach emotion regulation skills, it should improve emotion regulation and reduce aggressive behaviour. The next chapter discusses how deficits in emotion regulation contribute to aggressive behaviour.

## CHAPTER 2

### **EMOTION REGULATION**

Emotion regulation deficits contribute to a variety of forms of psychopathology, including aggression. Research finding a positive association between dysregulated emotion and aggression was reviewed by Robertson et al. (2012). Researchers advocate for the inclusion of techniques targeting emotion regulation processes in intervention programmes (e.g., Gratz & Tull, 2010; McLaughlin et al., 2011; Southam-Gerow & Kendall, 2002, Suveg, Southam-Gerow, Goodman & Kendall, 2007). Robertson et al. (2012) assert that the efficacy of aggression interventions could be improved if they were to increase emotional awareness and understanding, teach effective management of emotional expression and reduce maladaptive regulation strategies. This is the main tenet of this research; that ART, a psychoeducational intervention with an affective learning component, can reduce difficulties in emotion regulation that contribute to aggressive behaviour.

#### **The Function of Emotion**

“Emotions are the positive or negative valences in reaction to perceptions of events as relevant to the self” (Koole, 2011, p. 23). In providing information about our own mental state, emotions assist in organising and motivating cognitions and behaviours. Emotion information is also used in perception and interpretation of others’ mental states and in constructing expectations of their behaviour (Lerner & Arsenio, 2000). As such emotions serve both intrapersonal and interpersonal psychological functions respectively. Emotions prepare an individual for action, and drive decision making and judgements, in moving us closer to goals (Gross, 1998).

Emotions comprise physiological states, cognitions, affects and behaviours; this means that regulation can occur in any one of these components. For example, Dahlen and Deffenbacher (2001) describe four domains of anger. Physiologically, anger is associated with a surge of adrenalin and activation of the sympathetic nervous system (e.g., muscle tension, heart rate increase). In the cognitive domain anger is associated with cognitive content biases (such as threat, justification, hostility, suspicion and retribution), and with biased cognitive information processing (such as selectively attending to anger-related information and attributing hostile intent). Affectively, anger is a feeling state ranging in intensity from mild annoyance to rage. Finally, in the behavioural domain anger is associated with verbal and physical action tendencies (“the drive to perform a certain action characteristic of that emotion”; de Castro, 2010, p. 57) including adaptive and maladaptive responses (e.g., assertion and aggression respectively). Research into anger dysregulation demonstrates interactions between these domains. For example, high affective levels of anger can increase cognitive biases and aggressive responding (e.g., de Castro, Slot, Bosch, Koops & Veerman, 2003a). Regulation efforts may also be influential across domains, hence cognitive-behavioural interventions (such as ART) target multiple aspects of anger in order to reduce aggression (Goldstein et al., 2004).

The focus of this research is how dysregulated emotion interferes with SIP and leads to antisocial responses. Antisocial responding in this context is maladaptive aggression. As described in chapter one, E-SIP hypothesises that emotional reactivity, temporary emotional states and capacity to regulate emotions influence the ability to express emotion adaptively (Lemerise & Arsenio, 2000). Emotional reactivity (also known as emotional sensitivity, vulnerability or arousability) is different to emotion regulation and refers to stable temperament-based individual variations in basic emotional responsivity. This includes the

typical intensity with which emotions are experienced, the threshold of emotional arousal at which a person reacts to a stimulus, and the latency of response (Eisenberg & Fabes, 1992; Macklem, 2008). High emotional reactivity makes it more difficult for a child to manage the speed and extent of emotional escalation (Macklem, 2008), and high negative emotionality has been consistently linked to externalising behaviours (in children: Bohnert, Crnic & Lim, 2003; Eisenberg et al., 1997, and in adolescents: Laible et al., 2012). An individual's ability to regulate emotions moderates the association between high emotional reactivity and externalising behaviour (Eisenberg & Fabes, 1992; 2006). Although emotional reactivity is defined as a stable trait, emotional *regulation* (or ER as it will be referred to from here)<sup>4</sup> is thought to be socialised (Calkins, 1997; Shipman & Zeman, 2001; Southam-Gerow & Kendall, 2002) and therefore may be a modifiable risk factor for aggressive behaviour. As there is a lack of consensus about the most appropriate conceptualisation of ER (Bridges, Denham & Ganiban, 2004; Chambers, Gullone & Allen, 2009; Gratz & Tull, 2010; Macklem, 2008; Weinberg & Klonsky, 2009) interventions aiming to improve ER must be precise about the construct being measured. In order to demonstrate the potential targets for aggression interventions, the next section defines ER and the requisite skills for adaptive ER.

### **What is Emotion Regulation?**

Thompson's (1994) book, titled 'Emotion Regulation: A theme in search of definition', is widely cited in ER literature. Here ER is defined as "the extrinsic and intrinsic processes responsible for monitoring, evaluating, and modifying emotional reactions, especially their intensive and temporal features, to accomplish one's goals" (Thompson, 1994, p. 27). Thus ER refers broadly to the strategies used to influence and modulate emotional responses (Gross & Thompson, 2007). Gratz and Tull (2010) suggest that by

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<sup>4</sup> Emotional regulation will be referred to throughout the subsequent chapters as ER, whilst emotional reactivity will be written in full.

making two assumptions about ER, researchers can direct attention to aspects that are modifiable through treatment interventions. These assumptions are that a) emotional reactivity is separate from, but interacts with, ER and b) adaptive ER is control of *behaviour* when experiencing emotion (and not control of the emotional experience).

Firstly, there is an important interaction between temperament-based reactivity and learned regulatory processes. Low emotional reactivity, paired with ability to regulate emotion, predicts social competence, whereas high emotional reactivity and deficient ER predicts lower social functioning and increased likelihood of aggression (Eisenberg et al., 1997). Concurrent and longitudinal associations (between early to middle childhood) suggest that high emotional reactivity and deficient ER represent current and future risk factors for maladaptive behaviours (Eisenberg et al., 1997). Similarly adolescents who are high in negative emotionality and low in regulation, display the most problems with angry outbursts and aggression, compared to other profiles of emotionality and regulation (Laible et al., 2012).

The second assumption emphasises *regulation* of emotion and *control* of behaviour when emotionally aroused. The emotional experience should not be diminished<sup>5</sup> as this may interfere with the organising and motivating functions of emotions (Campos, Frankel & Camras, 2004). Instead, adaptive ER involves efforts to modulate the intensity or duration of an emotional experience, to reduce the immediacy of the emotion for the purpose of engaging in goal-directed behaviour (Thompson & Calkins, 1996). In this context ER is deliberate, driven by explicit goals and requires attentional resources (Gross, 2007). ER also requires

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<sup>5</sup> Regulation does not suggest attenuation in the form of avoidance or suppression of emotions is useful, and this is found to result in paradoxical effects, exacerbating the negative impact of an emotion; Salters-Pedneault, Tull & Roemer (2004) review literature that provides strong evidence of such effects.

regulatory abilities such as effortful control, “the ability to inhibit a dominant response to perform a subdominant response” (Rothbart & Bates, 1998, p.136). Interventions that coach awareness of when and how to inhibit a dominant aggressive response, and that strengthen prosocial responses, may therefore improve ER. Interventions should target the abilities underlying ER that are assumed to be modifiable through conscious control, as most cognitive-behavioural interventions are (including ART).

### **Skills and Strategies that Support Emotion Regulation**

Adaptive ER requires skills and strategies that contribute to accurate and efficient processing of internal and external information during interactions (Gratz & Roemer, 2004). Although some ER strategies are more or less adaptive than others<sup>6</sup> (de Castro, Merk, Koops, Veerman & Bosch, 2005; Gross & Thompson, 2007; Nolen-Hoeksema & Aldao, 2011), adaptiveness depends on the context and extent to which a strategy is used (Gratz & Roemer, 2004; Robertson et al., 2012). For example, adolescents who report more disengagement from their emotions (e.g., denial, avoidance, escape, or wishful thinking) or more involuntary reactions (e.g., ruminating or impulsive actions) maintained higher levels of negative emotions and internalising and externalising symptomatology (Silk et al., 2003). Maladaptive ER can lead to over-regulation and/or under-regulation of emotions, both have negative consequences (Robertson et al., 2012; Salters-Pedneault, Tull & Roemer, 2004), and adolescents could benefit from access to a range of strategies. Given that most strategies can be used adaptively, interventions should increase the diversity of ER strategies an individual can access and perform successfully, and the flexibility with which they utilise these strategies (Robertson et al., 2012).

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<sup>6</sup> Problem solving, distraction, and cognitive reinterpretation are thought to be adaptive, whereas disengagement and involuntary or aggressive strategies are thought to be less adaptive.

Access to a range of strategies promotes flexible use (Roberton et al., 2012) but requires a set of ER skills including: a) awareness and understanding of emotions, b) the ability to identify and distinguish specific emotions, c) willingness to experience and accept negative emotions, d) the ability to inhibit impulses, e) ability to engage in goal-directed behaviours, and f) the flexible use of situationally appropriate strategies to modulate the intensity or duration of emotional responses (Gratz & Roemer, 2004).

The emotion skills outlined above have all been independently associated with aspects of adaptive coping or prosocial behaviour (Gratz & Roemer, 2004). For example, young adults with higher monitoring and awareness of emotional state also reported higher anger control, which indicates understanding of the need to regulate emotional state (Wilkowski & Robinson, 2008). This skills-based model of ER provides a framework that translates directly into practical applications regarding measurement and intervention. To improve ER, interventions based on Gratz and Roemer's (2004) conceptualisation would incorporate education and training in the comprised abilities outlined above. As maladaptive ER contributes to aggressive behaviour, these skills should be integral to interventions aiming to reduce aggression. Aggression interventions often target these skills but not sufficiently or explicitly enough (Roberton et al., 2012). Several interventions that do directly teach these skills are discussed below, including ART which has an anger control component, often referred to as the *affective* component due to the focus on ER (Feindler & Baker, 2004; Goldstein et al., 2004).

Importantly this skill framework can be theoretically applied to E-SIP (Lemerise & Arsenio, 2000) as each step concerns several of these emotion skills (see Figure 1.2, p. 24). Encoding and interpretation relies on awareness and clarity of one's own and others'

emotional states. Selecting a goal is influenced by temporary mood states and emotions that arise in the context of an interaction. Emotional arousal should be acknowledged, reflected on, and appropriate ER strategies engaged, to reduce their interference with accurate SIP. The response evaluation and decision stages depend on the ability to inhibit dominant responses and engage in goal-directed behaviours. ART teaches these requisite skills and builds on the relationships between them to structure and facilitate learning experiences for individuals who have not developed adequate ER. The association between deficits in ER and SIP, and how ART can reduce these deficits, is discussed in chapter three. To hypothesise that reduced aggression is associated with improved ER it is important to understand the developmental determinants of ER.

### **How Does Emotion Regulation Develop?**

ER abilities develop from an early age and continue to be refined and modified throughout life (Denham et al., 2002; Southam-Gerow & Kendall, 2002). Although emotional reactivity presets the baseline on which environmental and contextual factors act, ER is largely determined by socialisation processes (Calkins, 1997; Shipman & Zeman, 2001; Southam-Gerow & Kendall, 2002). Many of the developmental processes described here overlap with social cognitive theories of aggression, reflecting that emotions can be regulated through various forms of expression including aggression. The next section describes development of skills related to ER, giving particular attention to parenting processes as these relate to the structure and principles of interventions aimed at improving ER. ER in adolescence is also discussed to highlight the need for interventions during this time.

Skills that support emotion processing develop concurrently, with one skill bolstering another. Children develop display rules in the preschool years (Saarni, 1999); these guide

appropriate emotional expression in social situations and are conveyed by social and cultural expectations (Bohnert et al., 2003). Children learn strategies for emotional expression by developing expectations about the responses from others during social interactions (Saarni, 1999; Shipman, Zeman, Nesin & Fitzgerald, 2003). To understand others' responses, children must discriminate among their emotional expressions, which most can do by 2-3 months old (Flavell, Miller & Miller, 1993). A child also needs sufficient working memory capacity to create and use mental templates to understand emotions, their intent and consequences, and to guide delayed behaviour (Bierman, Nix, Greenberg, Blair & Domitrovich, 2008). At preschool age, children use emotional expression as a rudimentary regulation strategy, such as crying, seeking support or switching attention (Macklem, 2008). A child's dominant form of anger expression may be aggression due to exposure to others' use of, and responses to aggression. Difficulty with perception, understanding or forming associations between own emotional expression and responses of others, may also prevent more adaptive behaviours. Interventions, such as ART, are informed by the prerequisite skills and learning process for understanding others' emotions and adaptive expression of emotion.

Language and regulation abilities develop reciprocally as language is used to modulate emotional behaviour, seen in the gradual internalisation of self-talk (Meichenbaum, 1986). Verbal fluency is associated with more extensive emotion vocabulary and more advanced emotion understanding (Bohnert et al., 2003), which assist with learning and recalling ER strategies. Integrating multiple sources of information to understand emotions, including an individual's own cognitions and others' perspectives, indicates more advanced emotion knowledge and processing (Bohnert et al., 2003). Disruptions to internalisation processes contribute to impulsive behaviours (Meichenbaum, 1986). Similarly aggressive behaviour is associated with decreased ability to verbalise negative feelings (Shields &

Cicchetti, 1998) and difficulty understanding the multiple causes of emotion (Bohnert et al., 2003). Interventions that aim to reduce aggression teach emotion identification and labelling, and teach self-instructional statements, to address the potential disruption of internalisation. Deficits in understanding causes of emotions are addressed by learning about others' physical and verbal cues of emotion, perspective taking role-plays and teaching individuals to ask about others emotions.

An understanding that emotions change, and that emotional expressions are controllable leads to planful ER (Southam-Gerow & Kendall, 2002). Typically an individual's ER repertoire changes from being externally oriented and behaviour-based, to internal and cognitive by later childhood (age 8 or 9 years; Garnefski, Rieffe, Jellesma, Terwogt & Kraaij, 2007). As skills that support internalisation develop, and children can use thoughts about themselves or others to regulate their emotional experience, the number and complexity of ER skills increases. ER is supported by executive functioning abilities such as working memory, cognitive flexibility, planning and higher order cognitive processes (Fox & Calkins, 2003) as they increase the capacity for inhibiting dominant responses and selecting goal-directed alternatives (Bierman et al., 2008).

The development of ER for typical children involves learning basic emotion perception and appraisal skills that they need to internalise regulation processes before they can understand that emotions are controllable. Without the understanding that emotions are modifiable, an individual is unlikely to spontaneously engage in effortful ER. Deficits in any of these skills may inhibit adaptive ER. Interventions could carefully assess the potential deficits underlying an individual's difficulty with ER and direct education and practice accordingly.

## **Parenting in the Development of Emotion Regulation Strategies**

Competencies of ER are strongly influenced by a child's social interactions with their caregivers (Mikulincer, Shaver & Pereg, 2003; Southam-Gerow & Kendall, 2002). Parents support development of ER skills by recognising their child's emotions, talking about emotions, modelling appropriate ER and selectively reinforcing ER (Macklem, 2008). This is the basis for many parent training interventions intending to improve social competence in young children, and can also inform the role of the facilitator and content of adolescent interventions.

When a parent talks with their child about emotions, they educate them about what to attend to in the environment and the causes and consequences of emotions; this helps the child form connections between thoughts, emotions and behaviours, and therefore aids awareness and understanding that will support ER skills (Barrett, Gross, Christensen & Benvenuti, 2001; Eisenberg et al., 2005). Supportive regulating comments decrease the intensity of a child's emotional reaction, and problem-solving provides a rationale for strategies (Jones, Eisenberg, Fabes & MacKinnon, 2002; Macklem, 2008). Adult responses initially provide external regulation that can be imitated and then internalised; therefore parental responsive assistance with regulation is a powerful determinant of the child's regulatory ability (Davidov & Grusec, 2006). Parents also expose children to emotions and emotional responses that become part of their child's emotional repertoire, with diversity and flexibility being critical components for adaptive development (Cole, Michel & Teti, 1994). Consistent interpersonal cues facilitate learning associations for the child, and helps develop planning skills that are useful in social sequences (Barkley, 2001; Bierman et al., 2008). A predictable and positive home/family emotional environment may facilitate learning, in particular about how to manage one's emotions. Positive emotional expressions in parents are

associated with better emotional control in a child and lower levels of acting out aggressively (Eisenberg, Zhou, Spinrad, Valiente, Fabes & Liew, 2005). Without parental assistance or consistency at a young age, individuals may not develop adequate ER (Jones et al., 2002; Mikulincer et al., 2003).

Punitive and minimising responses to a child's expressions of negative emotion are related to poor ER skills in children age 6-10 years (Jones et al., 2002). These responses limit opportunities to learn ways of managing emotions or problem solving and do not teach the child to tolerate distress which may be particularly detrimental for children high in negative emotional reactivity (Jones et al., 2002). If an individual associates emotional expression with negative interpersonal consequences (i.e. punishment) this may exacerbate arousal and lead to further negative emotions (shame, embarrassment). A less socially competent child is also more likely to behave in a manner that evokes punitive responses from adults (Eisenberg et al., 1999). Parents of older children may also be intolerant of emotionally driven disruptive behaviour, and may be more likely to punish or ignore negative expressions of emotion if they believe this reflects manipulation or inadequacies (Gottman, 1997, as cited by Jones et al., 2002). A perceived increase in the number of adolescent-parent conflicts is typical of this developmental stage (Spear, 2000), and may be exacerbated in adolescents who have not developed sufficient ER skills.

ER is socialised and some individuals learn patterns of ER that have negative consequences. The principles of social learning can guide interventions in teaching ER skills to these individuals. Interventions that are facilitated by a predictable and positive role-model provide new learning experiences that may help form associations between emotions and adaptive responses. Opportunities to role-play, model others' behaviour, discuss others'

perspectives and receive structured feedback are intervention methods intended to support learning in the way that parents do in younger years. ART was designed for youth aged 12-17 years who are unable to regulate their behaviour (Goldstein et al., 2004), which is associated with deficient emotion regulation skills (e.g., Laible et al., 2012; McLaughlin et al., 2011). ART incorporates the above learning techniques, educating that expression of emotion is adaptive and encouraging appropriate expression. ART facilitators are trained to consistently verbalise their own emotional responses, and to consistently and respectfully coach and reinforce a participants' demonstration of ER skills in role-play and discussion. The intent is to help strengthen understanding of internal and external cues of own and others' emotions, of perspectives, possible causes of emotions, and potential regulation strategies (see detailed description of ART in chapter three).

### **Adolescent Emotion Regulation**

Research is beginning to highlight the importance of ER skills in adolescence (e.g., Garnefski et al., 2005; Garnefski et al., 2002; Neumann et al., 2010; Silk et al., 2003; Vasilev et al., 2009), however fewer studies involve adolescents than children and adults. Maladaptive ER is arguably more disruptive during adolescence due to the characteristic increase in intensity and frequency of negative emotions, and heightened levels of emotional variability (Spear, 2000). Higher levels of internalising and externalising symptomatology in adolescents have been associated with greater intensity and lability of negative emotions (Silk et al., 2003) and self-reported ER difficulties (Neumann et al., 2010; Vasilev et al., 2009; Weinberg & Klonsky, 2009). Dysregulated emotion in adolescence is associated with a range of psychopathologies, including aggressive behaviour (McLaughlin et al., 2011).

During the adolescent period, hormonal, neural, and cognitive systems thought to underlie ER, undergo significant changes (Spear, 2000). ER is facilitated by the development of planning, problem-solving, response inhibition, abstract thinking, self-evaluation and metacognitions of self-control, which become more sophisticated in adolescence (Steinberg, 2005). The ability to monitor cognitive activities during thinking processes emerges during adolescence and is important in managing emotions before they become overwhelming (Garnefski et al., 2005). Self-instruction and cognitive reinterpretation are strategies that require a certain level of cognitive ability and thus are more successful with older children (Holodynski & Friedlmeier, 2006). Adolescents who are able to reflect on the purpose for regulating emotions may benefit from learning both behavioural and cognitive strategies for ER. These aspects of development could be usefully addressed in interventions.

The typical challenges of adolescence relate to increased importance of peers and opposite sex relationships, testing the boundaries of autonomy with parents and caregivers, academic pressures of school, and increased personal responsibility at home or with employment. These socio-emotional changes often involve increases in risk taking, and novelty and sensation seeking behaviours (Spear, 2000), which potentially increase stress and emotional variability. These conditions may provide the impetus for adolescents to develop more diverse and sophisticated ER strategies (Bariola, Gullone & Hughes, 2011; Yap et al., 2007). If however, psychosocial demands precede or exceed adequate development of cognitive and regulation capacities, maladaptive ER strategies, such as self-harm, aggression, smoking or substance use may occur (Yap et al., 2007). Difficulty coping with these affective experiences in adolescence increases the risk for aggressive behaviour (e.g., McLaughlin et al., 2011). Stressors such as peer victimisation and domestic violence lead to increased aggression in those adolescents with low ER (Herts, McLaughlin & Hatzenbeulher, 2012).

This research suggests that adolescents, whose cognitive and affective resources are stretched, may not develop adaptive ER, therefore intervention may be crucial at this time, regardless of greater effectiveness of early intervention (Herts et al., 2012; Robertson et al., 2012).

Peers become highly influential in reinforcing certain behaviours in adolescence, and self-regulation is influenced by susceptibility to peer influence (Steinberg et al., 2004). Although most individuals develop a range of ER strategies that they can use flexibly across situations and emotions, there may be significant adverse consequences for social relationships where individuals struggle to do so. Socially adjusted peers may reject individuals who are not capable of adaptive ER; expressions of negative emotions are much less acceptable to socially adjusted peers (Coie, Dodge & Kupersmidt, 1990; Lansford et al., 2010). Other peer affiliations may increase an individual's exposure to maladaptive ER strategies (e.g., aggression, substance use and self-harming) and the likelihood of adopting these strategies is increased for those with poor regulation skills (Goldstein et al., 2004). Increased disclosure to peers relative to parents, particularly from early adolescence (Zeman & Shipman, 1997), indicates that ER within the peer context is an important aspect of interventions aimed at improving these skills (Sullivan, Helms, Kliewer & Goodman, 2010). Adaptive ER can also reduce the increase in aggression associated with peer victimisation (Herts et al., 2012). This suggests that peer role-plays about managing conflict and peer pressure may encourage use of ER skills with peer stressors. The effects of peer aggression lead Herts et al., (2012 p. 1120) to suggest interventions should “incorporate techniques to improve emotional awareness, identification, monitoring and the adaptive expression and modulation of emotional experiences”.

Adolescents with inadequate ER skills are at risk of externalising and aggressive behaviours. The challenges of adolescence highlight that it is a crucial time to study the relationship between ER and psychopathology, and the usefulness of an intervention that targets emotion skills at a time when individuals may be able to recognise the pertinence and benefits of applying these skills (Herts et al., 2012; McLaughlin et al., 2011; Robertson et al., 2012). Typical development of ER requires skills such as emotion perception, appraisal, awareness and inhibition, suggesting that interventions that teach these skills might improve ER. An intervention that utilises social cognitive principles to teach the pre-requisite skills must also motivate individuals to develop, practice and transfer deliberate ER strategies. The negative impact of low ER on social relationships, and the emphasis on peer influence during adolescence, indicate that individuals may be more motivated to learn skills within the peer context.

Group interventions allow age-relevant issues and topics to guide rehearsal and improve generalisation of ER skills. Although some adolescents will be less cognitively advanced, they are more likely than younger children to have sufficiently developed executive functioning permitting reflective emotion processing and allowing them to benefit from CBT interventions (Sukhodolsky et al., 2004). ART is a CBT intervention that takes account of the adolescent stage of life context, and uses peer processes to motivate learning. As the purpose of ART is to reduce aggression, it is important to explore evidence of the relationship between adolescent deficits in ER and aggression. Research finding this relationship, would support the hypothesis is that improvement in ER moderates the effect of ART on aggression.

## **Does Improving Emotion Regulation Reduce Aggressive Behaviour?**

The following section discusses research evidence for a relationship between adolescent deficits in ER and aggression, and for treatments focused on improving ER that show reductions in aggressive behaviour.

### **Measuring the Relationship between Emotion Regulation and Aggression**

Despite comparatively less research into ER with adolescents, researchers consistently find a relationship between ER and aggressive behaviour in this age group (Laible et al., 2010; McLaughlin et al., 2011; Neumann et al., 2010; Robertson et al., 2012; Vasilev et al., 2009). Adolescents' self-reported aggression is associated with lack of ER strategies, impulsivity, difficulty engaging in goal-directed behaviours when distressed (Neumann et al., 2010; Vasilev et al., 2009), emotional awareness, clarity and acceptance (Vasilev et al., 2009). Vasilev et al., (2009) also found that parent-reported aggression was associated with impulsivity and lack of strategies. Longitudinal research indicates that problematic ER may mediate the effect of aversive psychosocial context on increases in aggressive behaviour (Herts et al., 2012), suggesting preventive interventions are not only useful for addressing current difficulties but for protecting adolescents from developing difficulties in the future.

The correlational studies above (Neumann et al., 2010; Vasilev et al., 2009) use the self-report psychometric based on Gratz and Roemer's (2004) ER skills framework (which will be utilised in this research and is discussed in the methodology section). Other self-report research into the relationship between ER and aggression has used an index of ER, consisting of poor emotional understanding, rumination (as an approximate measure for maladaptive ER strategies) and dysregulated expression of emotion (Herts et al., 2012; McLaughlin et al.,

2011). Using this index, deficits in ER predicted subsequent increases in early adolescent aggressive behaviour over approximately 6 months (McLaughlin et al., 2011).

A review of ER assessment methodology identified few observational methods investigating ER in adolescents (Adrian, Zeman & Veits, 2011). In this review, Silk et al's (2003) research was the only observational study, with direct links to externalising behaviour during adolescence, that did not use emotional expression as an approximate measure of ER. Using an experience sampling method to assess the intensity and lability of emotions, Silk et al., (2003) found poor ER was found to be associated with externalising behaviours. The only physiological measure assessing ER directly (with reduced respiratory sinus arrhythmia), rather than stress response as an approximate measure of ER, found an association between lower physiological reactivity and self-reported emotional acceptance, impulsivity and lack of strategies when distressed (Vasilev et al., 2009). The majority of research with adolescents uses self-report questionnaires of ER (Adrian et al., 2011) and therefore represents perceived efficacy in regulating emotion. Adolescents are thought to provide reliable self-report responses (Klimes-Dougan & Zeman, 2007) and some self-reports have demonstrated convergent validity with behavioural and physiological measures of ER (e.g., Gratz & Roemer, 2004). Overall this suggests that there is consistency across measurement methods in finding a relationship between ER and aggression and that self-reports are an acceptable measure for research with adolescents.

### **Interventions to Improve Emotion Regulation**

As discussed in chapter one, research indicates various interventions can be effective in reducing aggression, but what evidence is there that interventions are able to improve ER with adolescents, and does this reduce aggression? Firstly we must establish that ER skills are

modifiable, and then that interventions designed to improve ER also reduce aggressive behaviour. Metz et al., (2013) demonstrated that adolescents' ER skills, as defined in Gratz and Roemer's framework, appear to be modifiable by intervention. Using the same ER self-report measure as Vasilev et al., (2009) and Neumann et al., (2010), adolescents reported improvement in emotional awareness, clarity and ER strategies in response to a mindfulness stress-reduction programme (Metz et al., 2013). Although this intervention did not aim to reduce aggression, it does provide evidence of measurable improvement in adolescents' ER in response to training in emotion skills.

Research suggests that improvements in ER are associated with reductions in aggressive behaviour. A recent meta-analysis of social and emotional learning (SEL) interventions reported an effect size of .57 for improving socio-emotional competencies and of .22 for reductions in conduct disorder symptoms (Durlak, Weissberg, Dymnicki, Taylor & Schellinger, 2011). SEL interventions aim to improve ER but the proximal goals encompass development of self-awareness, self-management, social awareness, relationship skills and responsible decision making (Collaborative for Academic, Social and Emotional Learning, 2005). Of the 213 school-based universal interventions reviewed by Durlak et al., (2011) only 13 % were with students aged over 13 years, however no effects of age on conduct outcomes were reported.

There are several examples of promising programmes designed to improve emotion regulation for adolescents (Castillo, Salguero, Fernández-Berrocal & Balluerka, 2013; Miller, Rahun & Linehan, 2007). Dialectical behaviour therapy for adolescents (DBT-A; Miller et al., 2007) has a growing research base for improving ER for a variety of problem behaviours (Fiorillo & Long, 2012). DBT has demonstrated effectiveness with adults in improving

affective control (Van Dijk, Jeffrey & Katz, 2013) and aggression (Linehan, McDavid, Brown, Sayrs & Gallop, 2008; Soler et al., 2005), although randomised control trials for adolescents have not yet been published (Courtney-Seidler, Klein & Miller, 2013). Trials of the group skills component of DBT for adolescents with behavioural problems have shown reductions in aggression, negative affect, impulsive behaviour and self-control for adolescent males in correctional facilities (Shelton, Kesten, Zhang & Trestman, 2011), and improvements in externalising behaviour, and behavioural and emotional strengths for adolescents with oppositional defiant disorder (Nelson-Gray et al., 2006). Shelton et al., (2011) did not find an expected increase in positive coping strategies such as accepting responsibility, planful problem solving, self-control and positive reappraisal however. Although these studies did not have control groups for comparison and involve small samples with male majority, this early work is likely to be followed by randomised control trials (RCTs) suggesting many researchers expect ER training to be crucial in reducing externalising behaviour. Several authors have suggested the suitability of DBT in schools for adolescents demonstrating difficulties with ER or problem behaviours (Fiorillo & Long, 2012; Mazza, Dexter-Mazza, Murphy, Miller & Rathus, in press).

Another emotion-focused intervention with potential is the INTEMO program, for ages 11-17 years, which specifically aims to enhance emotion skills by improving: i) accurate perception, appraisal and expression of emotion, ii) awareness of emotions and their function, iii) understanding of emotions and ability to label them, and iv) regulation of emotions (Castillo et al., 2013). Although changes in emotion skills were not measured, the authors suggest that the emotion-focused strategies taught in this intervention are responsible for students' reductions in anger and hostility, and increases in empathic concern (Castillo et al., 2013). While the students in this sample were not selected due to aggressive or externalising

behaviour, at-risk youth could be expected to benefit from this program. This statement is supported by findings that, compared to individuals with lower initial levels of externalising behaviours, those with higher levels tend to show greater improvements in response to interventions into which they have been selected (Wilson & Lipsey, 2007). The INTEMO programme has yet to be replicated with other samples and gain evidence of efficacy in improving emotion skills and reducing aggression.

Although research is more scarce for adolescents, there are numerous skills training interventions based on emotion management that effectively reduce aggressive behaviour with *preadolescents* (Frey et al., 2000; Kam, Greenberg & Kusché, 2004; Lochman, Wells & Lenhart, 2008). For example, the Promoting Alternative Thinking Strategies curriculum (PATHS; Kam et al., 2004) is an emotion-focused intervention for ages 4-11 years and has been found to improve emotional understanding, perceived efficacy in managing emotions and recognition of others' affective cues. The intervention also increased teacher rated self-control and ability to utilise problem solving steps in interpersonal conflict, however the meditational role of emotion skills was not explored. Later research found that PATHS improves the related construct of inhibitory control and that inhibitory control mediates reductions in externalising behaviour (Riggs, Greenberg, Kusche & Pentz, 2006). There are also indications that the Coping Power Programme (a multi-component programme that effectively reduces aggressive behaviours in *preadolescents*; Lochman & Wells, 2002a) improves self-regulation, however details about affective regulation were not reported. Again this suggests that interventionists expect that ER to improve and is related to findings of reduced aggression, however the relationship remains poorly elucidated. This highlights the need for research using a clear framework of emotion skills shown to underlie ER, to measure the impact of intervention.

## Chapter Summary

The association between deficits in ER and aggressive behaviour is well established, and preliminary evidence suggests deficits in ER mediate the relationship between psychosocial stressors and aggression. Individuals who use more adaptive ER strategies appear to experience less emotional dysregulation and less externalising behaviours. ER can be improved by interventions that focus on teaching emotion skills however RCTs with adolescents are lacking. Interventions aimed at reducing aggression with preadolescents appear to impact self-regulation positively however emotion regulation does not appear to have been directly measured. Thus the research reviewed here suggests that aggression interventions could be improved by teaching individuals emotion awareness, understanding and effective management of emotional expression, through adaptive regulation strategies. The next chapter examines the research evidence for the role of ER in social information processing and how necessary skills and processes are targeted in ART.

## CHAPTER 3

### **RESEARCH EVIDENCE OF THE ROLE OF EMOTION PROCESSES IN SIP**

The following section describes the role of emotion regulation within social information processing (SIP) and how Aggression Replacement Training (ART) may improve emotion regulation (ER). Although the social-cognitive aspects of each SIP step have been extensively researched, the role of emotion has been focused on less often. A preliminary test of Lemerise and Arsenio's (2000) enhanced SIP model (E-SIP) demonstrated the role of an individual's own emotional experience, their perception of others' emotional experience, and their use of adaptive ER, in aggressive behaviour (de Castro et al., 2005). This suggests that these emotion skills contribute significantly in determining behaviour and that the E-SIP model is an appropriate basis for hypothesising about the effects of an aggression intervention. This chapter begins with a description of ART and is then broken down into several emotion skills and processes to describe their theoretical links with ART techniques.

#### **Aggression Replacement Training**

ART was introduced briefly in chapter one as a group cognitive-behavioural intervention, designed to reduce aggressive behaviours and increase prosocial responding. The three components of ART target social skills, anger control and moral reasoning. Social skills training (SST) involves teaching prosocial alternatives to manage social situations or challenges, that for many adolescents would provoke negative responses. The aim of these sessions is for individuals to learn and practice new behaviours through role-play, evaluating their own and others' performance and adjusting behaviours based on others' feedback. Practicing these skills should strengthen the cognitive-affective links between the thoughts

elicited in a variety of situations and prosocial responses, to increase the accessibility of these constructive responses in similar situations (at school, home or in the community).

Individuals are also taught to ‘think ahead’ about the possible negative consequences of aggressive behaviours.

The focus of anger control training (ACT) is to help participants become aware of, and learn to recognise, their emotional responses to situations. Individuals identify their typical “triggers”, the external events and internal appraisals that activate anger, and develop awareness of “cues”, the physiological sensations or experiences that signal their own emotional arousal. Individuals generate their own set of ER strategies and practice applying them in role-played situations; these consist of “reducers” (arousal reducing techniques such as distraction or relaxation) and “reminders” (self-instructional statements designed to reinterpret and defuse internal triggers). ACT emphasises the function of emotions and how regulating emotion can improve self-control to achieve goals in a prosocial manner. The “angry behaviour cycle” describes the action of triggers, cues, reducers, reminders, using a prosocial alternative (to exit the cycle) and self-evaluation of performance (see Figure 3.1). Individuals also learn about the reciprocal nature of social interactions and how, when they are angry, their typical behaviours may cause others to become angry, exacerbate the situation, or lead to repeated conflicts. Individuals learn about the “angry behaviour cycle” and how they can change the outcome of a conflict by using prosocial skill.

The content and structure of SST and ACT sessions utilise social learning principles. Observational learning is maximised by the facilitators modelling prosocial behaviour, participants then role-play the behaviour in a situation relevant to them and observe their peers role-playing the behaviour. Social approval and concrete rewards reinforce role-played

behaviour. The role-plays involve rehearsal of skills, verbalising thought processes and self-evaluation to encourage participants to internalise reinforcement of successful outcomes. These modules also encourage reflective processing in evaluating assumptions, decisions and consequences; individuals are also encouraged to think about and the impact of their own behaviour on the socio-emotional context in which they function.

### Exit the Angry Behavior Cycle: Use a Social Skill

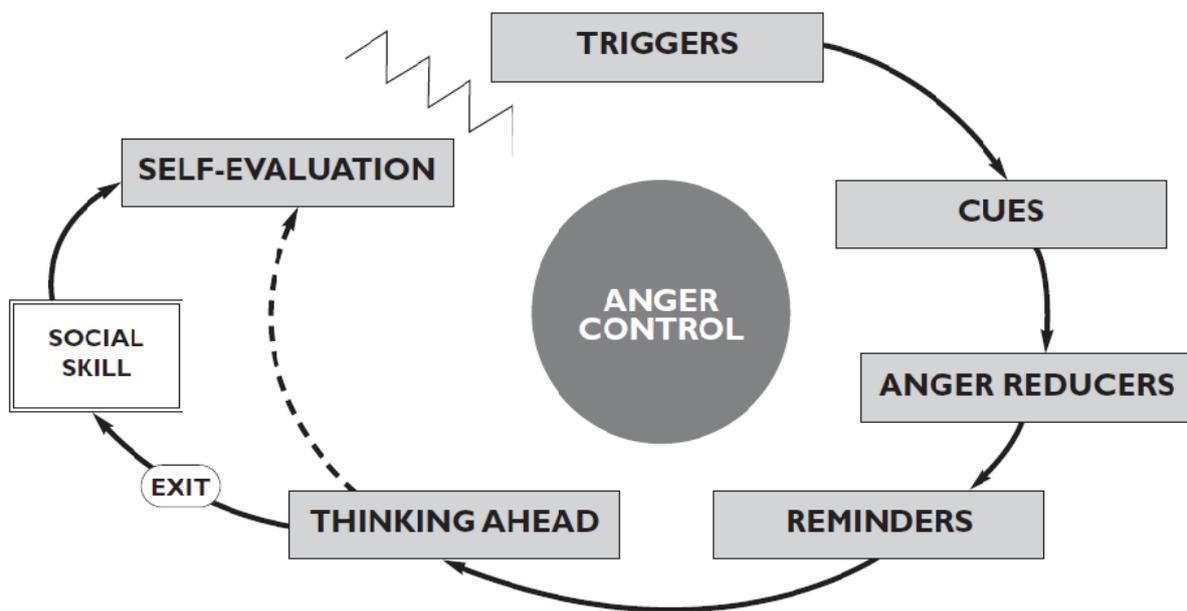


Figure 3.1. Exiting the angry behaviour cycle. From “Aggression Replacement Training: A Comprehensive Intervention for Aggressive Youth (3<sup>rd</sup> ed., p. 267)” by B. Glick., & J.C. Gibbs, 2011, Champaign, IL: Research Press. Reprinted with permission.

The moral reasoning (MR) component aims to motivate participants to use the skills from SST and ACT in choosing prosocial behaviours over aggression. In each session facilitators introduce a moral dilemma designed to challenge the values of fairness and justice. Group discussion and facilitator praise, instruction and feedback to individuals, aim to reinforce prosocial choices and promote prosocial behaviour in similar situations.

Exposure to peer reinforcement of prosocial decision-making is particularly important given the influence that antisocial peers have in justifying aggressive behaviour. MR sessions provide opportunities for individuals to practice processing social information that increases the likelihood of prosocial decisions including understanding emotional aspects of situations, empathising with others and perspective taking (Goldstein et al., 2004). Rehearsing this processing is intended to reduce the effort required and therefore increase the likelihood of competent evaluation and prosocial decisions in future situations that call for moral reasoning.

ART can alter SIP deficits and biases that are associated with aggressive behaviour. The educational and training content of ACT addresses emotion-related skills and processes, and importantly teaches ER techniques (Crick & Dodge, 1994; Lemerise & Arsenio, 2000). The following sections describe research into the emotion skills and processes of E-SIP (see Figure 1.2, p. 24) and relates these to the structure and content of ART to support the hypothesis that improving ER will reduce aggressive behaviour. Although some emotion skills and processes are more easily associated with particular SIP steps, there is much overlap and interaction between them (as described in chapter two, p.36). The sections that follow first describe the need to understand our own and others' emotions, to accurately interpret social situations. The influence of temporary emotional states is then discussed to highlight the need for those with aggressive behaviour problems to learn ER strategies. The impact of reflecting on emotional information within an interaction is discussed in terms of motivating prosocial behaviour. Finally, the need for ER in enabling adequate evaluation of responses is also discussed. The theoretical links between each skill and particular aspects of ART are described in order to support the hypothesis that ART will improve ER and reduce aggression.

## **Emotion Awareness and Attribution**

A meta-analysis of attribution research provided comprehensive evidence that aggressive children tend to interpret situations as hostile (de Castro, Veerman, Koops, Bosch & Monshouwer, 2002). Emotion attribution is different to hostile intent attribution, and has been less researched in SIP literature (de Castro et al., 2005). Hostile intent attribution is an appraisal of why another person did something, emotion attribution is an appraisal of how another person feels (and can refer to the attribution of one's own emotional experience). Our own internal affective cues, and others' facial and nonverbal expressions, provide information about emotion. Accurate emotion attribution reflects skill in perceiving and understanding emotion signals (Denham, 1998). The following research demonstrates the association between emotion attribution difficulties and aggression. This indicates that reflective processing of emotion information may increase prosocial behaviours, and supports the inclusion of emotion skills in ART.

### **Others' Emotions**

Children with behavioural problems are less accurate in identifying others' emotions, indicating difficulties using relevant emotion information (Cohen & Strayer, 1996; Shultz et al., 2010; Schultz et al., 2004). For example, lower levels of emotion attribution accuracy have been correlated with teacher-rated aggressive behaviour in older children (Schultz et al., 2004) and with self-reported acts of violence in youth offenders (Carr & Lutjemeier, 2005). Conduct disordered adolescents also showed impaired recognition of multiple facial expressions relative to control participants (Fairchild, Van Goozen, Calder, Stollery & Goodyer, 2009). Although some studies do not find an association between aggression and affect recognition, there does tend to be a robust finding in difficulties recognising low intensity (more subtle) facial expressions (Bowen & Dixon, 2010). Less skill at identifying

others emotions, coupled with other SIP deficits may be problematic for those with aggressive tendencies.

Aggressive individuals also display anger attribution biases, the tendency to perceive or encode this particular emotion above others. Experience with particular emotion states strengthens cognitive-affective structures such that when emotion signals are ambiguous particular connections may predominate and lead to misattributions (Izard, 1991; Schultz et al., 2004). Aggressive children and adults appear to systematically misattribute anger to other depicted emotions (Hall, 2006; Schultz et al., 2004). Misattributing other emotions has also been related to aggression. Attributing happiness to a provocateur is commonly found in those with behavioural disorders; aggressive pre- to early-adolescent boys more frequently attributed happiness and less often attributed guilt or shame to provocateurs in ambiguous auditory scenarios, in comparison to their non-aggressive counterparts (de Castro et al., 2005). This relates to aggressive individuals' expectations that antisocial behaviour will produce positive emotional outcomes for themselves (as discussed in relation to goals below on p. 62).

If an individual finds it difficult to recognise others' emotions and typically expects others' to be angry with them or happy about provoking them, it may be understandable that this motivates less prosocial responding. The ART programme includes psychoeducational material about the subtle variations in anger, from mild irritation to rage systematically breaking down the physical expressions we would expect to see in others, from a clenched jaw to shouting abuse. Teaching individuals to observe others' signs of emotions and challenge their assumptions or expectations about what others' are likely to feel, particularly in interpersonal conflict or provocation, may improve accuracy of processing (Schultz et al.,

2004). ART incorporates specific sessions about understanding others' feelings and the instruction to "watch the other person" to appraise their response, appears consistently across role plays.

### **Own Emotions**

Studies of emotion attribution in aggressive boys have shown that aggressive behaviour problems are also related to atypical labelling of their *own* emotions; aggressive individuals often have a limited ability to identify or differentiate between their own emotions (Casey & Schlosser, 1994; Feindler & Baker, 2004). Children aged 7-14 years with externalising disorders were less sophisticated in their understanding of their own emotions than non-disordered children; they struggled to explain how they knew what they felt, they were less accurate in reporting their own facial expressions of emotion, and their understanding was confined by representing knowledge of their own emotions in terms of physical or situational characteristics (Casey & Schlosser, 1994). Lower awareness of emotional state appears to increase externalising behaviour, which Wilkowski and Robinson (2008) explain may be due to difficulty recognising escalating emotional state and the need to regulate such arousal. Young adults with higher monitoring and awareness of emotional state reported higher anger control, indicating improved understanding of the need to regulate emotional state (Wilkowski & Robinson, 2008). These individuals also displayed automatic regulation of emotion after an aggressive priming word, but were unable to regulate themselves when cognitive resources were restricted by another task. Similarly, adults who tend to label discrete negative emotional experiences also more frequently used a strategy to regulate these negative emotions (Barrett et al., 2001). These studies together suggest individuals' propensity to monitor and differentiate between emotion states allows more adaptive ER. The effort required to regulate emotions may reduce an individual's cognitive

resources available for other information processing (Barrett et al., 2001); therefore repeated rehearsal of emotion skills may be a crucial part of interventions encouraging aggressive youth to inhibit their dominant responses in favour of prosocial responses.

As mentioned in the introduction to ART, ACT sessions help individuals to identify internal cues of emotional state. Anger cues are described as warning signs for increasing anger and individuals are encouraged to express in drawings, role-play and verbalise these physical sensations. Describing their own and others' cues are part of every subsequent ACT session. Thus ART provides opportunity for rehearsal and reflection to improve the emotional awareness and clarity, necessary for ER. As such this supports the hypothesis that ART will improve ER, which may contribute to aggressive behaviour in some adolescents. Essentially ART attempts to improve reflective processing of emotion information, which is thought to help individuals form more advanced representations of social situations (de Castro, 2010). This notion is supported by research finding that children's attributions of intent are more accurate when they are asked to consider the emotion information contained within a video provocation (Lemerise, Gregory & Fredstrom, 2005). Directing children to attend to emotion cues (a procedure designed to make the process more reflective than automatic) appears to encourage reflection and modify attributions (Lemerise et al., 2005). Questioning aggressive children about the provocateurs emotions reduced rates of aggressive responses to the same level as non-aggressive children. Thus aggressive children are capable of opting for prosocial responses when they consider others' emotions but they appear to less frequently do this automatically (Lemerise et al., 2005).

Although capacity for reflective processing improves from older childhood to adolescence, the above research indicates that some individuals may benefit from further

training. Given that socially maladjusted peers express negative affect more frequently (Eisenberg et al., 1997), and that adolescents experience more labile negative affect (Silk et al., 2003; Spear, 2000), multiple social situations in the school context are likely to involve misunderstandings about emotion. Without reflection these misunderstandings may lead to unnecessary conflict. Aside from training in emotion cues as described above, interventions should also help adolescents to understand the effect that their expression of negative emotion has on others, the need to communicate themselves clearly to avoid being misunderstood, and to ask about others' emotions to avoid their own misinterpretations (Casey, 1996; Lemerise et al., 2005). The social skills training in ART includes dedicated sessions for modelling and role-plays of the skill 'understanding the feelings of others' and 'expressing your feelings', these skills are also incorporated into ACT sessions. Again ART provides the structure and content for improving reflective processing of emotion information, which appears to promote prosocial behaviours, therefore strengthening the hypothesis that ART will improve skills necessary for ER and reduce aggressive behaviour.

### **Temporary Emotional States**

Reflecting on our own and others' emotional states appears to reduce aggressive behaviour, but is this more difficult when in a negative mood state? Negative mood states may alter how emotion information is processed, increase the likelihood of hostile interpretations and also prevent aggressive individuals from reflecting adequately on the situation. When emotionally aroused an individual's action tendencies may preside (see earlier definition on p.30). Emotions may also promote particular behavioural responses through affective-cognitive representations (Izard, 1991; Lemerise & Arsenio, 2000<sup>7</sup>; Schultz

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<sup>7</sup> Lemerise and Arsenio (2000) refer to these links as somatic markers, for example experiencing fear may prioritise access to an avoidance response, the enactment of which has previously been associated with the reduction of fear.

et al., 2004), such that anger promotes aggression in those with extensive aggression-related cognitive networks. Negative induced mood has greater influence on subsequent information processing in those with behaviour difficulties (de Castro et al., 2003a; Harper, Lemerise & Caverly, 2010), suggesting inadequate ER. Subsequent to an unfair loss on a computer game, highly aggressive boys attributed more hostile intent regarding an unrelated ambiguous provocation (de Castro et al., 2003a). Similarly, subsequent to an angry mood induction, aggressive children chose self-focused over other-focused goals (Harper et al., 2010). This suggests that regulating emotional arousal, to facilitate accurate SIP, may be more difficult for some individuals and is therefore an appropriate target for intervention.

Evidence that regulating negative mood reduces aggression suggests that teaching ER techniques in interventions is beneficial. Indeed asking aggressive individuals to monitor and regulate their own emotions, after listening to a provocation designed to induce negative mood, reduced aggressive responses (de Castro, Bosch, Veerman & Koops, 2003b). Aggressive choices increased however, if children were instructed to consider the provocateur's emotions, to wait before responding, or to focus on one's own mood without attempting to regulate it (de Castro et al., 2003b; Harper et al., 2010). As reflection on others' emotions under neutral conditions facilitated prosocial responding (Lemerise et al., 2005), this suggests that reflection is unhelpful without sufficient regulation of one's own emotional state. This may be because when children focus on their own negative affect, or the potential for hostility where no counter evidence is available, they are motivated to pursue self-interested behaviour (de Castro et al., 2003b; Harper et al., 2010).

Mood induction research indicates that ER is an important focus of interventions as emotional arousal interferes with SIP, especially for those with aggressive tendencies, As ER

difficulties are prominent in externalising youth (Neumann et al., 2010; Vasilev et al., 2009; Weinberg & Klonsky, 2009), and arousal often leads to automatic processing, extensive practice in prosocial responses is necessary to increase their accessibility at these times. Given that negative mood states exacerbate aggressive responses, interventions should help individuals become aware of, and monitor, their own emotions (de Castro et al., 2003b). Mood induction research highlights the importance of clear instructions to regulate one's own emotions in order for accurate processing of any other emotion information that is available. Techniques for reducing negative emotional arousal should be introduced prior to instructing an individual to think about the emotions of the provocateur, to avoid exacerbating hostile attributions.

In ART, the “angry behaviour cycle” (Figure 3.1) is a systematic method for self-instruction in prosocial responding. ART takes account of the above research by prompting ER to facilitate comprehensive reflective processing of all the affective information available. The instruction to generate a “reducer” (an arousal reducing technique) may motivate inhibition of the dominant aggressive responses (as in de Castro et al., 2003b). Individuals who are taught to use a “reducer” (i.e. count to ten) may only benefit if they understand the purpose of this reducer, as lack of motivation to regulate emotion is associated with aggressive behaviour (Hubbard, Parker, Ramsden & Smithmyer, 1998, as cited by de Castro et al., 2005). Explaining the rationale for “reducers” is therefore particularly important, this is the purpose of the “reminder” in ART (a self-instructional statement designed to reinterpret and defuse internal triggers). Without this “reminder” an individual may be less motivated to modify interpretations. The “angry behaviour cycle” demonstrates how ART accounts for an individual's need to understand that the purpose of ER is to enable reflection. Every student role-plays the “angry behaviour cycle” up to the point it has been learnt in each session of

ACT to optimise practice and feedback. ART emphasises that emotion influences appraisal of situations and provides the opportunity for development of reflective ER skills; thus providing support for the hypothesis that ART will improve ER and reduce aggressive behaviour.

Not only do pre-existing emotional states influence subsequent information processing, but also the processing during the interaction may alter emotional states. Evaluations of others' motives and intentions may elicit new internal affective cues, may change the intensity of a pre-existing mood and may alter the goals of an interaction. Selecting or attaining a goal may also modify mood as is discussed in the following section.

### **Goal Clarification**

Goal selection involves defining the desired outcome of a situation. Emotion can inhibit or motivate a particular goal, but selecting or attaining a goal can also regulate emotion (Crick & Dodge, 1994; Lemerise & Arsenio, 2000). For example fear of being hit might inhibit a person from their goal of getting back a football, whereas anger might motivate a person to get back a football. At the same time, getting back the football may reduce anger arousal. Defining goals and selecting responses are typically deliberative processes (Crick & Dodge, 1994; Fontaine, 2008), however poor ER skills are likely to interfere with deliberate assessment of the situation (Lemerise & Arsenio, 2000). Self-focused and instrumental goals are associated with aggression (Lemerise, Fredstrom, Kelly, Bowersox & Waford, 2006), as are goals of dominance and revenge or retaliation (in children: Lemerise et al., 2006; and in adolescents: Lochman, Wayland & White, 1993).

Relational goals require more processing of information (including others' perspectives) and are therefore considered more effortful and complex than instrumental goals (Lemerise & Arsenio, 2000). Experiencing anger increases the likelihood that an individual will select goals of personal gain (instrumental goals) over social or relational goals, especially for aggressive children (Harper et al., 2010). Aggressive children in this research were also those rated as less accepted by peers however, and therefore may be less relationally motivated than aggressive children who are still highly accepted by their peers<sup>8</sup>. Nevertheless, when children focus on their own negative affect they are motivated to pursue self-interested goals; emotional arousal puts additional pressure on SIP, and only children with sufficient ER skills are able to maintain prosocial responding under such conditions (Lemerise et al., 2006). As relational goals may provide more motivation to regulate oneself in adolescence, when peers are of increased importance, the effect of anger on goal selection may be different to the effect with children (6-9 years; Harper et al., 2010).

The nature of the affective relationship with one's interaction partner is also influential in selecting goals. Due to the effort required, relational goals may be forfeit when demands on SIP are high, however the relational goals may be maintained if the relationship outcome is important. Many scenarios used in SIP research are based on interactions with an unknown provocateur, but when the interaction partner is a known peer children prefer relational goals that preserve the relationship (Burgess, Wojslawowicz, Rubin, Rose-Krasnor & Booth-LaForce, 2006). Provocations involving a mutual friend led to more adaptive attributions, attenuated emotional arousal and more appeasement goals than revenge goals in response to the situation (Burgess et al., 2006). Equal levels of embarrassment and anger

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<sup>8</sup> Less well accepted children also tend to be less socially competent and have lower self-efficacy for prosocial behaviours, thus may be less likely to pursue these goals when angry. It would be important to compare aggressive-rejected and aggressive-accepted children to determine whether the goal selection was influenced by peer status or aggressive tendencies.

were reported by aggressive and non-aggressive children, suggesting that aggressive children can regulate emotions sufficiently to choose relational goals when motivated to do so. Research indicating that aggressive children are more likely to act in accordance with relational goals when less emotionally aroused, or with known peers, suggests that motivation is an important target for interventions (Burgess et al., 2006; Harper et al., 2010; Lemerise et al., 2006).

Interventions that are aimed at promoting pursuit of prosocial goals need to address conditions that influence goal choice. Interventions should help aggressive individuals understand the impact of negative emotional states on goal choice (de Castro et al., 2003a). For example, understanding that anger increases behaviours that may be detrimental to relationships may motivate an individual to use an ER strategy. ACT explicitly teaches individuals to use physical and verbal ER to reduce the interference of emotional arousal with higher level cognitive processes, improving reflective processing and therefore reducing the risk of emotional action tendencies overriding considered goal setting (de Castro, 2010). SST helps individuals evaluate what they want to achieve in a social situation and includes a range of social skills in which the goals are prosocial or relational, for example “negotiating”, “avoiding trouble with others” and “dealing with group pressure”. SST and MR sessions encourage discussion of motivations and justification for goal choice, and reinforce decisions that demonstrate empathy and perspective taking. ART teaches the skills necessary for regulating emotions and reflectively choosing prosocial goals, indicating that it is likely to both improve ER and reduce aggression.

ART involves peer role-plays and peer appraisal of performance, which is likely to elicit levels of arousal, and therefore creates appropriate conditions under which individuals

must learn to recognise emotions and behavioural drives. Given that interaction partners also attenuate emotional arousal and enhance motivation for relational goals, role-plays with a range of peers is appropriate when training individuals to use ER skills. An adolescent's ability to perform ER strategies during ART sessions will influence their perceived ER ability. The current research asks adolescents to self-report on their perceived ER difficulties following practice in peer role-plays, therefore these reports may approximate more closely performance outside of ART sessions.

### **Response Evaluation and Decision (RED)**

Typically, in adaptive SIP, once an individual is clear about their goal, they generate and evaluate possible responses, before selecting their preferred option (Crick & Dodge, 1994). The response evaluation and decision (RED) stage involves evaluating the value of the possible responses and their outcomes, and comparing and selecting a response (Fontaine, 2008). The relationship between hostile attribution and aggression is mediated by adolescents' evaluative processing (Fontaine et al., 2010), suggesting that adequate evaluation enables prosocial responding. ER facilitates perspective taking selection of a more competent response (Saarni, 1999), and although inadequate ER is likely to interfere with evaluative processes (Fontaine, 2008) this has not been investigated with adolescents.

In reactive aggression, heightened emotional arousal may interfere with higher level cognitive functions necessary for making evaluative judgements, and the RED stage may be bypassed (Fontaine, 2008). For reactive aggressors, action tendencies and/or affective-cognitive associations may lead to aggressive responding to stimuli before evaluation can occur (de Castro, 2010; Izard, 1991; Lemerise & Arsenio, 2000; Schultz et al., 2004). To demonstrate this, reactive aggressors enact aggressive responses despite expecting a poor

outcome from this type of behaviour, whereas non-aggressive boys select prosocial responses based on the expectation this would achieve their goals (de Castro, Verhulp & Runions, 2009, as cited by de Castro, 2010). This suggests that emotional arousal may result in aggression before reflection on potential outcomes can occur (de Castro, 2010; Lemerise & Arsenio, 2000).

Proactive aggressors do not appear to bypass the RED stage, instead they evaluate aggressive responses positively (Dodge, Lochman, Harnish, Bates & Pettit, 1997). Proactive aggression is deliberate behaviour aimed at achieving a self-focused goal, influenced by perceived self-efficacy in, and expectations of positive outcomes from aggressive responding (Arsenio et al., 2009). Although proactive aggressors do not experience interference of evaluative processes due to dysregulated negative emotion, the goal of proactive aggression may be in part to produce positive emotional outcomes, and therefore proactive aggression does serve an ER purpose (de Castro et al., 2005). Also, although proactive aggression is not consistently associated with deficits in self-regulation (White, Jarret & Ollendick, 2012), most individuals with elevated proactive aggression also show elevated reactive aggression (e.g., Dodge et al., 1997); this suggests that they would still benefit from training in adaptive ER strategies. In fact, adaptive ER predicts decreases in reactive *and* proactive aggression over a 6 month period (Calvete & Orue, 2012). Interventions focusing on improving emotion-related skills have also found improvements in aggression (Riggs et al., 2006; Durlak et al., 2011; Castillo et al., 2013) although few studies have assessed change in reactive and proactive subtypes (one example is Mills, in press).

Improving knowledge of, and therefore access to, adaptive ER strategies may reduce reliance on aggressive responses. Aggressive individuals generate fewer potential responses

to situations, assess aggressive response options as preferable to prosocial responses across several evaluative domains<sup>9</sup> (de Castro, 2010), and have limited ability to access socially competent alternatives (de Castro, 2010; Dodge, Laird, Lochman & Zelli, 2002; Quiggle, Garber, Panak & Dodge, 1992). Aggressive children and early-adolescents are also less likely to generate or use ER responses (e.g., problem-solving strategies, distraction, cognitive reappraisal) than their non-aggressive peers, and often report that their emotions could only be regulated by other people (de Castro et al., 2005). Teaching ER strategies is therefore an important component of an intervention; although as the process appears to differ between aggressive subtypes, some individualisation of training should occur. If reactive aggressors tend to become angry and act impulsively, without evaluating aggression positively, the focus should be on ER. For proactive aggressors, whose behaviour may be driven by an expectation that aggression will improve their mood and benefit personal goals, the focus may need to be on acquiring, and increasing the value of, prosocial alternatives. Regardless of the focus, individuals need to perceive themselves as capable of enacting prosocial responses and expect positive emotional outcomes. Multi-modal interventions such as ART are equipped to address the emotion skills underlying ER to enable reflective processing, but also increase the motivation and self-efficacy to perform prosocial responses.

ART teaches individuals to “think ahead” and anticipate possible emotional and relational outcomes following pro- and anti-social responses. ACT and SST sessions involve explanations and discussion of short- and long-term consequences of certain behaviours with the intent to motivate individuals toward prosocial goals and behaviour. ACT and SST sessions involve learning self-evaluation of performance and success within role-played

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<sup>9</sup> Proactive aggressors identify positively with aggressive behaviour (internal congruence), they consider aggression to be socio-morally acceptable (response valuation), they perceive themselves to be capable of effectively performing the aggressive act (response efficacy), and they expect aggressive responses to lead to both positive emotions and social acceptance (outcome expectancy) (Fontaine, 2008).

social interactions and, as with ER skills, individuals' perceptions of their ability to perform prosocial responses, should improve. Improving self-efficacy for prosocial responses and increasing expectations of positive outcomes, should reduce reliance on antisocial responses.

### **Chapter Summary**

This chapter outlined the role of emotion skills and ER in SIP, and attempted to draw theoretical links between these skills and features of ART to support the hypothesis that ART will improve ER and reduce aggression. Monitoring and awareness of one's own and others' emotions, and reflective processing is important for accurate interpretation of social situations, to avoid misappraisals that may lead to aggressive behaviour. Emotional arousal can interfere with reflective processing and override evaluative processes. ART provides the educational content and structure for learning ER strategies and to improve reflective processing of emotion information, which appears to promote prosocial behaviours. Access to ER strategies, that an individual believes they can successfully enact, is necessary for prosocial behaviour. A lack of regulation strategies indicates a deficit in emotion skills or knowledge (de Castro et al., 2005) that aggression interventions should address.

Adolescents who are deficient in emotional understanding and regulation skills may also lack *motivation* to undertake the effortful processing required for prosocial responding. ART educates adolescents about the negative consequences of dysregulated emotion, and provides a system for practising skills to both reduce the effort involved in SIP and increase the dominance of prosocial skills reducing the motivation necessary for socially competent behaviour. ART sessions create appropriate conditions, involving emotionally provoking situations with peers, under which individuals can practice recognising emotions and

behavioural drives as they unfold. The next chapter will discuss types of aggression intervention and the extent to which their impact on ER has been examined.

## CHAPTER 4

# **AGGRESSION INTERVENTIONS: IS ART SUITABLE FOR NZ SCHOOLS?**

The first chapters of this thesis identified that youth aggression is a problem in schools and communities in NZ, and that research into interventions with younger children is favoured in the literature above that with adolescents, particularly with regards to school-based programmes. Social information processing (SIP) theory was identified as a useful basis for intervention research and emotion regulation (ER) was noted as an important, but less researched, aspect of this theory. The second chapter explored the association between aggression and ER, and emphasised the importance of ER during adolescence. In the third chapter research into the role of emotion ER in SIP was examined, and theoretical links drawn between this and the content and structure of Aggression Replacement Training (ART). The purpose of this was an attempt to establish ART as a worthwhile and theoretically robust intervention for improving ER. This chapter gives a brief overview of the research evidence for systemic and school based aggression interventions for adolescents and argues that ART is suitable for trial in the NZ school context.

Multi-systemic interventions, specifically designed for adolescents, are utilised in NZ for youth offenders or for youth who have been removed from their homes. School-wide programmes are implemented in approximately 40% of secondary schools with positive initial indications in NZ (MoE, 2013). Outcome measures typically relate to the intended target for change, using broad behavioural measures (i.e. recidivism, disciplinary actions or school attendance) rather than individual-level psychological change. This is of limited use in understanding the potential effect of aggression interventions on ER. Other individual programmes are typically resource intensive therefore delivering these interventions to all

students who may benefit would overstretch the professional capacity of NZ schools, begging the question: could group programmes be a useful adjunct to school-wide interventions? Studies of ART with offenders and with adolescents in schools suggest that ART may indeed be an effective programme (e.g., Currie, Wood, Williams & Bates, 2012; Langeveld, Gunderson & Svartdal, 2012).

Several studies also indicate that interventions based on SIP theory, with teaching components targeting ER, have improved emotion skills with preadolescents, suggesting adolescents may benefit also. Research strongly indicates that adolescents struggle with ER but aggression interventions rarely measure change in ER. This may be because ER was relatively recently identified as an important risk factor for aggression, or that it is a less tangible outcome for government or social agencies who may be responsible for funding aggression research in schools. The current research will examine both the effect of ART on ER and aggression. This chapter ends by considering how the cultural appropriateness of ART should be evaluated at this level of feasibility research.

### **Multi-Systemic Interventions for Adolescents**

Systemic therapies are those that intervene through the context of social systems, focus on interpersonal relations and interactions, and include multiple person and environment influences (Von Sydow, Retzlaff, Beher, Haun & Schweitzer, 2013). These interventions are sometimes referred to as multi-systemic, as they combine two or more intervention domains (i.e., school, family, interpersonal skills training). Several systemic therapies have been designed for adolescents; multi-systemic therapy (MST; Henggeler & Lee, 2003) is supported by the greatest number of trials with the lengthiest follow-up period (von Sydow et al., 2013).

MST aims to effect change in the home, school and community systems that are maintaining adolescent antisocial behaviour. Intervention components are tailored to meet the needs of the family, but involve both parent and teen skill development. For the teen this involves improving developmentally appropriate competencies (i.e., social, academic and self-management skills). MST emphasises positive family systems, increasing personal responsibility, reducing interactions that maintain target behaviours, treatment team accountability for intervention plans, and promoting generalisation across contexts. MST involves intensive input from a trained therapist on a daily to weekly basis, for between 3-5 months, with 24 hour support from a collaborative team. A systematic review of RCTs of MST consistently found long-term benefits for behavioural problems and reduced recidivism (von Sydow et al., 2013) and concludes that MST is well established for the treatment of social problems and delinquency, despite several null effects reported (Littell, Popa & Forsythe, 2005; Sundell et al., 2008). A meta-analysis of seven studies reported a medium effect size (.55) for MST, with larger effects on measures of family relations than individual adjustment (Curtis, Ronan & Borduin, 2004). MST has been trialled in NZ with youths aged 8-18 years engaged in or at-risk of criminal offending behaviours (Curtis, Ronan, Heiblum & Crellin, 2009). Post-treatment reductions in frequency of offending, improvements in school attendance, family functioning and basic individual psychosocial adjustment were reported; effects were similar in size to those observed in the other RCTs however there was no control comparison group (Curtis et al., 2009).

Several other systemic therapies are residential programmes and therefore only suitable for adolescents who are removed from their family homes by juvenile justice or child services. Teaching Family Homes (e.g., Davis & Daly, 2003) and Multidimensional Foster Care (MDFC; Chamberlain & Smith, 2003) were recently recommended for further

evaluation in NZ (AGCP, 2013). These residential programmes involve a qualified couple applying a high level of monitoring and supervision for the adolescent, alongside an individual behavioural management and skills development plan. The emphasis within the home is on positive, predictable relationships and environments. A recent meta-analysis of 24 systemic therapy studies, including MST and MDFC, found equivalence of these therapies for improving conduct problems over treatment as usual (Baldwin, Christian, Berkeljohn, Shadish & Bean, 2012).

Systemic interventions define conduct problems in terms of the functioning of the youth's social system, rather than as a result of skill deficiencies. This is reflected in outcome measures that are more often frequency of problem behaviours within certain contexts (i.e., home, school, community) and relationships. Improvement in delinquent behaviour appears to be the most robustly found outcome measure (Baldwin et al., 2012; von Sydow et al., 2013). There are a number of parent and family variables that have been associated with adolescent outcomes; in one study of MST with adolescent offenders, improved family relations (i.e., quality of family functioning, family cohesion, and parent monitoring) predicted decreased delinquent peer affiliation and delinquent behaviour (Huey, Henggeler, Brondino & Pickrel, 2000).

Of the RCTs reviewed by von Sydow et al., (2013), few systemic interventions reported on changes in individual psychological functioning (e.g., internalising and externalising symptomatology; Ogden & Hagan, 2006), although many reported on aggregated youth adjustment (e.g., Curtis et al., 2009). Research by Nickel et al., (2005) is one exception that reported improvements in anger control and emotional role functioning but

not on ER. There is little in the literature about the influence of systemic therapies on adolescents' ER, and therefore no indication that this type of intervention would improve ER.

### **Summary of Systemic Interventions**

The research discussed above suggests that systemic therapies are a useful form of intervention for adolescents with increased risk of offending (von Sydow et al., 2013). MST (Henggeler & Lee, 2003) is well supported as an adolescent intervention that successfully reduces recidivism and in some cases improves family and individual functioning. MST is beneficial for NZ adolescents who have been identified as at-risk of offending (Curtis et al., 2009). Few studies of systemic therapies disaggregate broad outcome indicators of individual-level change, and changes in ER do not appear to be reported. Multi-systemic interventions are expensive and resource intensive, sometimes requiring out-of-home placements, and are therefore reserved for use with adolescents who require this level of intervention. So what is the next step down from multi-systemic interventions, and does it adequately reach the population who show maladaptive aggression but who are not *known* to be involved in offending behaviour?

### **School-Based Interventions for Adolescents**

Therapeutic interventions that do not take account of the school context may neglect important behavioural influences and forego opportunities to enhance skill development (Weisz & Hawley, 2002). There are several types of intervention offered in NZ schools up to age 14 years, as described in chapter one (p.7). Similar to the systemic interventions described above, the NZ education sector's Intensive Behavioural Support Service provides individualised plans for a multi-systemic programme (MoE, 2012). This service is for individuals with severe behavioural problems and may involve advice and specialist support

for the individual and/or their parent (or caregiver) in school, community or home contexts (MSD, 2007). There has been no evaluation of the effectiveness of this service as yet, and few students currently receive such intensive support. In an analysis of school-based intervention research, 11 reviews and meta-analyses reported moderate to strong effects of interventions on youth violence-related outcomes (Matjaska et al., 2012). A meta-analysis of school-based intervention programs for aggressive behaviour, across all aged students, indicated that the most effective approaches were universal programmes, and targeted programmes for selected students (with effect sizes of .21 and .29 respectively; Wilson & Lipsey, 2007). This section reviews evidence for universal and targeted interventions for adolescents.

### **Universal Programmes**

Universal programmes are those that are delivered to all children within a class, regardless of risk status for aggressive behaviour. In NZ, School-Wide Positive Behaviour Support (SWPBS; Sailor et al., 2010) and the Good Behaviour Game (Tingstrom et al., 2006) are recommended universal programmes for adolescents (AGCP, 2013). SWPBS is an approach designed to improve use of evidence-based behavioural and classroom management practices (Sugai & Horner, 2009), therefore specific application varies across schools. The key features of SWPBS are constant across settings and include: positive reinforcement and functional behavioural assessment, a focus on prevention and teaching interventions, and creating a culture to assist generalisation of behaviours (Sugai & Horner, 2009). Solomon, Klein, Hintze, Cressey & Peller (2012) found few reports of SWPBS in high schools, however aggregated published reports show low to medium effect sizes in reducing observed problem behaviours and disciplinary referrals.

Evaluations of SWPBS in secondary schools indicate that older students do benefit from this intervention, as indicated by a reduction in disciplinary actions (Bohanon et al., 2006; MoE, 2013; Flannery, Fennig, Kato & McIntosh, in press), increased attendance and academic achievement (MoE, 2013). Some meta-analyses of school-based universal programmes show that younger students show larger decreases in problem behaviours (Wilson & Lipsey, 2007) and larger skill increases (Durlak et al., 2011) than older students, but the lack of research in high schools has prevented the investigation of age as a moderating factor in some meta-analyses (e.g., Solomon et al., 2012). Nevertheless, adolescents may not benefit to the same extent as younger students.

Universal programmes have some similarities to the systemic approaches described above as the focus is on how an individual functions within their school system. As such universal interventions do not typically report on individual psychological outcomes, therefore little is known about their impact on ER. One exception is Promoting Alternative Thinking Strategies (PATHS; Kam et al., 2004, as discussed on p.49), a universal intervention for preadolescents, that improves emotional understanding, perceived efficacy in managing emotions and recognition of others' affective cues, and reduces aggressive behaviour (Kam et al., 2004). The PATHS programme has not been evaluated with adolescents, therefore findings can only be extrapolated from younger ages to inform interventions with adolescents. The targets of change in PATHS are guided by SIP theory (Crean & Johnson, 2013), and there is much overlap in content with ART, suggesting similar improvements following ART could be expected.

## **Targeted Programmes**

Targeted programmes are delivered to at-risk students typically outside of normal classes. Individuals with higher levels of behavioural disorder consistently benefit more from interventions than lower-risk individuals (e.g., Wilson & Lipsey, 2007). Therefore although targeted interventions tend to be more costly, they are considered to have a “high rate of social and economic return” and this supports the notion of intervening across the lifespan (Office of the Prime Minister’s Science Advisory Committee [OPMSAC], 2011, p.2).

Targeted programmes recommended by the AGCP (2013) for adolescents are Check & Connect (C&C; Christenson et al., 2008) and Prevent-Teach-Reinforce (PTR; Dunlap, Iovannone, Wilson, Kincaid & Strain; 2010). C&C involves systematic monitoring (of attendance, behavioural problems and academic progress), tailored counselling and guidance services, provided to individuals by a qualified mentor (Christenson et al., 2008). C&C emphasises improving communication between school and home, problem solving, conflict resolution and engaging the student in school activities. Students participating in C&C are more likely to stay in school, and there is some evidence of improved academic achievement (What Works Clearinghouse, 2006). Outcome measures are generally restricted to indicators of school engagement as befits the content and aims of this intervention.

PTR (Dunlap et al., 2010) consists of a functional assessment to inform an intervention around the conditions that are maintaining an individual’s antisocial behaviour. PTR involves a number of techniques to teach and reinforce the skills necessary for alternative behaviours, and to motivate attendance, engagement and academic progress. Although there is limited research supporting PTR, a preliminary RCT suggest that students aged 5-14 years had significantly fewer problem behaviours and higher social skills after two months of PTR, compared with students who received services as usual (Iovannone et al.,

2009). The availability of specialist support and intervention services for behaviourally disordered youth in NZ is inconsistent, especially for adolescents (MSD, 2007). This undoubtedly impedes evaluative research.

Targeted interventions consistently had larger effect sizes than universal interventions in a meta-review of school-based studies (Matjaska et al., 2012). Younger and older students appear to benefit equally from targeted interventions, although this finding is based on a meta-analysis in which 70% of studies involved 6-13 year olds (Wilson & Lipsey, 2007). Within targeted interventions higher-risk participants showed larger effect sizes than lower-risk participants, and interventions with fewer implementation problems also showed larger effect sizes (Wilson & Lipsey, 2007). Although both school-based interventions above are individual, targeted interventions are also commonly run in a group format (e.g., Coping Power Programme; Lochman & Wells, 2002a; 2004), and research does not consistently indicate that individual programmes are any more effective than group programmes (Matjaska et al., 2012).

### **Summary of School-Based Intervention Research**

The research discussed above suggests that school-based interventions are effective in reducing problem behaviours including aggression. School-based literature favours preadolescent research and very few school-based interventions are designed for adolescents. Despite findings that school-based universal programmes are less useful for adolescents and that CBT programmes tend to be more effective with adolescents, two of the school-based interventions suggested by the AGCP in NZ are universal programmes, and the other two are individualised interventions that do not contain specific cognitive components (AGCP, 2013). This report does not recommend a group programme, despite the apparent equivalence of

individual and group programmes, the increased cost-effectiveness group programmes offer, and identifying ART as a promising programme. For universal and targeted programmes outcome measures tend to be behavioural, as typically relevant to school retention and academic progress. This adds little to our understanding of how school based programmes influence psychological variables including ER. A large meta-review of school-based studies indicates superiority of targeted interventions, and those that contain cognitive and social skills components result in larger effect sizes than those without them (Matjaska et al., 2012). There is a clear need for research into the feasibility and effectiveness of a group programme with cognitive and social skills components in the NZ school context.

### **Multi-Modal Interventions**

The developmental models from chapter one acknowledge the many and diverse pathways that lead to aggression. Multi-systemic interventions attempt to effect change in the various systems that maintain aggressive behaviour. Multi-modal interventions recognise the various individual-level risk factors that contribute to aggression, and attempt to effect change through addressing more than one aspect, (i.e., cognitive, emotional or behavioural deficits; Goldstein et al., 2004). A meta-analysis of CBT outcome studies finds that multi-modal treatments were more effective than problem solving or affective education alone, in reducing aggressive behaviour and improving social skills with children and adolescents (Sukhodolsky et al., 2004). Many multi-modal interventions are based on the premise that cognitions and emotions influence an individual's behaviour across various situations, and that by modifying the cognitive and affective processes that precede or accompany behavioural responses, social behaviours will change (Goldstein et al., 2004). Thus many multi-modal interventions incorporate affective training and effectively reduce anger intensity and arousal (Sukhodolsky et al., 2004). Of the multi-modal programmes (e.g.,

PATHS, Coping Power Programme, Second Step, ART) only ART has been implemented with adolescents. As described in chapter three, ART offers a comprehensive treatment by addressing social skills deficits, anger management and moral reasoning (Feindler & Engel, 2011).

### **Research Evidence for ART**

ART has gradually gained support as an effective intervention for increasing prosocial behaviour and moral reasoning abilities, and reducing impulsivity and antisocial behaviour (Glick & Gibbs, 2011; Goldstein et al., 2004). ART was initially developed for use in juvenile correctional institutions with aggressive and violent adolescents. Since this time there have been many published descriptions of ART and the programme has been adapted for children, adolescents, and adults in various educational and mental health settings (Goldstein et al., 2004). Early evaluations of ART reported promising results; youth in correctional facilities acquired new prosocial skills, demonstrated reduced impulsivity and intensity of acting-out behaviours, improved moral reasoning and higher post-release community functioning (Goldstein & Glick, 1987). Although other early studies with offenders found less consistent results (Coleman, Pfeiffer & Oakland, 1991; Currula, 1990), more recent evaluations show positive effects (e.g., Barnoski & Aos, 2004; Currie et al., 2012; Hatcher et al., 2008; McGuire & Clark 2004), and a meta-analysis of CBT for offenders report the largest effect size of .16 for ART (Lipsey, Landenberger & Wilson, 2007). A recent study reports initial evidence of the effectiveness of ART with young Australian offenders, finding reductions in aggressive behaviour, antisocial cognitive distortions and impulsivity (Currie et al., 2012). ART evaluation research with offenders is limited by the over-reliance on recidivism as an outcome measure, as this does not inform mechanisms of change. Interventions involving training in anger control or interpersonal

problem solving are associated with larger effect sizes (Lipsey et al., 2007) and there are many clinical outcomes that could inform treatment planning (Serin, Gobeil & Preston, 2009; Currie et al., 2012). The effect of ART on ER does not appear to have been examined, despite suggestions that further research into ER would advance understanding of the mechanisms of change in anger control training (Sukhodolsky et al., 2004).

Several studies of ART in schools suggest benefits in preventing escalation of conduct difficulties before they reach offending behaviours (Gunderson & Svartdal, 2006; Jones, 1992; Langeveld et al., 2012; Nodarse, 1998). School-based ART studies show a decrease in aggressive behaviours and increase in social skills in early adolescent students (Gunderson & Svartdal, 2006), for those with anger-control problems (Jones, 1992), and for those with emotional difficulties (Nodarse, 1998). Jones (1992) also found that students who received the full ART programme showed an increase in coping incidents and self-control, however students who received only moral reasoning showed only an increase in prosocial behaviours. Improvements in moral reasoning have been inconsistent across studies, however, in some cases fewer moral reasoning sessions are included (i.e., Gunderson & Svartdal, 2006). Assessment of effectiveness depends in part on the reporting source; Gunderson and Svartdal (2006) found improved social skills and reduced problem behaviours as assessed by parents and teachers, but not by students. Students' subjective rating of their social skills was improved only if a custom made self-report form was used to assess change.

A more recent RCT of ART with 112 students across Norway found that ART was most effective for those with lower levels of social competence and higher problem behaviours, and that increased self-control and co-operation moderated reductions in problem behaviours (Langeveld et al., 2012). With participants in the normal range of problem

behaviours younger ages tended to benefit more than older ages (Langeveld et al., 2012), however there was no effect of age in students with a greater degree of behavioural disorder (Gunderson & Svartdal, 2006). This may indicate that developmental level is more important than age differences. ART is also reportedly used for the prevention and treatment of behaviour problems at all levels of the education system in all Norwegian counties (Moynahan & Stromgren, 2005). A trial of Family-ART, an enhanced version incorporating a parent component, has recently taken place in Norway, but with small numbers and without a control group, it is yet to be evaluated fully (Johansen, 2012). ART is also incorporated into public school curriculum in parts of America (Goldstein et al., 2004).

Despite efforts to measure more specific outcomes in terms of social skills and problem behaviours, school-based ART evaluation research remains limited by outcome measures that use broad terms (i.e., acting-out behaviours) and the diversity of measures across studies complicates comparisons. Some applications of ART are unpublished, a number of those that are published describe implementation experiences that promote the effects of ART without outcome data (e.g., McGinnis, 2003; Roth & Striepling-Goldstein, 2003), and much of the published research supporting ART does not report statistical outcome data. As there are fewer published research studies of ART in schools, than with juvenile delinquents in residential settings, claims about the effect of ART on less advanced aggressive behaviour are more tentative.

ART outcome research has not reported the effect of ART on the emotion-related deficits that are typically experienced by aggressive individuals. This may be because the social-cognitive theory underlying ART emphasised cognitive over non-cognitive factors for some time. Several studies on the role of emotion in social cognitions and aggression have

emerged since Lemerise and Arsenio's (2000) statement advocating for a more prominent role of emotion in SIP. This culminated in a Special Section in the Journal of Abnormal Child Psychology about the new developments in the role of emotion in SIP (Arsenio, 2010). As described in chapter three, the anger control training component of ART is aimed at reducing the impact of emotion-related deficits at each stage of SIP; however the success of ART has typically been measured in terms of reductions in aggressive cognitions and behaviours, and on occasion improvements in self-control (e.g., Currie et al., 2012; Jones, 1992; Langeveld et al., 2012). Measuring the effectiveness of ART in improving self-control is an approximate measure of ability to control behaviour when emotionally distressed. Although this relates to ER, this outcome measure cannot tell us whether ART improves emotion skills. Research measuring the impact of ART on ER specifically has not been undertaken.

### **Summary of ART Research Evidence**

The research evidence for ART with offenders is reasonably consistent, albeit meta-analytic findings of a weak effect size (Lipsey et al., 2007). More recent research with offenders was not incorporated into this meta-analysis however, and appears to find consistently positive results in reducing recidivism and improving social skills. School-based ART shows promising results, with the most recent RCT indicating that those with higher levels of behavioural problems are most likely to benefit from ART, despite this trial not including adolescents with clinical levels of externalising behaviour (Langeveld et al., 2012). Although our understanding of the mechanisms of change of ART is limited by the use of broad behavioural outcome measures, there are several indications that ART may improve ER. Firstly, ART leads to improvements in self-control (Currie et al., 2012; Langeveld et al., 2012) which is closely related to control of behaviour when emotionally distressed, and these improvements are closely related to reductions in problem behaviours (Langeveld et al.,

2012). Secondly, there are strong theoretical links between ER and the techniques employed in ART, as described in chapter three. Finally, an intervention that incorporates similar techniques to ART has been found to improve emotion skills and reduce aggression in preadolescents.

### **Who Does ART Benefit?**

It is important for school interventions to be provided to those who are most in need and who are most likely to benefit. Several individual characteristics moderate the effect of aggression interventions (i.e., age and level of deficits), but further understanding could inform the design of future interventions (Matjaska et al., 2012). As individuals with the lowest pre-ART levels of social competence show the greatest reductions in problem behaviours (Langeveld et al., 2012), those with the lowest pre-ART levels of *ER* may show the greatest improvements also.

Many researchers have suggested that the moderating effect of ER may be higher for reactive aggression than proactive aggression, given the association between anger and aggressive responding (e.g., Calvete & Orue, 2012; de Castro, 2010). Adaptive ER has however, been associated with decreases in both reactive and proactive aggression, suggesting that when an individual has strategies available to them for regulating their emotions, they are less likely to engage in aggressive behaviours. Availability and ability to perform adaptive ER may reduce aggression as a result of under-controlled anger (in reactive aggression), or when motivated by expectations that positive emotional outcomes only result from aggressive behaviour (in proactive aggression). Learning emotion skills may contribute differently to reducing reactive and proactive aggression, but may be beneficial nonetheless.

Reactive and proactive aggression have a high rate of co-occurrence, suggesting that the majority of individuals are likely to benefit regardless of the specific effect.

Langeveld et al., (2012) provide initial support for the usefulness of ART in reducing proactive aggression; individuals who were high in social competency but also had high levels of problem behaviours pre-ART, showed a decrease in problem behaviours not accounted for by an increase in social competence. The authors suggest that these individuals were aware of the unacceptability and social consequences of their behaviour pre-ART, and that the moral reasoning component may have motivated behavioural changes for these individuals (Langeveld et al., 2012). Indeed in their earlier research, Gunderson and Svartdal (2006) attempted to determine whether moral reasoning had any additional effect over and above the social skills and anger control components of ART. They found a significant improvement in prosocial thinking after moral reasoning training in the treatment *and* control group, which they attributed to a “dilution effect” as participants of both groups interacted within the same school and in some cases the same classrooms (Gunderson & Svartdal, 2006, p.77). The current research adopts a similar procedure, running the moral reasoning sessions after anger control and social skills, to allow assessment of the additional value of the moral reasoning component, as reported by Mills (in press).

The distinction between early- and adolescent-onset disorders is infrequently studied in intervention research (AGCP, 2013). The deficits contributing to aggressive behaviour in each subtype are different, therefore ART may differentially moderate these deficits and their impact on aggressive behaviour. Some deficits in emotion skills may be common to both subtypes, for example impaired recognition of facial expressions (Fairchild et al., 2009), indicating that ER may improve regardless of trajectory. The role of ER in each of these

subtypes has not been well studied, and the current research will not differentiate between these subtypes. Comprehensive assessment of pre-ART skill deficits will help understand the impact that ART has on a range of abilities underlying aggressive behaviour however.

### **Cultural Considerations**

NZ is a multi-cultural society requiring interventions that are culturally appropriate and responsive, however there is a lack of comprehensive data on the wellbeing of minority youth living in the country (OPMSAC, 2011). In NZ, Māori and Pasifika young people represent 20.9% and 9.4% of school students aged 13-19 years respectively (MoE, 2014). Māori children are at increased risk of conduct disorders (Fergusson et al., 2005) and are disproportionately represented in youth crime, with over half the children and young people charged in court of Māori ethnicity (SNZ, 2014).

Māori and Pasifika students are also more likely to receive exclusionary sentences from school (MoE, 2014)<sup>10</sup>. Compared to European NZ students, Māori and Pasifika youth are more likely to live in high deprivation areas and attend lower decile schools, where rates of exclusionary disciplining is higher (AHRG, 2012b; MoE, 2014). Māori students also reported being disproportionately exposed to domestic violence compared to their European NZ peers (AHRG, 2012b). This suggests that although minority ethnicities are more likely to be exposed to multiple risk factors associated with lower socio-economic status, these risk factors increase the likelihood of adverse outcomes in adolescence for a child of any ethnicity. The NZ government acknowledges the scant evidence-base for effective interventions for Māori adolescents but recommends that interventions should be targeted

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<sup>10</sup> In 2012 the age-standardised stand-down rate for Māori and Pasifika students was 2.4 and 1.5 times higher than European NZ students respectively (42.8 and 27.7 stand-downs per 1,000 (MoE, 2014).

according to risk rather than ethnicity (OPMSAC, 2011). A meta-analysis of psychotherapeutic interventions showed comparable effectiveness for minority and non-minority youth (a medium effect size at post-intervention and retained at follow-up; Huey & Polo, 2008). Although they report that ethnicity has no significant moderating effect on intervention outcomes, it is unclear from this review whether cultural adaptations to interventions lead to enhanced treatment outcomes due to methodological limitations (Huey & Polo, 2010).

As the majority of participants in the current study were of Māori or Pasifika ethnicity, cultural appropriateness of ART was carefully considered. Cultural appropriateness refers to the extent to which programmes are developed and delivered in a way that is considered appropriate by the ethnic minorities to whom they are delivered (AGCP, 2013). Improving cultural appropriateness of conduct programmes for minority adolescents can focus on development, implementation and evaluation of programmes designed by ethnic minorities (i.e., kaupapa Māori programmes) and/or adaptation of generic programmes to be more culturally relevant (AGCP, the 2013).

Although there have been few evaluative trials for kaupapa Māori interventions or Pasifika services for adolescents (OPMSAC, 2011), there are several such programmes described by AGCP (2013). One example run in a small number of schools, Te Mana Tikitiki (Carlson & Longi, 2011), is a group intervention for preadolescents focusing on communication, positive role-models, identity, belonging and achievement centred on Māori practices and teachings (Carlson & Longi, 2011; MoE, 2012). A school-wide framework for

a comprehensive kaupapa Māori behaviour intervention service, Huakina Mai<sup>11</sup>, was also planned for piloting in 2014 (MoE, 2012). Efforts to develop and evaluate these types of programme are essential, however it is also useful to adapt and evaluate programmes that have a significant evidence-base internationally as these often have potential for cross-cultural application. In adapting generic programmes a balance must be found between sufficient adaptation and retaining programme fidelity (Cherington, 2009). Cultural adaptations vary across studies but include: therapist knowledge and training in working with ethnic minority, therapist-client ethnic match, involvement of family and peers, and adaptation of programme content or resources for cultural relevance (Cherington, 2009; Huey & Polo, 2008). Cherington (2009) states that as a starting point consultation with key cultural groups, inspection of programme content, client satisfactions surveys and statistical comparisons of rates of participation should be reported<sup>12</sup>.

### **Is ART Culturally Appropriate for the NZ context?**

ART has been produced positive results with European, American, African American minorities and Australian cultures (e.g., Currie et al., 2012; Langeveld et al., 2012; Nugent et al., 1998). Although ART research has not reported whether ethnicity moderates programme effectiveness, cognitive-behavioural approaches like ART have the strongest record of positive outcomes with minority youth (Huey & Polo, 2010). ART is described as being most effective when delivery considers culturally relevant notions (such as strengths versus deficit explanations, communication styles and instructional strategies), and when the facilitators

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<sup>11</sup> Huakina Mai is based on restorative practice (Hui Whakatika) which has been associated with reduced rates of exclusionary practices and enhanced perceptions of school climate (Adair & Dixon, 2000; Gordon, 2011; Moxon, 2003 as cited by Boyd, 2012). Restorative justice practices are being implemented as part of the PB4L action plan (MoE, 2012).

<sup>12</sup> For a more detailed account of cultural appropriateness and responsiveness, and the concepts of Kaupapa Māori interventions, see AGCP (2009, 2011, 2013).

understand and are sensitive to cultural differences between facilitator and participant (Glick & Gibbs, 2011; Goldstein et al., 2004). Some amendments to language and the cultural norms reflected in the moral reasoning problems may be appropriate for certain populations (Currie et al., 2010; Glick & Gibbs, 2011; Goldstein et al., 2004).

As ART has been implemented cross-culturally, examining cultural appropriateness of the programme in NZ appears reasonable. Evaluation of interventions is guided by prevention science and, as recommended by the AGCP (2013), studies should examine programme feasibility before larger scale RCTs are warranted. A general scope of the acceptability of ART to all ethnicities could make use of a qualitative evaluation, to allow the “voice” of participants to be heard (as suggested in Macfarlane, 2012). A comparison of attendance, retention and clinical change between minority and non-minority participants may also indicate engagement (Huey & Polo, 2010). The ethics application procedure for this research involved consultation with a cultural advisor to provide a safeguard for the cultural acceptability of ART on an initial level. Cultural adaptations are described in the discussion (on p.194).

### **Chapter Summary**

The research discussed above suggests that systemic therapies are a useful form of intervention for adolescents with increased risk of offending (von Sydow et al., 2013), however they are available only to a small percentage of the adolescent population and do not explicitly target, or report on, emotion-related skills that are the focus of the current thesis. Few school-based interventions are designed for adolescents, and the evidence supporting interventions currently offered in NZ is mainly from outcome research with preadolescent students. Given that greater responses to programmes are found in higher risk students,

targeted programmes could be a useful adjunct to school-wide programmes, the effectiveness of which tends to lessen for older students (Durlak et al., 2011; Wilson & Lipsey, 2007). CBT school-based programmes have also shown superior results when compared to other forms of interventions (Matjaska et al., 2012) and superior effects with adolescents compared to younger students (Lipsey & Wilson, 2007; McCart et al., 2006; Sukhodolsky et al., 2004). A trial of a group programme such as ART, which targets a greater number of at-risk students than individualised intensive behaviour support programmes is warranted.

The effectiveness of school-based group interventions for adolescents with aggressive behaviour has not been demonstrated by published work in NZ. ART has demonstrated efficacy across various population groups and societies (Glick & Gibbs, 2011). Cognitive-behavioural approaches like ART have the strongest record of positive outcomes with minority youth (Huey & Polo, 2010), and trial of this programme provides an opportunity to evaluate the cultural appropriateness of ART and suggest modifications where necessary. Although there are few published studies of school-based ART, research suggests that students with high levels of disruptive and aggressive behaviour would benefit from this programme. ART has been found to improve social skills, and reduce aggressive behaviour and recidivism, however the impact of ART on the emotion-related deficits typically experienced by individuals with aggressive behaviour has not been reported.

### **Statement of Research Intention**

The ART programme takes account of the prominent risk factors and developmental challenges faced by adolescents. The association between deficits in ER and aggressive behaviour is well established and ER is increasingly identified as crucial during adolescence. Despite a growing interest in ER interventions with adolescents (Courtney-Seidler et al.,

2013), comparatively few interventions designed to reduce aggression have examined their impact on emotion functioning, as opposed to social and cognitive aspects. To improve the effectiveness of interventions with adolescents, it is important to understand the mechanisms of change that may result in reduced aggression, such as improved ER. Interventions aimed at reducing aggression with preadolescents seem to have a positive impact on self-regulation, however ER appears not to have been directly measured. E-SIP (Lemerise & Arsenio, 2000) explains the contribution of emotion processes to aggressive behaviour, and as such is a useful model for hypothesising about the skills necessary for adaptive ER. The research reviewed in previous chapters suggests that individuals who use adaptive ER strategies experience less emotional dysregulation and display less externalising behaviours. This research also suggests that aggression interventions could be improved by teaching individuals emotion awareness, understanding and effective management of emotional expression through adaptive regulation strategies.

If ART is able to teach ER skills, it should improve ER and reduce aggressive behaviour. This idea is supported by strong theoretical links between adaptive ER and the techniques employed in ART (as described in chapter three). These links demonstrate how ART provides the educational content and structure to learn strategies to regulate emotion and improve reflective processing of emotion information, which appears to promote prosocial behaviours. The intention of the current research is to assess changes in adolescents' perception of their ER abilities over the course of ART. Changes in social skills, anger expression and control, aggressive cognitions and behaviour were also measured to investigate their relationship with ER.

This research also intends to assess the feasibility of ART for implementation in NZ schools. This will include a discussion of the acceptability of ART to participants, and the practicalities of implementing and integrating the programme into NZ schools.

### **Project Objectives**

This research aims to investigate whether Aggression Replacement Training (ART) improves Emotion Regulation (ER) ability in early to mid-adolescent college students who present with aggressive behavioural problems. The project has four primary objectives:

1. To investigate the impact of ART on ER.
2. To investigate the relationship between changes in ER and aggressive behaviour.
3. To evaluate the feasibility and effectiveness of ART in New Zealand schools.
4. To add to the existing research on the relationship between the role of ER and aggression in adolescence.

### **Hypotheses**

1. ART participants will report fewer difficulties with ER at follow-up than at pre-intervention.
2. ART participants will report higher anger control, and lower anger expression, externalising and problem behaviours at follow-up than at pre-intervention.
3. ART participants will demonstrate fewer externalising behaviours as reported by teachers and parents at follow-up than at pre-intervention.
4. ART participants will report higher social skills and less aggressive cognitive biases at follow-up than at pre-intervention.

The next chapter will describe the methodology of the research, including sampling and recruitment procedures, participant characteristics, and the design and measures used in the research.

## CHAPTER 5

### METHOD

#### Sampling and Recruitment Procedures

A list of all composite and secondary schools, within the wider Wellington region and with students aged 12-15 years, was obtained using the Te Kete Ipurangi website (MoE, 2012). The following schools were excluded from the list: bilingual schools, 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. All remaining schools (n=52) were invited to participate in research into ART. Of these schools, six expressed an interest in participating and four met with the researchers. The researchers were two Clinical Psychology Doctoral candidates trained in ART implementation, the current author and Mills (in press). The principals of three colleges consented for the programme to commence, and one school decided against participating due to difficulties with capacity and timetabling.

School personnel began a process of identifying students who exhibited a high level of disruptive, aggressive and/or antisocial behaviour at school in comparison to their peers. This process was based on the professional judgement of form tutors, resource teachers (RTLBs<sup>13</sup>), counsellors and/or deans of the year group. Despite problem frequency, only two colleges identified sufficient numbers of students within the specified age range, thus the final sample was across two colleges. Students who were receiving other behavioural interventions were excluded from selection to avoid pre- to post-intervention changes being

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<sup>13</sup> Resource Teachers: Learning and Behaviour (RTLBs) are within-school positions held by experienced teachers who are trained to support the needs of students who have difficulties with learning or behaviour.

confounded by the influence of treatment effects other than the intervention. The schools' RTLBs were the ART liaison person.

The parents of identified students (n=26) were sent a letter explaining the ART programme and requesting informed consent for completion of behavioural screens (described in the measures section) by themselves and the school, and consent for participation in the programme if their child met the inclusion criteria (see Appendix A1 for letter to parents). The information sheet, also sent to parents, explained consent, confidentiality and participants' rights (see Appendix A2). The information sheet also encouraged parents to discuss the programme with their child before deciding whether to provide consent. As students also had to provide written assent to participate it was thought that involving students in the decision making may enhance motivation to engage in the programme.

Parents were invited to contact the researchers and/or attend an information evening to obtain further information before deciding whether to provide consent. Two information evenings were held and five parents/caregivers attended in total. Consenting parents/caregivers (n=25) were asked to complete the behavioural screen for their child and were given the option of completing it independently or with the assistance of school personnel; this process was intended to mitigate problems with English literacy without requiring parents to disclose literacy difficulties. One parent required assistance to complete the behavioural screen. Once parental consent was given, form tutors or deans were asked to complete the behaviour screen for each student. All students who were assessed met the threshold for inclusion as described in the screening measure section below. There were no students excluded from participating in the programme based on these assessments. Students

whose parents consented and who met the inclusion criteria (n=25) were invited to meet with the researchers via the RTLBs. One student decided not to participate before meeting the researchers. Students were asked to give written assent to participate at these meetings (the content of which is described in the procedure below), all students who met with the researchers agreed to participate (n=24) however one student withdrew before starting the programme. Students were assigned to groups based on their college and year group such that students from the same year group and college formed separate groups. Refer to Figure 5.1 for a flow chart for numbers of consenting parents and students.

### **Participants**

Starting the programme were 23 students, aged 13-15 years, in Years 10 and 11 from two colleges in the wider Wellington region of NZ. During the course of the programme one student moved schools and one student chose to discontinue the programme. Two students were removed from the programme due to failure to comply with ground rules and excessive disruptive behaviour. One student was excluded from the final data set despite finishing the programme, due to being unable to complete assessments at all time points. The final sample consisted of 18 adolescents who, at the start of the programme were aged between 13 years 10 months and 15 years 10 months ( $M_{age} = 14$  years 8 months,  $SD^{14} = 9$  months). Table 5.1 displays the gender and ethnicity of the final sample.

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<sup>14</sup> Standard Deviation.

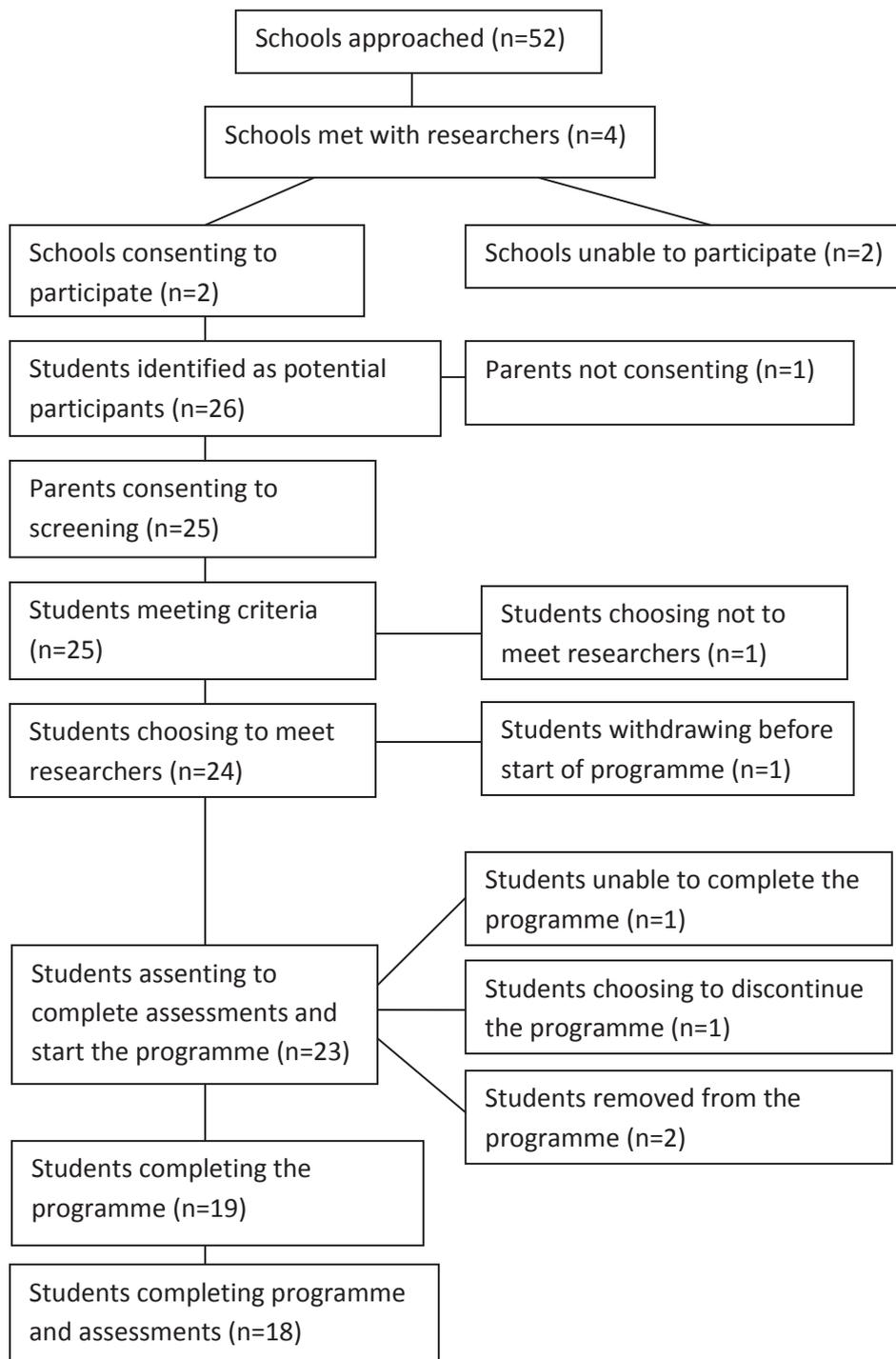


Figure 5.1. Flow chart of parent and student consent, screening and programme completion.

Table 5.1

*Gender and ethnicity of students completing the programme and assessments*

Gender	N	Identified ethnicity		
		NZ European	Māori	Pasifika
Male	12	7	5	0
Female	6	1	3	2

### Procedure

All students who agreed, met with the researchers individually (n=24) to explain the purpose of the intervention, the content and rules of the group sessions, and limits of confidentiality as set out in the student information sheet (see Appendix A3). These meetings took place over several weeks and were followed by participants completing the first half of psychometric assessments, they therefore ranged in duration from 40 to 50 minutes. Students were encouraged to discuss any concerns with the researchers as they arose and were informed that there would be an opportunity to provide feedback at the end of each session and re-assessment sessions. Parents, teachers and students were able to contact the researchers via email during the programme, and for six months following the programme.

Students completed seven self-report measures in a pre-intervention assessment. Assessments and ART sessions took place on college premises. To maximise attention to task, and therefore accuracy of responses, assessments were split across two administrations. Students took approximately 30 and 20 minutes for the first and second session respectively. In the first assessment students completed the Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004), the State-Trait Anger Expression Inventory-2 Child/Adolescent Version (STAXI-2 C/A; Brunner & Spielberger, 2009) and the Social Skills

Improvement System –Student form for ages 13-18 years (SSIS; Gresham & Elliot, 2008). In the second session students completed the Interpersonal Reactivity Index (IRI; Davis, 1983), Little et al’s Proactive/Reactive Aggression measure (Little, Henrich, Jones & Hawley, 2003), How I Think (HIT; Gibbs, Barriga & Potter, 2001) and the Sociomoral Reflection Measure – Short Form (SMR-SF; Gibbs, Basinger & Fuller, 1992)<sup>15</sup>. The assessment measures were individually administered by one of the two researchers, who provided clarification of questions and verbally administered measures when necessary.

Students received the standard introduction to the programme and subsequent instructions and session formats were delivered as prescribed by the ART manual. Session Evaluation Checklists were completed for each session with each group to monitor and maximise fidelity to the programme. The researchers were two Clinical Psychology Doctoral candidates trained in ART implementation, who also facilitated the ART sessions. A master ART trainer<sup>16</sup> provided supervision during the programme.

### **Design**

All students undertook the full ART programme consisting of alternate anger control training (ACT) and social skills training (SST) for 20 sessions, followed by 10 moral reasoning (MR) sessions. The programme was run in 3 hour-long sessions every week for 10 weeks. All students were assessed at pre-intervention (T1), after the 20 sessions of ACT and SST (T2), after MR sessions at post-intervention (T3), and at a 3 month follow-up assessment (T4). All assessments involved students completing the seven self-report measures as

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<sup>15</sup>The IRI, SRM-SF and the Proactive/Reactive Aggression measure were administered as part of Mills (in press) research and therefore will not be reported in this study, see Appendix F for a table explaining the split of data.

<sup>16</sup> Master ART Trainers are certified to participate in program development, curriculum innovation, and independent ART consultation and have undergone personal development courses covering training for facilitators and training for trainers.

described above. Parents and teachers were requested to complete the CBCL and TRF at T1 and T3.

The typical structure of ART is to deliver one ACT, SST and MR session each week over a 10-week period, however the delivery can be manipulated to fit research objectives or the needs of participants. Some ART research programmes have delivered the moral reasoning sessions after the ACT and SST sessions (e.g., Currie et al., 2012) and some include fewer MR sessions (e.g., Gunderson & Svartdal, 2006). The current research adopts this structure to examine the additive value of the MR component, as separate from ACT and SST; this research question is addressed by Mills (in press).

## **Measures**

### **Screening Measures**

**Child Behaviour Checklist and Teachers Report Form for ages 13-18 years (CBCL and TRF; Achenbach & Rescorla, 2001).** The CBCL and TRF for ages 13-18 years are screening measures of adolescent emotional and behavioural problems, exhibited at home or in school respectively. The 113 item scales provide information about the respondent's perceptions of an adolescent's emotional and behavioural functioning, competencies and problems. The respondent rates the adolescent's behaviour based on the previous six months, using a 3-point rating scale for each item ("0=*Not True*", "1=*Somewhat or Sometimes True*", "2=*Very True or Often True*"). The scores generate a profile of the adolescent's behaviours across eight syndrome scales and three problem scales. The problem scales are composites; Internalising, Externalising and a Total Problem Scale. Higher scores represent more serious behavioural dysfunction. When raw scores are converted to T-scores (M=50; SD=10) the results can then be compared against averages for the age and gender of the adolescent.

The inclusion criterion for participation was a T-score equal to or above 60 on the Externalising scale of either the CBCL or TRF. This is the borderline cut-off score reported by Achenbach and Rescorla (2001) and in line with other research practice. The CBCL and TRF are frequently used in behavioural intervention research and have successfully detected post-intervention reductions in externalising behaviour (Riggs et al., 2006). The Externalising scale includes an Aggressive Behaviour subscale measuring behaviours such as disobedience, fighting, making threats and losing their temper, and a Rule Breaking subscale measuring behaviours such as lying, stealing, truanting and drug use. The Externalising scale has a high internal consistency with alphas ranging from .90-.95 depending on the respondent (Achenbach & Rescorla, 2001).

### **Assessment measures**

**Difficulties in Emotion Regulation Scale (DERS; Gratz & Roemer, 2004).** The DERS (Gratz & Roemer, 2004) is a 36 item self-report questionnaire that was used to assess difficulties in emotion regulation across six domains reflected in the subscales: (1) lack of emotional awareness (*LAW*) or the ability to attend to and acknowledge emotions; (2) lack of emotional clarity (*LCL*) or the ability to identify the emotions one is experiencing; (3) non-acceptance of emotional responses (*NA*) or a tendency to have negative secondary emotional responses to negative emotions or not accepting one's reactions to distress; (4) difficulties with impulse control (*DIM*) including poor behavioural control when experiencing negative emotions; (5) difficulties engaging in goal-directed behaviours (*GDD*), such as difficulty concentrating or accomplishing tasks when upset; and (6) limited access to ER strategies (*LS*), for example, the perception that little can be done to regulate emotions effectively. Participants are asked to indicate how often items apply to themselves; items include statements such as "I am clear about my feelings". All items are scored on a 5-point Likert

type scale ranging from 1 (“*almost never*”) to 5 (“*almost always*”). 1 is “*almost never (0-10% of the time)*”, 2 is “*sometimes (11-35% of the time)*”, 3 is “*about half the time (36-65% of the time)*”, 4 is “*most of the time (66-90% of the time)*,” and 5 is “*almost always (91-100% of the time)*”. Higher scores indicate greater difficulties with emotion regulation. Scores for subscales are obtained by summing the items that constitute the subscale. Clinical cut-off points are not available for the DERS although norms for an adolescent sample can be used for comparison (Neumann et al., 2010; Weinberg & Klonsky, 2009).

The DERS was selected to be the main measure of this study from numerous ER psychometrics for several reasons. Firstly this measure reflects the multi-dimensional construct of ER as defined by Gratz and Roemer (2004). Theoretical links between the emotion skills within this construct and the content of ART were described in chapter three, therefore this measure is ideal for testing the hypothesis that ART improves emotion skills. Secondly a review of ER assessment methodology indicated that self-reports were widely used with adolescents (Adrian et al., 2011) and that only the DERS was assessed for convergent validity with a physiological measure (respiratory sinus arrhythmia; Vasilev et al., 2009). Thirdly, the DERS does not ask about management of several specific emotions or a subset of management strategies as an indicator for ER more generally (as in studies that use the Children’s Sadness Management Scale and Children’s Anger Management Scale; McLaughlin et al., 2011). Lastly, the DERS asks about the control of behaviour when emotionally distressed, which is particularly relevant for the relationship with aggression.

The total DERS score and subscale scores have high internal consistency with clinical samples (e.g., for BPD: Gratz & Gunderson, 2006; Gratz, Tull, Baruch, Bornoalova & Lejuez, 2008; for eating disorders: Harrison, Sullivan, Tchanturia & Treasure, 2010; for PTSD: McDermott et al., 2009) and nonclinical populations (e.g., Gratz & Roemer, 2004;

Neumann et al., 2010; Vasilev et al., 2009; Weinberg & Klonsky, 2009). Good test-retest reliability was obtained over a period of 4 to 8 weeks in a sample of college students (intraclass correlation of .88; Gratz & Roemer, 2004). The DERS has also demonstrated sensitivity to change due to successful clinical intervention (with adults: Fox, Hong & Sinha, 2008; Gratz & Gunderson, 2006; Gratz, Lacroce & Gunderson, 2006, and with adolescents: Metz et al., 2013). The DERS also corresponds with behavioural (Gratz & Gunderson, 2006) and physiological (Vasilev et al., 2009) measures of emotion dysregulation. Research supports the use of the DERS in pre-adolescent to adolescent samples finding psychometric properties comparable to that of adult samples (Neumann et al., 2010; Vasilev et al., 2009; Weinberg & Klonsky, 2009).

**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 five main scales; State Anger, Trait Anger, Anger Expression-Out, Anger Expression-In, and Anger Control. The State Anger scale is composed of two subscales with five items each; State Anger-Feelings (S-Anger/F) assesses the intensity of feelings currently being experienced and State Anger-Expression (S-Anger/VP) assesses the intensity of desire to express verbal or physical aggression. The Trait Anger scale (TA) is also composed of two subscales with five items each; T-Anger/Temperament (TA/T) assesses the disposition to experience anger without provocation, and T-Anger/Reaction (TA/R) assesses the frequency with which angry feelings are experienced in situations that involve frustration, negative evaluation or perceived mistreatment (together they measure frequency of anger experiences). The Anger Expression-Out (AX-O) scale has five items measuring the frequency that anger is expressed

as verbal or physical aggression in behaviour toward objects or others in the environment. The Anger Expression-In (*AX-I*) scale has five items measuring the frequency that anger is experienced but not expressed outwardly (as in rumination or suppression). Anger-Control (*AC*) is assessed by five items as a single concept that evaluates how often a person attempts to control the inward experience or outward expression of anger. Respondents are asked to rate how much items such as “I am hot-headed” describe them, on a 3-point Likert scale from 1 (“*not at all/hardly ever*”) to 3 (“*very much/often*”). The analyses in this research utilise the Trait Anger scale and subscales, both Anger Expression scales and the Anger Control scale.

The STAXI-2 C/A exhibits strong psychometric properties based on a school sample (N=838) of 9-18 year olds (Brunner & Spielberger, 2009). Internal reliability alpha coefficients were above .70 on all subscales for this normative sample, and for a clinical disruptive behaviour sample of 11-18 year olds (Brunner & Spielberger, 2009). Correlations with the Youth Self-Report’s Syndrome and DSM-Oriented Scales (Achenbach & Rescorla, 2001) provide support for discriminant and convergent validity in a subset of the normative and clinical sample. The STAXI-2 C/A also provides valid pre- and post-assessments of anger expression and control for children and adolescents who are undertaking intervention programmes (Brunner & Spielberger, 2009). The STAXI-2 C/A has also been used to assess the effectiveness of anger management in CBT (Ducharme, Wharff, Hutchinson, Kahn, Logan & Gonzalez-Heydrich, 2012) and in systemic interventions (e.g., Nickel et al., 2005).

**Social Skills Improvement System-Rating Scales (SSIS-RS) student form (13-18) (Gresham & Elliot, 2008).** The SSIS, a revision of an earlier version of the Social Skills Rating System (SSRS), is a 75 item screening instrument for those thought to experience social skills deficits. The parent, teacher and student forms assess common social skills and

behaviours in the domains of communication, co-operation, assertion, responsibility, empathy, engagement and self-control. Problem behaviours are also measured, comprised of externalising, internalising, bullying and hyperactivity/inattention. Participants rated how much each statement regarding a skill or behaviour applied to them on a 4-point Likert scale of ‘*not true*’ to ‘*very true*’. An example item is “I pay attention when others present their ideas”. The SSIS has high internal consistency and moderately high validity indices for total scores on both social skills and problem behaviour scales (Gresham & Elliot, 2008).

The SSRS is the typical social skills measure used in school-based ART research and has successfully detected improvements in social skills post-intervention (Gunderson & Svartdal, 2006; Langeveld et al., 2012). The comprehensive range of social skills covered by the SSIS captures the skills taught in all three ART modules (for example anger control training would be expected to improve self-control, whereas moral reasoning relates well to empathy). The problem behaviour scale also provides an opportunity to assess self-perceived reductions in bullying behaviours, which have relevance for social information processing, and in hyperactivity/inattention which are relevant for classroom disruption. Only the student form was used in this research as the CBCL and TRF ask parents and teachers respectively about social problems, and ART training notes were also intended to gather information from parents and teachers about participants’ use of skills (see further information in behavioural data section).

**How I Think (HIT; Gibbs, Barriga & Potter, 2001).** The HIT (Gibbs, Barriga & Potter, 2001) is a 54 item self-report questionnaire that assesses cognitive distortions in individuals who are often angered and aggressive. Four types of cognitive distortions are assessed by 39 items; Assuming the Worst, Blaming Others, Self-Centred and

Minimising/Mislabelling. Each item is also applied to four behavioural referent subscales; Stealing, Lying, Oppositional Defiance and Physical Aggression (these relate to the four DSM-IV categories of behaviour in antisocial disorder). The sum of Oppositional Defiance and Physical Aggression forms the Overt scale and the sum of Lying and Stealing forms the Covert scale. There are also seven items that act as positive fillers and eight items that act as a validity check by identifying anomalous responding. Participants rated how much they agree with each statement, for example “You have to get even with people who don’t show you respect”, along a 6-point Likert type scale from 1 (“*strongly agree*”) to 6 (“*strongly disagree*”). The HIT has very high internal consistency ( $\alpha=.92-.96$ ), good convergent validity with self- and other-reports of antisocial behaviour, and good divergent validity as it does not correlate with socioeconomic status, intelligence or academic achievement (Gibbs, Barriga & Potter, 2001). The HIT is used frequently in ART intervention research and has been found to successfully detect reductions in cognitive biases (Currie et al., 2012; Gunderson & Svartdal, 2006; Nas et al., 2005).

### **Behavioural Data**

Behavioural incidents were recorded by school personnel, (tutors, RTLBs, counsellors and teachers) on a database, pre-established by both participating schools, for disciplinary records. A range of behaviours were recorded including non-compliance with teachers’ instructions, verbal or physical aggression, bullying, truanting, smoking on grounds and vandalism. There was no set format for personnel entering information into the database. A comparison of ART participants’ incident frequency, for a 10-week period before, during and after the ART programme, was planned as part of the behavioural outcome analysis. Inconsistent recording of incidents and variation in information captured by these records made this analysis unreliable however. It was also planned to use information about

participants' experiences of social conflict incidents and their use of social skills between sessions. This was to be recorded as part of their homework<sup>17</sup>, however participants did not reliably complete these forms; they were regularly filled in at the start of the next session, but participants struggled to recall relevant incidents, as such the data were insufficient to analyse. Participants were also asked to deliver training notes detailing what they had learned during the ART programme that week to their parents, who were to provide observational information about skills performed by the student and their perception of how well the skill was performed. Again these were infrequently returned by participants, and as such the data was insufficient to analyse. The school RTLBs delivered training notes to teachers, however the school did not require teachers to complete these forms for individual students and the process of delivery did not appear to be reliable. There was very little information shared between teachers and facilitators.

### **Observational Data**

After each ART session the facilitators completed observational rating scales about participants' behaviours. The categories of behaviour that were assessed included level of volunteering, co-operation, engagement, enthusiasm, understanding of material and disruption (see Appendix B1 for full rating scale). To assess the degree to which the facilitators provided consistency in their observational ratings of behaviours across ART participants, an analysis of inter-rater reliability was conducted and is included in the results (on p. 156).

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<sup>17</sup> "Hassle logs" from ACT provide a week-by-week measure of anger incidents (details of the event and a rating of how angry the participant was and how well they considered themselves to have coped on a five-point Likert scale). Social skill homework reports provide a self-reported week-by-week measure of the participants' use of skills. Participants will also rate their perception of how well they can perform them on a four-point Likert scale.

## **Participant Feedback**

Participants were asked to provide general feedback at the second assessment about how they were finding the programme and what they perceived themselves to have learned thus far. Participants were also asked to provide feedback at follow-up assessments regarding their experiences of the ART programme, how useful they found it, what they had learned, and their preferences for modules and learning methods. For the final feedback participants could complete an anonymous questionnaire which comprised 10 forced choice questions and 20 open-ended questions where participants could describe their experiences and opinions (see Appendix C). Participants were also invited to discuss their thoughts with facilitators directly in individual discussions, and were also given an opportunity to discuss the programme in a final group session with facilitators and their ART peers. This qualitative information was intended to inform the feasibility of the programme in terms of acceptability to students.

The next chapter will present the statistical analyses performed on the data gathered and describe the results of the research.

## CHAPTER 6

### RESULTS

The results of statistical analyses are presented in this chapter, with explanations and brief interpretative statements to indicate whether the analyses support the research hypotheses regarding the impact of Aggression Replacement Training (ART). The main interpretation of data is included in the discussion. Investigating the sample data involved evaluating the distribution of the responses to all self-report measures (Difficulties in Emotion Regulation Scale [DERS], State-Trait Anger Expression Inventory-2 Child and Adolescent [STAXI-2 C/A], Social Skills Improvement System [SSIS] and How I Think [HIT]). It also involved examining the reliability of the scales within self-report measures, and the intercorrelations within and between these measures. Following this, analyses of variance (ANOVAs) and t-tests are presented; these analyses test the research hypotheses by examining whether there is a significant change over time in the mean scores of all variables. These hypotheses are restated immediately prior to the intervention analyses section (p.112). Analyses of mean scores are presented alongside individual-level analyses, which provide additional information about the variation in how participants responded to ART. Behavioural observation scales are also described and t-tests are used to determine whether there were significant changes in within-session behaviours such as volunteering and co-operation. Participant feedback is also presented as a brief insight into the acceptability and usefulness of ART to participants.

#### Sample Characteristics

##### Distribution

Firstly the sample distribution was examined to ensure that the data was normally distributed as required to meet the assumptions for further testing using ANOVAs (Pallant,

2011). All data screening and analysis was performed using SPSS version 21. All variables were assessed for data entry errors, outliers and violations of the assumptions for multivariate analysis across all data collection points from pre-intervention (i.e., pre-intervention: T1; following ACT and SST sessions: T2; following MR sessions/post-intervention: T3; and follow-up: T4)<sup>18</sup>. To evaluate normality of distribution, the skewness and kurtosis of each variable was considered using the conservative *p* levels recommended by Tabachnik and Fidell (2001). The key study variables were all found to be normally distributed at T1. Using the same criteria, six univariate outliers were identified on the Internalising, Externalising and Problem Behaviour scales of the SSIS. One outlier on the Internalising scale was replaced at T2, T3 and T4, one on the Problem Behaviour scale at T2 and T3 and one on the Externalising scale at T3. These were replaced with the next closest mean score as suggested by Tabachnick & Fidell (2001).

### **Scale Reliability and Correlations**

**Reliability.** The reliabilities of the key scales were examined to ensure that they met an acceptable level (Cronbach's alpha of .7; DeVellis, 2003) and where reliabilities were low, to highlight that this may influence further analyses. Reliability analyses were also used to identify any particular items that may have been problematic for ART students for further investigation. The internal consistencies of key variables were examined using Cronbach's alphas. The range of Cronbach's alphas from T1 to T4 are presented along with means, standard deviations and data for a comparative or normative sample (see Tables 6.1, 6.3, 6.5 and 6.7). Reliabilities for the main scales of the DERS, SSIS and HIT<sup>19</sup> were above the acceptable level at each assessment point, except for the Externalising scale of the SSIS

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<sup>18</sup> ACT = anger control training, SST = social skills training, MR = moral reasoning

<sup>19</sup> Main scales include: DERS Total, Social Skills Total (SSIS), Problem Behaviours (SSIS), Externalising (SSIS), HIT Total, Overt Aggression (HIT), Covert Aggression (HIT)

which had generally lower alphas<sup>20</sup>. The main scales of the STAXI-2 C/A have somewhat lower alphas. These scales have fewer than ten items however, and lower alphas are not unusual with shorter scales, particularly given the small numbers of participants (DeVellis, 2003; Pallant, 2011). Some of the other subscales, also with fewer items, had alphas lower than .7 at some time points. There were no particular items identified that, if removed, significantly increased reliabilities.

**Correlations.** The scales within each measure were correlated with each other, and with the scales of each of the other main measures. These intercorrelations within and between measures were examined at pre-intervention for expected relationships (i.e., as found in the literature by others using these measures). Finding the expected relationships between conceptually related variables at pre-intervention would suggest valid assessment of the constructs, and in some cases support relationships that underlie the research hypotheses. Tables D1 to D8 in Appendix D display the intercorrelations (Pearson's  $r$ ) within and between the DERS, STAXI, SSIS and HIT subscales for assessments at pre-intervention (T1) and follow-up (T4).

Intercorrelations of the scales within measures were as expected at T1 for the DERS (Weinberg & Klonsky, 2009), STAXI-2 C/A (Brunner & Spielberger, 2009), SSIS (Gresham & Elliot, 2008) and HIT (Gibbs, Barriga & Potter, 2001). Most intercorrelations within measures were similar across time points. One change regarding the SSIS is noteworthy however. Following the ART programme (at T4) the Externalising scale trends toward a

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<sup>20</sup>The lowest Cronbach's alpha was at T4 ( $\alpha = .20$ ). The items were checked for reversed coding errors, the alpha was no higher with any one item deleted, removing items that were part of the hyperactivity or bullying subscale did not increase the alpha. As the Externalising subscale alphas from T1 to T3 are acceptable, it is possible that the intervention differentially affected aspects of Externalising assessed by the scale and therefore how participants responded to items at follow-up.

significant negative correlation with Social Skills Total ( $r = -.45$ ,  $p=.06$ ). This suggests that participants who reported higher levels of social skills were also more likely to report lower levels of externalising behaviour after ART, and that this relationship was stronger than at pre-intervention.

With regards to intercorrelations between different measures, there was much variation across the four assessment points, however some of the interesting correlations are reviewed here. At pre-intervention (T1) several scales measuring aspects of emotion regulation (the DERS Total scale, Difficulties with Impulsivity and Non-Acceptance) were positively and moderately correlated with scales measuring Trait Anger (ranging between  $r = .47-.60$ ) and Trait Anger Reactivity (ranging between  $r = .50-.61$ ). As expected, those reporting more difficulties regulating their emotions also reported higher levels of anger experience. Difficulties with Impulsivity and Trait Anger also correlated positively and moderately with the Externalising scale of the SSIS ( $r = .57$  and  $r = .62$  respectively), such that those reporting more impulsivity and anger also reported more dysregulated behaviours. These correlations support the relationship between difficulties with emotion regulation, anger experience and externalising behaviours that underlies the current hypotheses regarding the impact of ART.

The Anger Control scale correlated *negatively* with Difficulties with Impulsivity ( $r = -.52$ ) and Goal Directed Difficulties ( $r = -.48$ ), such that those reporting higher anger control also reported less difficulty controlling impulses and engaging with goal directed behaviours when emotionally distressed. This supports the relationship between adaptively regulated emotions and regulated behaviour. Following the Anger Control and Social Skills Training (at T2) Anger Control was also negatively and moderately correlated with the DERS Total

scale ( $r = -.47$ ), and at T4 was positively correlated with Social Skills Total ( $r = .60$ ). This suggests that at follow-up those who reported being better able to control their anger also reported less difficulties with overall emotion regulation and higher levels of social skills.

As expected, intercorrelations also suggest that ART participants with high levels of cognitive biases also had high levels of dysregulated behaviours. The Externalising scale of the SSIS correlated positively with all but one HIT subscale ( $r = .56-.76$ , excluding Lying). Problem Behaviours also correlated positively with Physical Aggression, Blaming Others and Assuming Worst ( $r = .60, .55$  and  $.52$  respectively). Physical Aggression also correlated positively with Trait Anger Temperament, Difficulties with Impulsivity and Internalising ( $r = .47, .59$  and  $.54$ ). These associations between variables support expectations that higher levels of anger, difficulties with self-regulation and problem behaviours often co-occur with cognitive biases regarding aggression. The HIT subscale Assuming the Worst also correlated positively with DERS Total ( $r = .48$ ). At later assessment points Assuming the Worst was most consistently associated with DERS subscales, such that those who reported more difficulties with emotion regulation also tend to assume the worst about others intentions.

Overall the correlations within and between measures was as expected with some variation and development of relationships across assessment points. Despite some low Cronbach alphas for several scales, particularly the Externalising scale of the SSIS, this suggests that the scales are reliable and valid measures to be used in further analyses. Lower reliability of scales will be taken into account when interpreting the results of these analyses.

The following section sets out the intervention analyses based on the research objectives that are the main tests of hypotheses. The first objective was to investigate the

impact of ART on emotion regulation. It was predicted that ART participants would report fewer difficulties with emotion regulation at follow-up than at pre-intervention. The DERS was used to measure emotion regulation, therefore reductions in the DERS mean scores would support this hypothesis. The second objective of this research was to investigate the relationship between changes in emotion regulation and aggressive behaviour. It was predicted that ART participants would report higher anger control, and lower anger expression, externalising and problem behaviours at follow-up than at pre-intervention. The STAXI-2 C/A is used to assess anger control and anger expression, and the SSIS measured externalising and problem behaviours. The third objective was to evaluate the implementation and effectiveness of ART in New Zealand schools. Regarding effectiveness, it was predicted that ART participants would report higher social skills and less aggressive cognitive biases at follow-up than at pre-intervention. Observational ratings of ART participants' behaviour within-sessions are also presented. Although no predictions were made about within-session behavioural changes, the information has practical significance for implementation and effectiveness of ART. The intervention analyses are explained further below and presented following the order of hypotheses to be tested.

### **Intervention analyses**

A series of one-way repeated-measures analyses of variance (ANOVAs) were conducted to examine differences between the four assessment times (T1 to T4 as described on p.109). Time was the independent variable in all ANOVAs. For the majority of main effects sphericity assumptions were met, where the assumption was violated Greenhouse Geisser is reported. For significant main effects, Tukey's HSD post-hoc analyses were used to determine the assessment times between which the significant difference occurred. Bonferroni's correction was applied in post-hoc tests to reduce the chance of type one error,

that is obtaining a false positive result. An alpha level of  $p < .05$  was used to determine significance but exact  $p$  values are reported in text and where significance met criteria of  $p < .01$  this is indicated in tables. Effect sizes (partial eta-squared) are reported for all main effects and described as small (.01), medium (.06) and large (.14) as determined by Cohen's (1988) guidelines. To take into account the small sample size, some additional analyses were undertaken for the main scales of interest where a) ANOVAs did not reach the criteria of  $p < .05$  but effect size was medium or large and the graphed means indicated a reduction in mean score, or b) the ANOVAs main effect was significant but Tukey's HSD did not indicate significant pairwise comparisons. Depending on the pattern of change apparent in the graphs of the mean scores this analysis involved a  $t$ -test between mean scores at pre-intervention and post-intervention (T1 to T3), and/or between pre-intervention and follow-up (T1 to T4). Given the numerous statistical analyses reported below, and the small sample size, it is important to interpret findings with caution and to acknowledge the possibility of type one errors; comment on the robustness of findings regarding primary variables is included in the discussion.

Although the post hoc analyses can indicate between which assessment points the change in mean difference was significant, this does not give any information about the significant changes for individual participants. The Reliable Change Index (RCI; Jacobson & Truax, 1991) was used to determine whether an individual's change from pre-intervention to follow-up assessment was clinically significant. The RCI is a function of the reliability of the measure, the variability in the scores obtained by the sample group, and the change in pre-intervention to follow-up to determine whether change is clinically significant (Evans, Margison & Barkham, 1998). The RCI was calculated for the main scales of interest in each measure, and the subscales of the DERS where there was a significant main effect of time

identified by an ANOVA or where a significant change was identified by a t-test. Throughout the below analyses the percentage of participants who showed a statistically significant improvement are reported, as are the percentage who moved from a dysfunctional to a functional level.

### **Emotion Regulation: Effect of Intervention**

It was predicted that ART participants would report fewer difficulties with emotion regulation following the intervention. A decrease in Difficulties in Emotion Regulation Scale (DERS Total) scores represents an increase in ability to regulate emotion. A decrease in the subscales of the DERS (Lack of Awareness, Lack of Clarity, Non-Acceptance, Difficulties with Impulsivity, Goal Directed Difficulties and Lack of Strategies) would also indicate improved ability with these emotion skills. Reductions in the mean scores on the DERS Total scale or DERS subscales at assessments subsequent to pre-intervention (T2, T3 or T4) would therefore support the above hypothesis.

A series of one-way repeated-measures ANOVAs were conducted to determine if changes in mean DERS were significant over the intervention and follow-up period (T1-T4). The means, standard deviations and alpha ranges of the DERS for the ART sample from T1 to T4, and a control comparison, are displayed in Table 6.1. The main effect ANOVA results for the DERS and each of the subscales at T1 to T4 are displayed in Table 6.2. As indicated, there was a significant main effect of time on the DERS Total scale and Difficulties with Impulsivity (DIM) subscale. Participants' reports of overall difficulties with emotion regulation, and DIM reduced at each time point subsequent to their pre-intervention score. There were no other significant effects over time. Although no other subscales showed a

main effect of time, the effect size was large for Lack of Clarity and medium for Lack of Awareness, Goal Directed Difficulties and Lack of Strategies<sup>21</sup>.

Figure 6.1 shows the direction of change from T1 to T4 for the significant main effect of time on the DERS Total scale. Tukey's HSD post-hoc tests indicate that there was a significant reduction in the mean DERS Total scores from T1 to T3 ( $p = .035$ ), and from T1 to T4 ( $p = .002$ ). This suggests that from pre- to post-intervention DERS Total reduced significantly, and that at follow-up this reduction increased and remained significant. The reliable change index analyses indicate that from pre-intervention to follow-up 27.8% of the sample showed a statistically significant reduction in DERS Total score (see Table 6.9). Of those who were in the dysfunctional range of ER at pre-intervention, 27.3% improved to a functional level. This supports the hypothesis that ART will improve emotion regulation skills, such that some participants perceive less difficulty regulating emotions following the intervention.

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<sup>21</sup> Effect sizes (partial eta-squared) are reported for all main effects and described as small (.01), medium (.06) and large (.14) as determined by Cohen's (1988) guidelines.

Table 6.1

*Descriptive statistics and alpha range for ART participants on the DERS from T1 to T4 (N=18) with control comparison (n=428)*

	ART participants												Control comparison†	
	Time 1-T4		Time 1		Time 2		Time 3		Time 4					
	$\alpha$ (range)	M	SD	M	SD	M	SD	M	SD	M	SD	$\alpha$	M	SD
DERS Total	.83-.91	99.56	19.93	95.28	17.11	90.11	15.14	87.17	16.58	.93	78.9	23.2		
Lack of Awareness	.57-.81	19.78	3.35	19.22	4.28	18.89	4.70	17.33	3.74	.77	15.5	4.9		
Lack of Clarity	.25-.78	11.94	2.58	11.56	2.57	10.39	3.24	10.22	3.35	.76	11.1	4.3		
Non-Acceptance	.74-.83	13.78	5.07	13.94	5.31	12.39	4.35	13.33	4.46	.86	11.3	5.3		
Difficulties with Impulsivity	.72-.82	18.28	4.74	15.61	5.01	14.83	4.46	14.17	4.37	.88	11.9	5.6		
Goal Directed Difficulties	.70-.83	17.11	3.94	16.67	4.51	17.44	4.63	14.94	4.22	.87	13.8	5.3		
Lack of Strategies	.77-.91	18.67	7.59	18.28	5.90	17.50	5.66	17.17	6.05	.89	15.6	7.0		

Note:  $\alpha$  = Cronbach's alpha, M = Mean, SD = Standard Deviation, DERS Total = Difficulties in Emotional Regulation, †From "Measurement of emotion dysregulation in adolescents" by

Weinberg, A., & Klonsky, E.D., 2009, 21(4), p.619.

Table 6.2.

Main effect ANOVA results on the DERS from T1 to T4 (N=18)

	F (3,51)	P	Partial $\eta^2$
DERS Total	6.92	.001	.29**
Lack of Awareness	2.28	.091	.12
Lack of Clarity	3.15†	.063	.16
Non-Acceptance	0.81	.494	.05
Difficulties with Impulsivity	8.93	.000	.34**
Goal Directed Difficulties	2.03	.122	.12
Lack of Strategies	1.12	.356	.06

Note: DERS Total = Difficulties in Emotional Regulation,  $\eta^2$  = Eta Squared,

25. = Significant at  $p < .01$ , † Greenhouse Geisser (df=1.76, dfr=29.88)

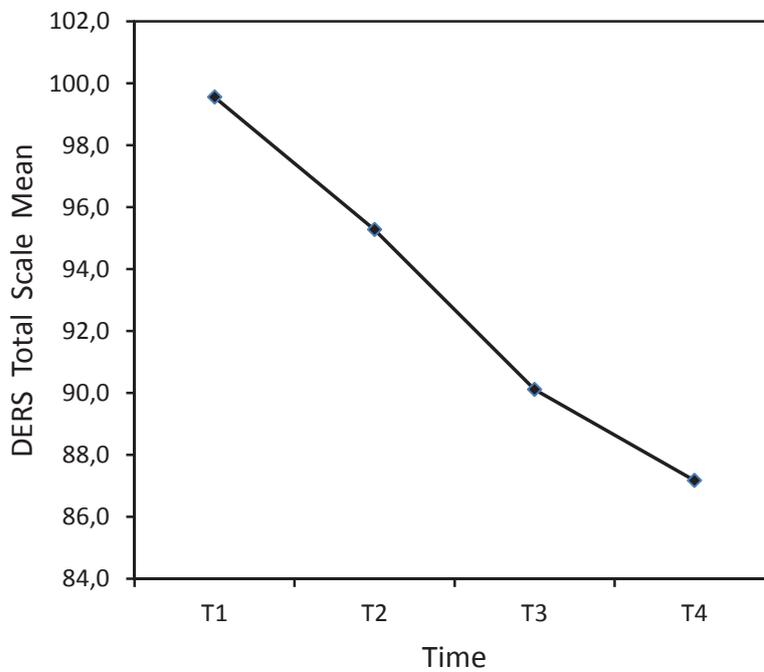


Figure 6.1. Difficulties with Emotion Regulation Scale total mean from T1 to T4.

Figure 6.2 shows the direction of change from T1 to T4 for the significant main effect of time on the DIM subscale. Tukey's HSD post-hoc tests also showed that the reductions in DIM were significant from T1 to T2 ( $p=.017$ ), T1 to T3 ( $p=.025$ ) and T1 to T4 ( $p=.000$ ). The largest reduction in DIM occurred during the anger control (ACT) and social skills (SST) sessions (T1 to T2), with the reduction increasing and remaining significant at post-intervention and follow-up. This suggests that ACT and SST sessions improve participants' abilities to control their behaviour when emotionally distressed such that they perceive less difficulty with impulsivity following these sessions. The reliable change index analyses indicate that from pre-intervention to follow-up 27.8% of the sample showed a statistically significant reduction in DIM scores (see Table 6.9). Of those who were in the dysfunctional range of DIM at pre-intervention, 46.2% improved to a functional level. This supports the hypothesis that ART will improve emotion regulation skills with respect to ability to control behaviour when emotionally distressed.

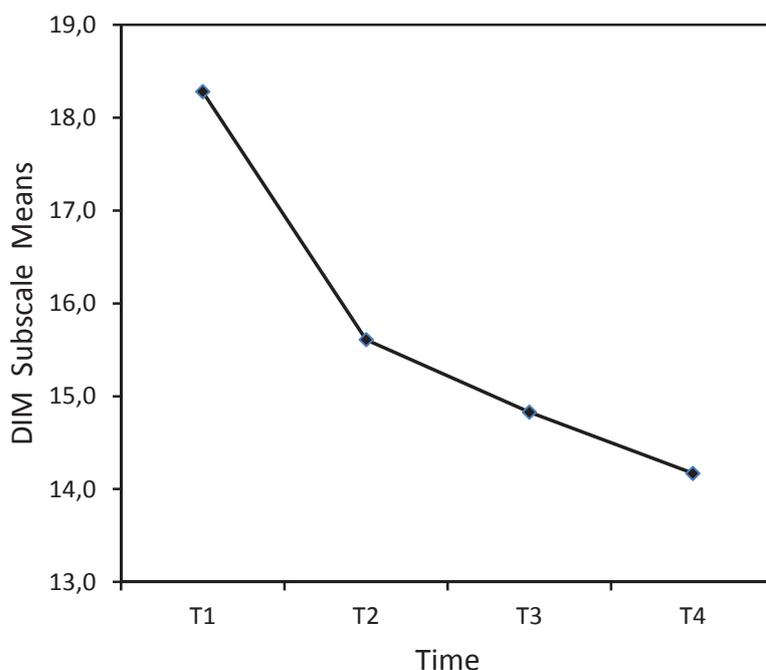


Figure 6.2. Difficulties with Impulsivity subscale mean from T1 to T4.

Figure 6.3 shows the pattern of change for Lack of Clarity (LCL), indicating a decreasing trend occurred during the intervention. As the ANOVAs main effect of time on LCL trends toward significance with a large effect size (see Table 6.2), t-tests were used to assess change. T-tests indicate that there was a significant decrease in mean LCL score between T1 and T3, but not between T1 and T4 despite a further decrease in mean score (T1 to T3:  $t(17) = 3.22, p = .005$ ; T1 to T4:  $t(17) = 1.87, p = .079$ ). The mean score at T4 was also lower than the control comparison mean (see Table 6.1). The reliable change index analyses indicate that from pre-intervention to follow-up 16.7% of the sample showed a statistically significant reduction in LCL (see Table 6.9). Of those who were at a dysfunctional level of LCL at pre-intervention, 55.5% showed improvement to a functional level at follow-up. This partially supports the hypothesis that ART will improve emotion regulation skills with respect to improvements in emotional clarity.

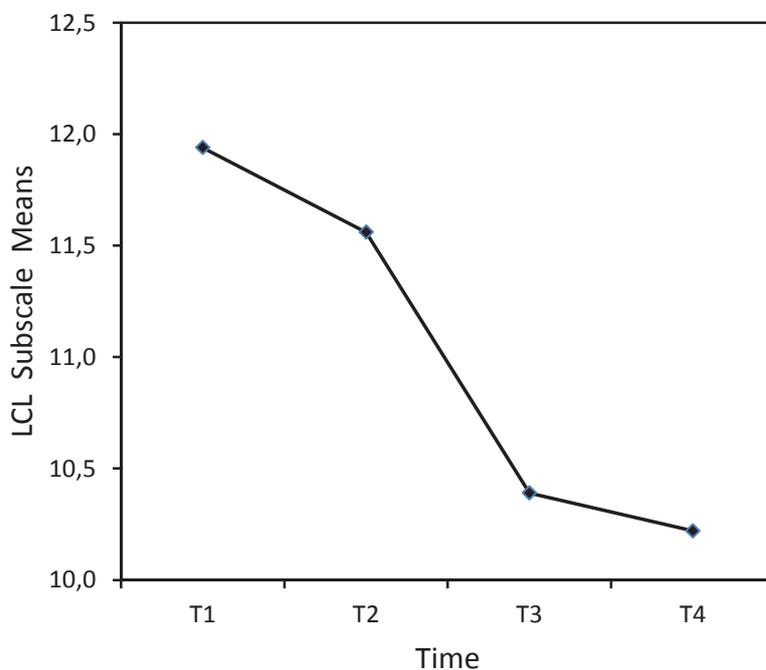


Figure 6.3. Lack of Clarity subscale mean from T1 to T4.

Figure 6.4 shows the pattern of change for Lack of Awareness (LAW), indicating a decreasing trend occurred during the intervention. Although the main effect of time on LAW was non-significant, a medium effect size was found (see Table 6.2) therefore t-tests were used to assess change. The reduction in mean LAW scores between T1 and T3 was non-significant, but was significant between T1 and T4 (T1 to T3:  $t(17) = .836, p = .415$ ; T1 to T4:  $t(17) = 2.85, p = .001$ ). The reliable change index analyses indicate that from pre-intervention to follow-up 16.7% of the sample showed a statistically significant reduction in LAW (see Table 6.9). Of those who were at a dysfunctional level of LAW at pre-intervention, 41.7% showed improvement to a functional level at follow-up. This partially supports the hypothesis that ART will improve emotion regulation skills with respect to improving emotional awareness.

Figure 6.5 shows the pattern of change for Lack of Strategies (LS), indicating a decreasing trend across T1 to T4. Although the ANOVA was non-significant, the effect size was medium, therefore t-tests were undertaken to assess change. The reduction in mean LS scores was non-significant between T1 and T3, and between T1 and T4 (T1 to T3:  $t(17) = 1.31, p = .207$ ; T1 to T4:  $t(17) = 1.14, p = .270$ ). This does not support the hypothesis that ART will improve emotion regulation skills with respect to increasing access to emotion regulation strategies.

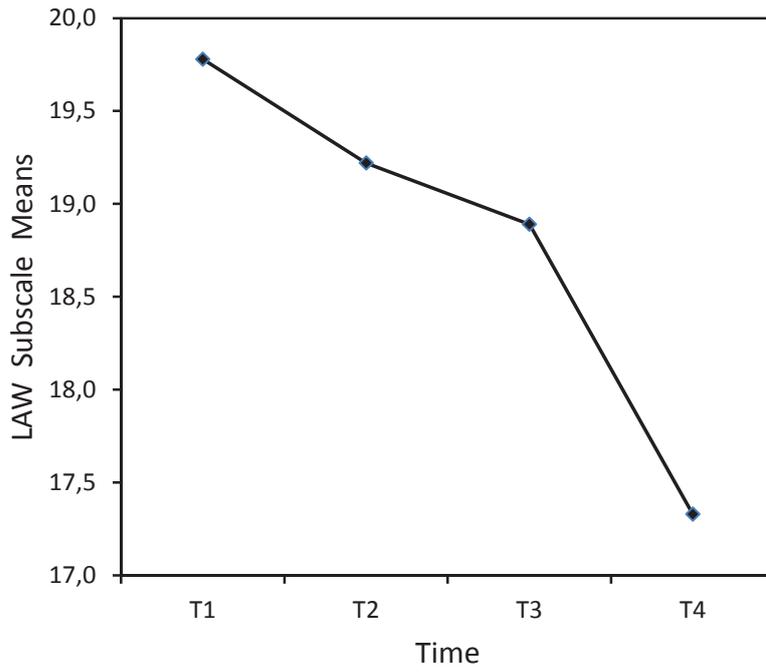


Figure 6.4. Lack of Awareness subscale mean from T1 to T4.

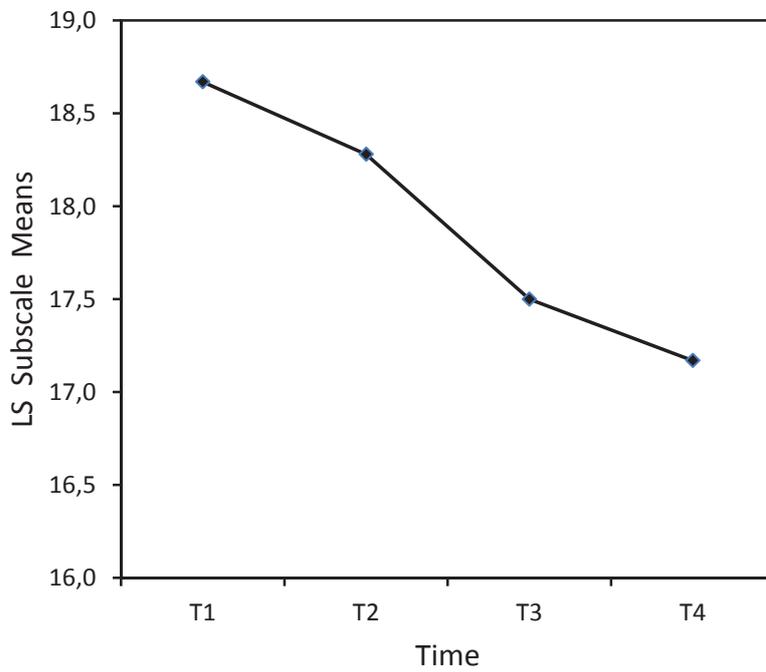


Figure 6.5. Lack of Strategies subscale mean from T1 to T4.

Figure 6.6 shows the pattern of change for Goal Directed Difficulties (GDD) indicating that, although there is not a clear decreasing trend in mean score, GDD does appear to be lower at follow-up than at pre-intervention. Although the main effect of time on GDD was non-significant, the effect size was medium, therefore a t-test was used to assess change. A t-test found that from T1 to T4 there was a significant reduction in mean GDD score,  $t(17) = 2.87, p=.011$ . The reliable change index analyses indicate that from pre-intervention to follow-up only 16.7% of the sample showed a statistically significant reduction in GDD (see Table 6.9). Of those who were at a dysfunctional level of GDD at pre-intervention, 38.5% showed improvement to a functional level at follow-up. This partially supports the hypothesis that ART will improve emotion regulation skills with respect to increasing ability to engage in goal-directed behaviours when emotionally distressed.

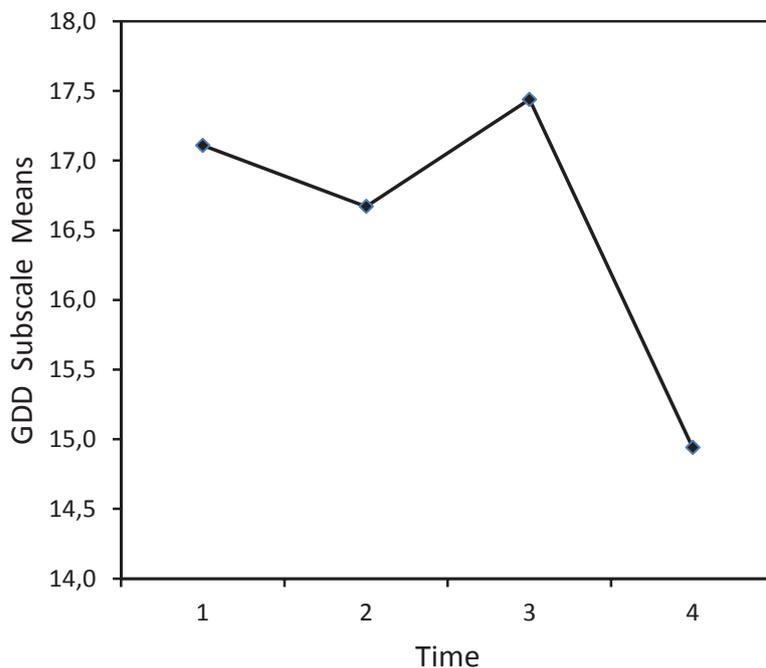


Figure 6.6. Goal-Directed Difficulties subscale mean from T1 to T4.

Figure 6.7 shows the pattern of change for Non-Acceptance (NA), which does not indicate a clear decreasing trend in mean scores, or a large reduction from T1 to T4. As the ANOVAs main effect of time on NA does not trend toward significance and the effect size was small, no further analyses of mean scores were considered. This does not support the hypothesis that ART will improve emotion regulation skills with respect to improved acceptance of emotional experience.

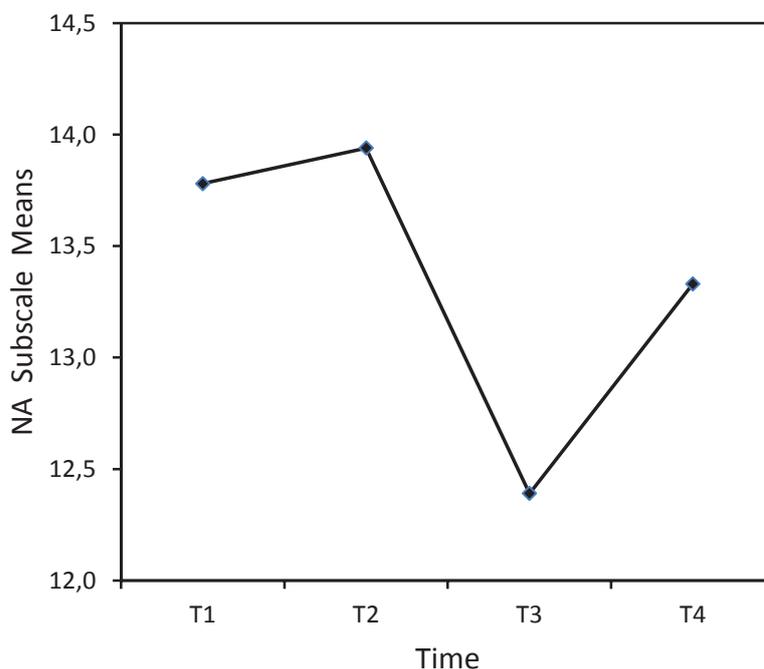


Figure 6.7. Non-Acceptance subscale mean from T1 to T4.

Analysis of the change in responses to the DERS over time supports the hypothesis that ART will improve emotion regulation skills. There is some variation as to the extent to which different emotion skills (and therefore subscales) show an improvement over the course of the ART intervention. The most robust improvement was in controlling impulses when emotionally distressed. Improvements in emotional awareness, clarity and engaging in goal-directed behaviours were also found to a lesser extent. At the individual level only a proportion of the ART participants showed a statistically significant improvement on any

scale. The mean scores at follow-up remained above the control comparison mean for all scales except Lack of Clarity. As outlined in previous chapters, higher levels of emotional regulation are associated with less anger experience and expression. The next section addresses the impact of ART on anger-related variables.

### **Anger Expression: Effect of Intervention**

It was predicted that ART participants would report higher anger control and lower anger expression following the intervention. An increase in the Anger Control mean score represents an improved effort and ability to control anger experience. A reduction in the Trait Anger or Expression-Out subscales would indicate that the experience of anger has become less frequent or intense and that participants less often express anger through aggressive means. Higher levels of Anger Control and lower levels of Trait Anger and/or Expression-Out at assessments subsequent to pre-intervention (T2, T3 or T4) would therefore support the above hypothesis.

A series of one-way repeated-measures ANOVAs were conducted to determine if changes in mean STAXI-2 C/A scores were significant over the intervention and follow-up period (T1-T4). The means, standard deviations and alpha ranges of the STAXI-2 C/A for the ART sample from T1 to T4, and a normative comparison, are displayed in Table 6.3. The main effect ANOVA results for the STAXI-2 C/A and each of the subscales at T1 to T4 are displayed in Table 6.4. There was a significant main effect of time on Trait Anger (TA), Trait Anger-Reactivity (TA/R) and Anger Control (AC). The main effect of time on Trait Anger-Temperament (TA/T) trends toward significance and the main effect of time on Expression-In (EI) is non-significant.

Figures 6.8 to 6.11 show a similar pattern of change from T1 to T4 for EO, TA, TA/T and TA/R. The pattern of change shows an increase in mean scores between T1 and T2, followed by a decrease between T2 to T4. Tukey's HSD post-hoc analyses show that there was a significant decrease in EO and TA from T2 to T4 (EO:  $p=.032$ ; TA:  $p=.036$ ). Although the pattern of change was similar for TA/T and TA/R, there were no significant pairwise comparisons from Tukey's post hoc tests. At T4 however, ART participants' mean TA/R score had fallen below the control comparison samples mean score. This pattern of change may result from an increased awareness of anger experiences, followed by a decrease in anger experience as participants learn emotion regulation techniques during the intervention (this is examined further in the discussion, p.169). The reliable change index analyses indicated that from pre-intervention to follow-up 27.8% of the sample showed a statistically significant reduction in TA (see Table 6.9). Of those who were at a dysfunctional level of TA at pre-intervention, 22.2% showed improvement to a functional level at follow-up. For EO however many fewer participants showed a statistically significant reduction from pre-intervention to follow-up (5.6%) (see Table 6.9), although of those who were at a dysfunctional level of EO at pre-intervention, 41.7% showed improvement to a functional level at follow-up. These findings do not support the hypothesis that ART participants would report lower anger experience and expression following the ART intervention, as the T2 mean scores are higher than at pre-intervention.

Table 6.3

*Descriptive statistics and alpha range for ART participants on the STAXI-2 C/A from T1 to T4 (N=18) with normative comparison (n=52)*

STAXI	α (range)	ART participants												Normative sample†		
		Time 1			Time 2			Time 3			Time 4			α	M	SD
		M	T	SD	M	T	SD	M	T	SD	M	T	SD			
Trait Anger	.70-.81	19.89	51.44	3.95	21.94	54.44	3.28	19.94	51.94	3.87	18.83	49.22	3.81	.80	46.98	8.37
Trait Anger-Temperament	.55-.77	8.67	48.83	2.47	9.94	54.78	1.64	8.83	50.89	1.65	8.72	50.56	1.81	.78	47.08	7.80
Trait Anger-Reactivity	.71-.83	11.22	52.50	2.44	12.00	55.94	2.35	11.11	52.44	2.83	10.11	47.83	2.61	.71	47.96	8.17
Expression Out	.39-.66	10.78	54.11	2.37	11.33	56.39	1.85	10.50	53.33	2.28	9.56	49.67	1.92	.70	46.45	8.93
Expression In	.69-.79	8.83	51.11	2.36	8.56	50.17	2.23	8.06	48.00	2.24	8.33	49.11	2.11	.71	50.08	8.94
Anger Control	.41-.74	9.89	47.33	1.91	10.83	50.33	1.62	10.44	48.61	1.95	11.17	51.50	2.01	.79	50.21	9.40

*Note:* α = Cronbach's alpha, M= Mean, T= T-score, SD = Standard Deviation, †From "State-Trait Anger Expression Inventory-2 Child and Adolescence" by Brunner, T.M., & Spielberger,

C.D., 2009, pp. 21, 28.

Table 6.4

Main effect ANOVA results on the STAXI-2 C/A from T1 to T4 (N=18)

	F (3,51)	P	Partial $\eta^2$
Trait Anger	4.24	.009	.20**
Trait Anger-Temperament	2.51	.069	.13
Trait Anger-Reactivity	2.80	.049	.14*
Expression Out	4.23	.010	.20**
Expression In	.827	.485	.05
Anger Control	2.85	.047	.14*

Note:  $\eta^2$  = Eta Squared, \* = Significant at  $p < .01$

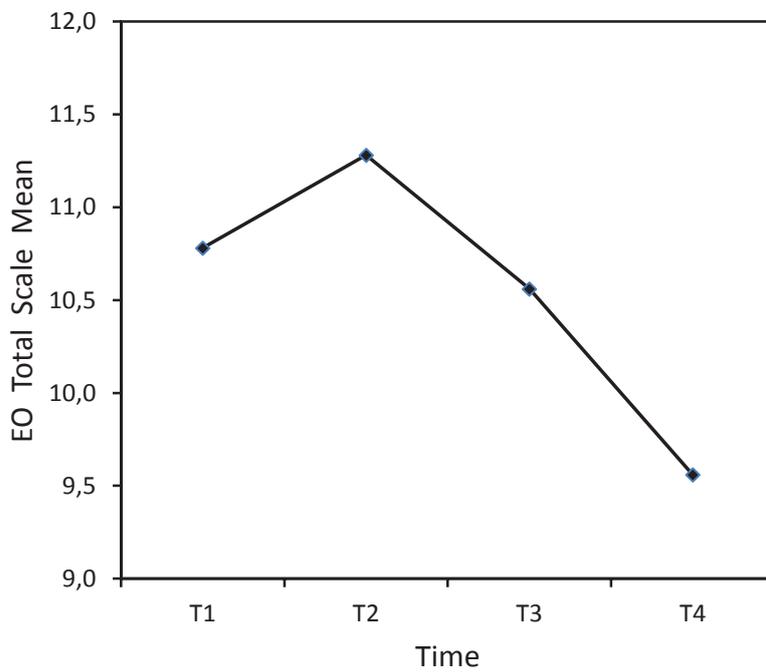


Figure 6.8. Anger Expression-Out scale mean from T1 to T4.

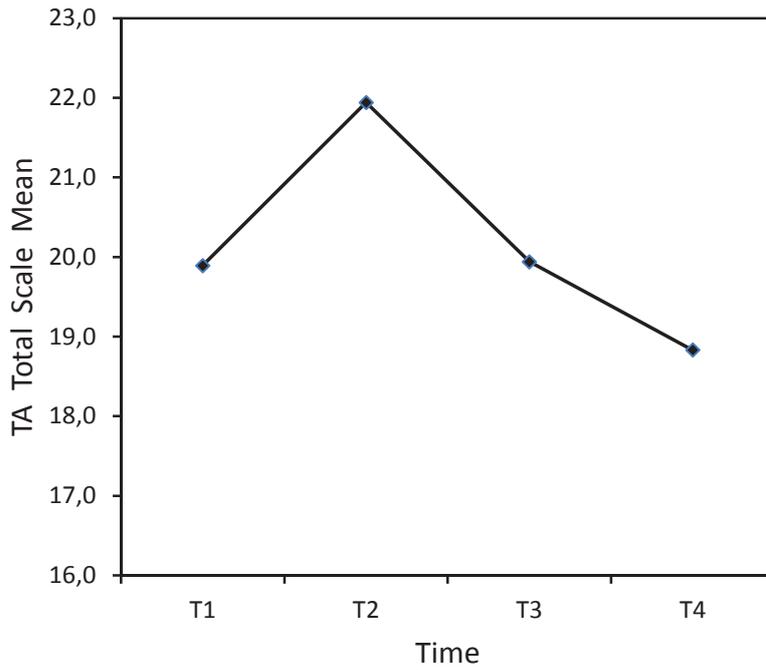


Figure 6.9. Trait Anger scale mean from T1 to T4.

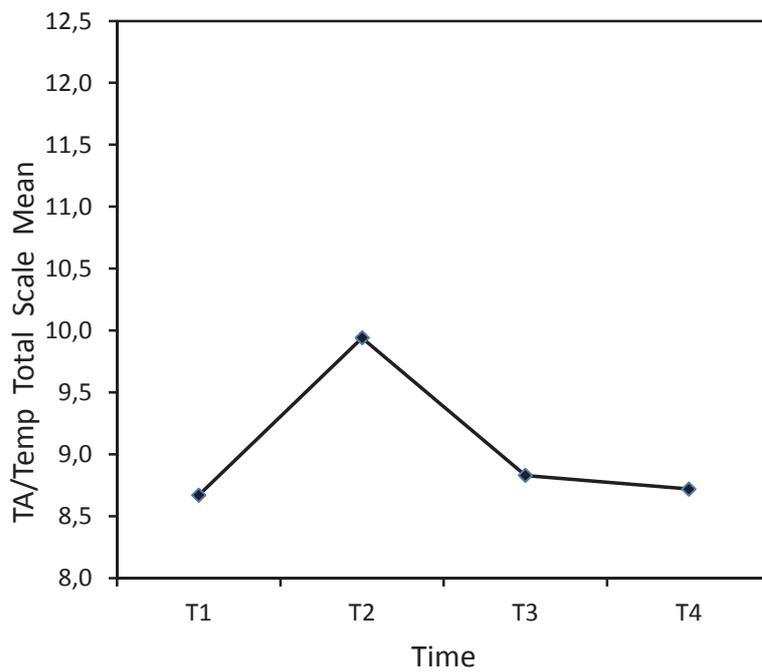


Figure 6.10. Trait Anger – Temperament subscale mean from T1 to T4.

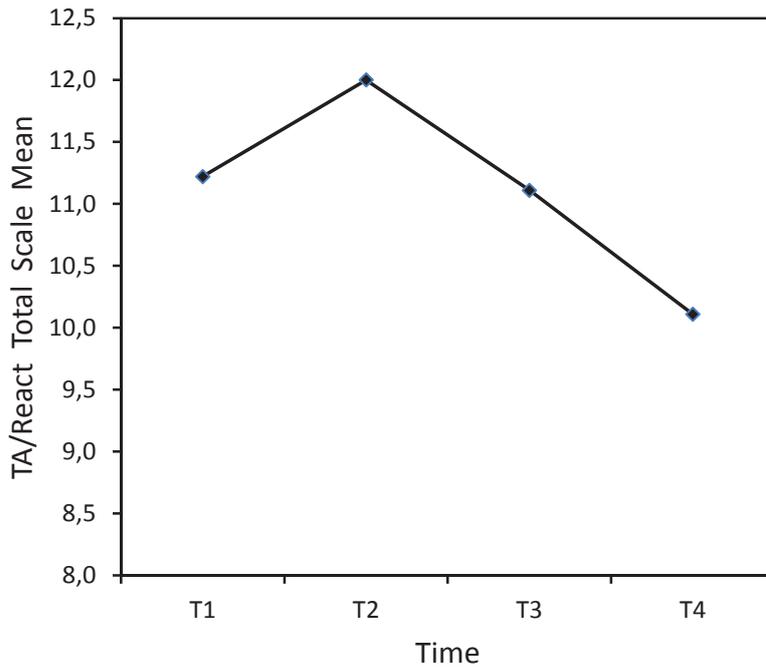
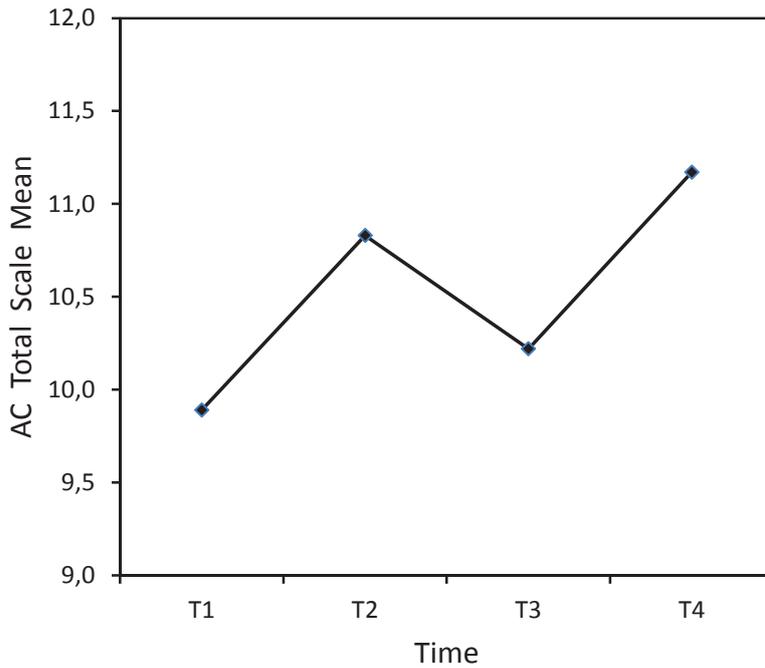


Figure 6.11. Trait Anger – Reactivity subscale mean from T1 to T4.

Figure 6.12 shows the pattern of change in mean Anger Control (AC) scores, indicating no clear increasing trend but a higher mean AC score at follow-up than at pre-intervention. Although the ANOVAs main effect of time on AC was significant, with a large effect size (see Table 6.4), Tukey's HSD post-hoc tests found no significant difference between any one pair of means. A t-test was used to further investigate the difference between the mean AC score at T1 and T4, finding a significant increase  $t(17) = -2.47, p = .024$ . At T4 the mean AC score was above that of the control comparison (see Table 6.3). The reliable change index analyses indicate that from pre-intervention to follow-up 16.7% of the sample showed a statistically significant reduction in AC (see Table 6.9). Of those who were at a dysfunctional level of AC at pre-intervention, 54.5% showed improvement to a functional level at follow-up. This supports the hypothesis that ART participants would report increased anger control following ART.



*Figure 6.12.* Anger Control scale mean from T1 to T4.

Analysis of the change in responses to the STAXI-2 C/A over time supports the hypothesis that ART would increase anger control. The ART participants' group mean was higher than the control comparison mean score indicating that the group mean improved to a functional level. The hypothesis that ART would reduce anger experience and expression was not supported by self-report data. The pattern of change for Trait Anger and Expression-Out suggests that a perceived increase in frequency and intensity of anger experience and expression was followed by a decrease, but that the decrease was not sufficient for follow-up scores to be significantly lower than pre-interventions scores. As outlined in previous chapters, higher levels of anger control are associated with ability to monitor and regulate mood, which may reduce biased social information processing and aggressive behaviour. The next section addresses the impact of ART on dysregulated behaviour and social skills.

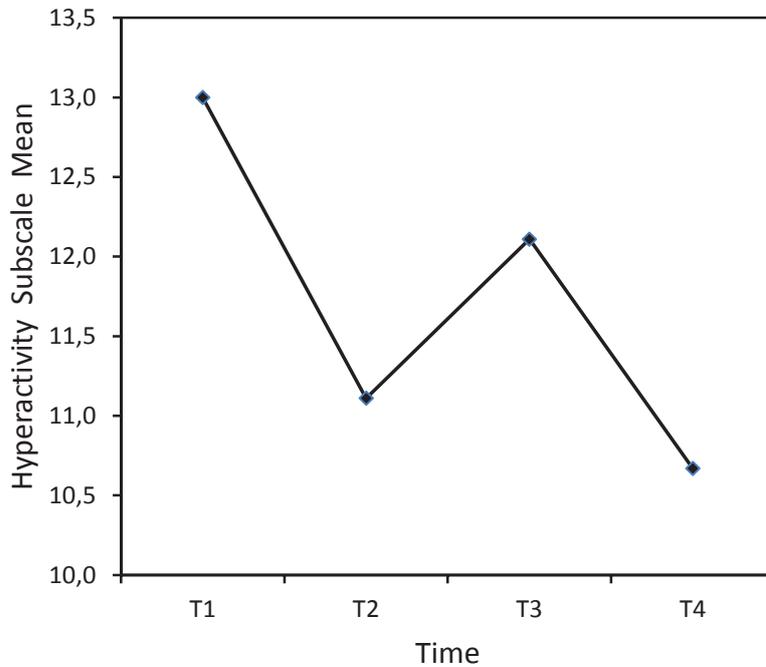
### **Social Skills: Effect of Intervention**

It was predicted that ART participants would report lower levels of externalising behaviour, problem behaviours and higher levels of social skills following the intervention. A decrease in the Externalising and Problem Behaviours subscales would represent lower self-reported behavioural dysregulation (including hyperactivity, bullying and internalising). An increase in the Social Skills Total scale, or social skills subscales (Communication, Cooperation, Responsibility, Empathy, Assertion, Engagement or Self-Control) would indicate participants improved use of social skills. Lower levels of externalising or problem behaviours, and higher levels of social skills at assessments subsequent to pre-intervention (T2, T3 or T4) would therefore support the above hypothesis.

A series of one-way repeated-measures ANOVAs were conducted to determine if changes in mean SSIS scores were significant over the intervention and follow-up period (T1-T4). The means, standard deviations and alpha ranges of the SSIS for the ART sample from T1 to T4, and a normative comparison, are displayed in Table 6.5. The main effect ANOVA results for the SSIS and each of the subscales at T1 to T4 are displayed in Table 6.6. The only significant main effect of time was for Hyperactivity. The main effect of time was not significant for Social Skills Total scale or social skills subscales, Bullying, Externalising, Internalising or Problem Behaviours.

Figure 6.13 shows the direction of change for Hyperactivity from T1 to T4, indicating that there was not an incremental decrease in Hyperactivity but that the mean scores were lower at post-intervention and follow-up than at pre-intervention. Tukey's HSD post-hoc tests reveal that there was a significant reduction in Hyperactivity from T1 to T2 ( $p=.031$ ), and from T1 to T4 ( $p=.026$ ). The ART participants' mean Hyperactivity score reduces from

above average at T1 to average levels at T4 (see Table 6.5). Reduced hyperactivity was not predicted but improvements in behaviours assessed by this scale (i.e., impulsivity, distraction, temper, focus and motivation) can be understood in terms of the focus of ART on improving self-regulation (refer to the discussion p.173).



*Figure 6.13.* Hyperactivity subscale mean from T1 to T4.

Table 6.5

*Descriptive statistics and alpha range for ART participants on the SSIS from T1 to T4 (N=18) with normative comparison (n= 127)*

	Time 1		Time 2		Time 3		Time 4		Normative sample†		
	M	SD	M	SD	M	SD	M	SD	α	M	SD
Social Skills Total	71.06 <sup>b</sup>	18.82	73.83 <sup>a</sup>	18.17	75.11 <sup>a</sup>	15.84	77.67 <sup>a</sup>	18.50	.95	94.9	20.2
Communication	10.83 <sup>b</sup>	2.83	10.39 <sup>b</sup>	3.47	11.78 <sup>a</sup>	2.56	11.72 <sup>a</sup>	2.40	.81	13.5	3.2
Co-operation	7.89 <sup>b</sup>	3.29	8.44 <sup>b</sup>	3.82	8.61 <sup>b</sup>	2.38	9.33 <sup>b</sup>	3.93	.83	14.8	3.8
Responsibility	9.50 <sup>b</sup>	2.85	10.11 <sup>b</sup>	2.91	10.17 <sup>b</sup>	2.73	11.11 <sup>a</sup>	3.36	.80	14.6	3.6
Empathy	10.56 <sup>b</sup>	3.36	12.17 <sup>a</sup>	3.95	10.78 <sup>b</sup>	3.06	11.33 <sup>a</sup>	2.40	.83	13.0	3.3
Assertiveness	10.83 <sup>b</sup>	4.12	11.50 <sup>a</sup>	3.15	11.89 <sup>a</sup>	3.10	11.50 <sup>a</sup>	3.11	.75	13.4	3.7
Engagement	12.72 <sup>a</sup>	3.44	13.11 <sup>a</sup>	3.27	13.67 <sup>a</sup>	3.82	13.22 <sup>a</sup>	3.53	.78	14.8	3.6
Self-control	8.72 <sup>a</sup>	4.20	8.56 <sup>a</sup>	3.77	8.22 <sup>a</sup>	3.12	9.44 <sup>a</sup>	3.59	.83	10.8	3.6
Bullying	4.61 <sup>a</sup>	2.45	4.50 <sup>a</sup>	2.43	4.00 <sup>a</sup>	1.88	3.44 <sup>a</sup>	2.26	.82	2.0	2.6
Hyperactivity	13.00 <sup>aa</sup>	3.53	11.11 <sup>aa</sup>	4.11	12.11 <sup>aa</sup>	3.27	10.67 <sup>a</sup>	3.25	.86	6.0	4.6
Problem Behaviours	37.39 <sup>aa</sup>	11.64	35.61 <sup>a</sup>	12.62	34.94 <sup>a</sup>	9.95	32.50 <sup>a</sup>	9.99	.95	19.3	14.5
Externalising	18.44 <sup>aa</sup>	5.39	17.28 <sup>aa</sup>	3.32	17.44 <sup>aa</sup>	4.16	15.33 <sup>aa</sup>	3.05	.90	7.5	6.4
Internalising	8.33 <sup>a</sup>	5.40	8.50 <sup>a</sup>	6.32	8.17 <sup>a</sup>	5.37	8.61 <sup>a</sup>	6.56	.88	7.0	5.7

Note: α = Cronbach's alpha, M= Mean, T= T-score, SD = Standard Deviation, <sup>aa</sup> = above average, <sup>a</sup> = average, <sup>b</sup> = below average, †From "Social Skills Improvement System: Rating Scales

Manual" by Gresham, F.M., & Elliot, S.N., 2008, pp. 63, 201. # = See footnote 2 for comment regarding this low Cronbach's alpha.

Table 6.6

*Main effect ANOVA results on the SSIS from T1 to T4 (N=18)*

	F (3,51)	P	Partial $\eta^2$
Social Skills Total	1.14 <sup>†</sup>	.330	.06
Communication	1.85	.150	.10
Co-operation	1.36	.265	.07
Responsibility	1.64	.209	.09
Empathy	1.52	.221	.08
Assertiveness	.88	.457	.05
Engagement	.56 <sup>†</sup>	.572	.03
Self-control	.63	.601	.04
Bullying	1.71	.176	.09
Hyperactivity	5.24	.003	.24*
Problem Behaviours	1.49	.227	.08
Externalising	2.34	.084	.12
Internalising	.07	.976	.00

*Note:*  $\eta^2$  =Eta Squared, \* = Significant at  $p < .01$ , <sup>†</sup>Greenhouse Geisser, Social Skills:

(df=1.98, dfr=33.73), Engagement: (df=1.93, dfr=32.879)

Despite the lack of significant main effects of time on the SSIS scores, some scales and subscales show change in the expected direction with medium effect sizes. Given hypotheses that ART would lead to a reduction in externalising and problem behaviours, and an increase in social skills, the main scales of the SSIS were explored further. Figure 6.14 shows the pattern of change for the mean Externalising score, indicating a decreasing trend

across T1 to T4. As the main effect of time on Externalising trends toward significance with a medium effect size (see Table 6.6), t-tests were used to assess change. The reduction in mean Externalising score from T1 to T3 was non-significant, but was significant between T1 to T4 (T1 to T3:  $t(17) = 1.03, p = .319$ ; T1 to T4:  $t(17) = 2.13, p = .048$ ). The reliable change index analyses indicate that from pre-intervention to follow-up 33.3% of the sample showed a statistically significant reduction in Externalising (see Table 6.9). Of those who were at a dysfunctional level of Externalising at pre-intervention, 33.3% showed improvement to a functional level at follow-up. The ART participants' mean Externalising score at T4 remains above average however (see Table 6.3). This partially supports the hypothesis that ART participants would report less externalising behaviour following the intervention. This finding should be interpreted with caution given the low Cronbach's alpha found for Externalising at T4.

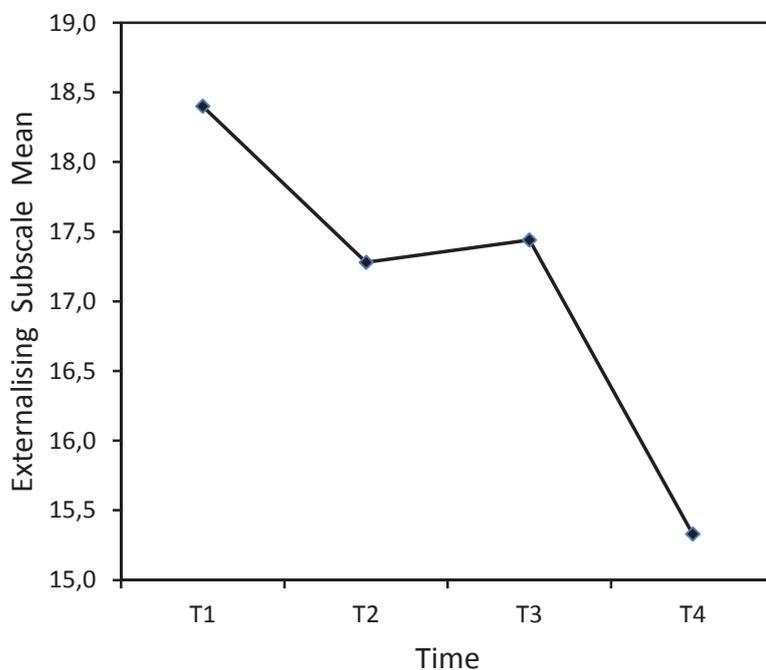


Figure 6.14. Externalising subscale mean from T1 to T4.

Although the main effect of Problem Behaviours was non-significant, it was of medium effect size (see Table 6.6), and the mean score shows a decreasing trend over T1 to T4 (see Figure 6.15). A t-test was used to assess change, finding the reduction in Problem Behaviour mean score was non-significant between T1 and T3, and between T1 and T4 (T1 to T3:  $t(17)= 1.30, p= .212$ ; T1 to T4:  $t(17)= 1.76, p =.096$ ). The reliable change index analyses indicate that from pre-intervention to follow-up 33.3% of the sample showed a statistically significant reduction in Problem Behaviours (see Table 6.9). Of those who were at a dysfunctional level of Problem Behaviours at pre-intervention, 30.8% showed improvement to a functional level at follow-up. The ART participants' mean Problem Behaviour score reduces from above average at T1 to average at T4. Thus the hypothesis that ART participants would report fewer problem behaviours following the programme is partially supported.

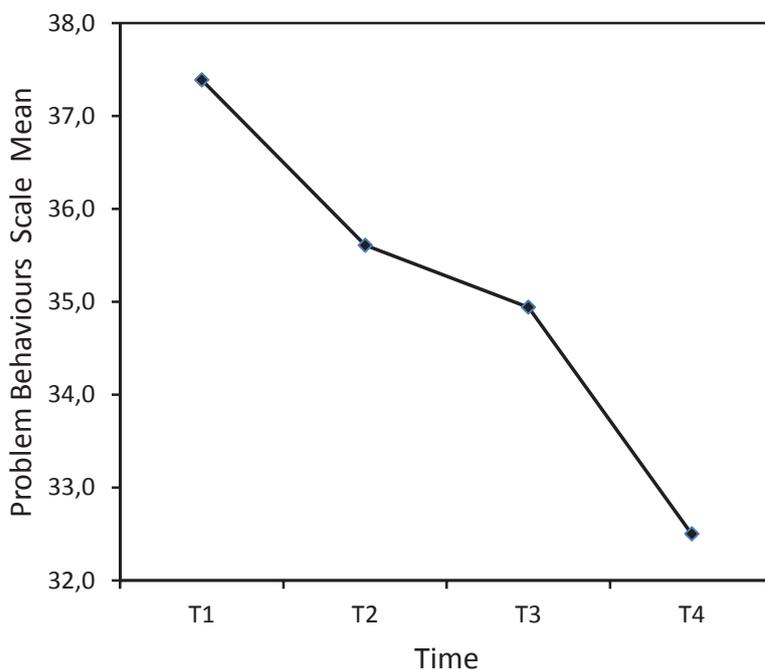


Figure 6.15. Problem Behaviours subscale mean from T1 to T4.

Although the ANOVA main effect of time on Social Skills Total was non-significant, it was of medium effect size, and the Social Skills Total mean score shows an increasing

trend over T1 to T4 (see Figure 6.16). A t-test was used to assess change, finding the reduction in Social Skills Total mean score was non-significant between T1 and T3, and between T1 and T4 (T1 to T3:  $t(17) = -1.13, p = .275$ ; T1 to T4:  $t(17) = -1.34, p = .198$ ). The reliable change index analyses indicate that from pre-intervention to follow-up 50.0% of the sample showed a statistically significant increase in Social Skills Total (see Table 6.9). Of those who were at a dysfunctional level of Social Skills Total at pre-intervention, 28.6% showed improvement to a functional level at follow-up. The ART participants' mean Social Skills Total score increased from below average at T1 to average at T4. Thus the hypothesis that ART participants would report an improvement in social skills is partially supported.

Analysis of the change in responses to the SSIS over time partially supports the hypothesis that ART would reduce dysregulated behaviour and increase social skills. Although there was no significant change in the mean group scores for problem behaviours, the mean score did move from an above average to an average level and there were some notable individual-level improvements for a third of participants. For externalising behaviours, there was a significant reduction from pre-intervention to follow-up. Although the mean score remained in the above average range, again there were some notable individual-level improvements for a third of participants. Despite no significant change in the mean group scores for social skills, the mean score did increase from the below average range to the average range, and half of ART participants also showed a statistically significant improvement in social skills. The findings of behavioural change do not appear to be as robust as the changes reported in emotion regulation and anger control. As outlined in previous chapters, social competency is associated with lower levels of aggressive behaviour and less cognitive biases. The next section addresses the impact of ART on cognitive biases.

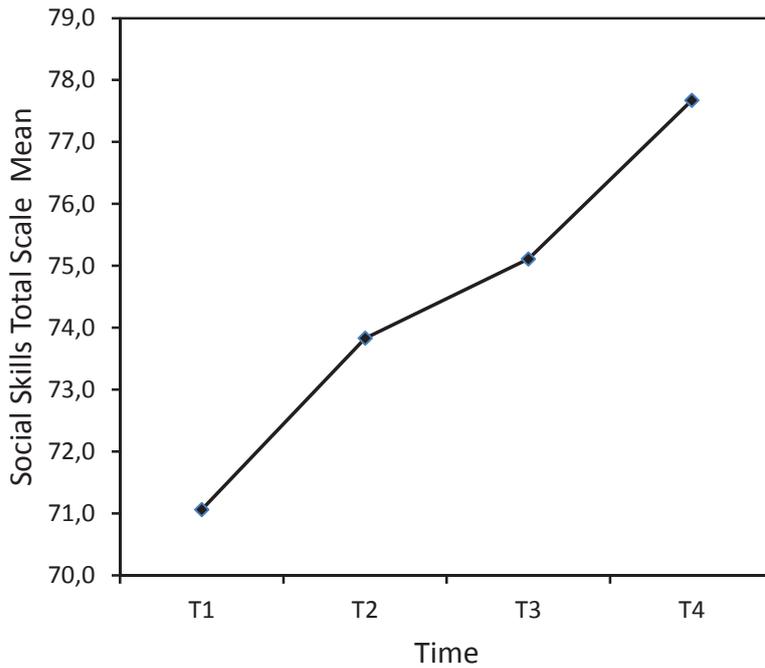


Figure 6.16. Social Skills Total Scale mean from T1 to T4.

### **Cognitions: Effect of Intervention**

It was predicted that ART participants would report less aggressive cognitive biases following the ART intervention. A decrease on the HIT Total scale would indicate that participants were reporting fewer positive attitudes toward aggression and cognitive biases associated with aggressive behaviour. There were no predictions made about whether Overt or Covert aggressive biases would be influenced differently by ART. There were also no predictions made about whether behavioural referents (Oppositional Defiance, Physical Aggression, Lying and Stealing) would be influenced differently to cognitive referents (Assuming the Worst, Blaming Others, Minimising/Mislabelling and Self-Centred). Lower mean scores on any of the above subscales would be in support of the hypothesis that ART reduces cognitive biases.

A series of one-way repeated-measures ANOVAs were conducted to determine if changes in mean How I Think (HIT) scores were significant over the intervention and follow-

up period (T1-T4). The means, standard deviations and alpha ranges of the HIT for the ART sample from T1 to T4, and a normative comparison, are displayed in Table 6.7. The main effect ANOVA results for the HIT and each of the subscales at T1 to T4 are displayed in Table 6.8. There was a significant main effect on time for HIT Total, Overt aggression, Oppositional Defiance, Assuming the Worst and Blaming Others. The main effect of time was non-significant for Covert aggression and Minimising/Mislabelling, but note the effect sizes were large. The main effect of time was also non-significant for subscales of Stealing, Lying and Self-Centred but with medium effect sizes.

Figure 6.17 shows the direction of change for the HIT Total mean score from T1 to T4. Tukey's HSD post-hoc analyses showed the reduction in HIT Total mean score were significant between T1 and T4 ( $p=.008$ ). The HIT Total mean score reduced from a clinical level at T1 to within the borderline range at T4 (see Table 6.7). The reliable change index analyses indicate that from pre-intervention to follow-up 44.4% of the sample showed a statistically significant decrease in HIT Total (see Table 6.9). Of those who were at a dysfunctional level of HIT Total at pre-intervention, 38.5% showed improvement to a functional level at follow-up. This supports the hypothesis that ART participants would report fewer cognitive biases following the ART programme.

Table 6.7

Descriptive statistics and alpha range for ART participants on the HIT from T1 to T4 (N=18) with normative comparison (n=412)

	$\alpha$ (range)	Time 1		Time 2		Time 3		Time 4		Normative sample†		
		M	SD	M	SD	M	SD	M	SD	$\alpha$	M	SD
HIT Total	.89-.95	3.39	0.71	3.31	0.66	3.15	0.63	3.01 <sup>b</sup>	0.81	.95	2.39	0.69
Overt	.82-.91	3.49	0.77	3.46	0.75	3.26	0.63	3.08 <sup>b</sup>	0.84	.90	2.44	0.71
Oppositional defiant	.52-.85	3.64	0.72	3.66	0.67	3.47	0.69	3.16 <sup>b</sup>	0.90	.79	2.55	0.72
Physical aggression	.68-.86	3.34	0.93	3.27	0.97	3.05 <sup>b</sup>	0.66	2.99 <sup>b</sup>	0.83	.86	2.32	0.78
Covert	.83-.93	3.32	0.73	3.20	0.65	3.09	0.74	2.99 <sup>b</sup>	0.82	.90	2.34	0.74
Stealing	.81-.91	2.86	0.94	2.70	0.81	2.58 <sup>b</sup>	0.74	2.52 <sup>b</sup>	1.04	.86	2.02	0.75
Lying	.45-.78	3.78	0.63	3.71	0.60	3.60	0.86	3.47	0.80	.79	2.69	0.83
Assuming worst	.66-.84	3.49	0.78	3.32	0.64	3.21	0.70	3.06	0.87	.83	2.35	0.72
Blaming others	.65-.81	3.41	0.87	3.46	0.70	3.17	0.71	3.04 <sup>b</sup>	0.81	.82	2.42	0.79
Minimising/mislabelling	.62-.76	3.30	0.72	3.25	0.82	3.14	0.80	2.95 <sup>b</sup>	0.79	.83	2.31	0.78
Self-centred	.64-.84	3.27	0.70	3.13 <sup>b</sup>	0.72	3.01 <sup>b</sup>	0.63	2.91 <sup>b</sup>	0.83	.79	2.42	0.74

Note:  $\alpha$  = Cronbach's alpha, M = Mean, SD = Standard Deviation, <sup>b</sup> = borderline, † From "How I Think" by Gibbs, J.C., Barriga, A.Q., & Potter, G.B., 2001, p. 19 & 25.

Table 6.8

*Main effect ANOVA results on the HIT from T1 to T4 (N=18)*

	F (3,51)	P	Partial $\eta^2$
HIT Total	5.81	.002	.26*
Overt	6.71	.001	.28*
Oppositional defiant	9.63	.000	.36*
Physical aggression	2.61	.061	.13
Covert	2.72	.054	.14
Stealing	1.85	.150	.10
Lying	1.76	.167	.09
Assuming worst	4.48	.007	.21*
Blaming others	6.85†	.003	.29*
Minimising/mislabelling	2.65†	.085	.14
Self-centred	2.23	.097	.12

Note  $\eta^2$  = Eta Squared, \* = Significant at  $p < .01$ , † Greenhouse Geisser, Blaming Others: (df=2.01, dfr=34.19),

Minimising/Mislabelling: (df=2.01, dfr= 34.19)

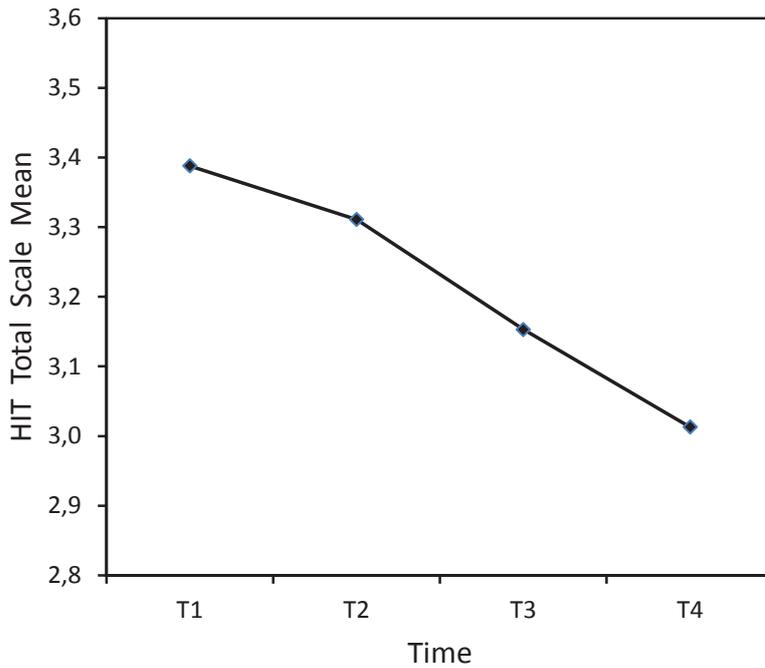


Figure 6.17. HIT Total scale mean from T1 to T4.

Figure 6.18 shows the direction of change in mean scores for Overt aggressive biases from T1 to T4. Tukey's HSD post-hoc tests, indicate there was a significant reduction in the Overt mean score from T1 to T4 ( $p=.051$ ) and from T2 to T4 ( $p=.016$ ). The Overt mean score reduced from a clinical level at T1 to within the borderline range at T4 (see Table 6.7). The reliable change index analyses indicate that from pre-intervention to follow-up 16.7% of the sample showed a statistically significant increase in self-reported Overt aggressive biases (see Table 6.9). Of those who were at a dysfunctional level of Overt aggressive biases at pre-intervention, 57.1% showed improvement to a functional level at follow-up. This supports the hypothesis that ART would reduce aggressive biases, with regards to overt behavioural referents.

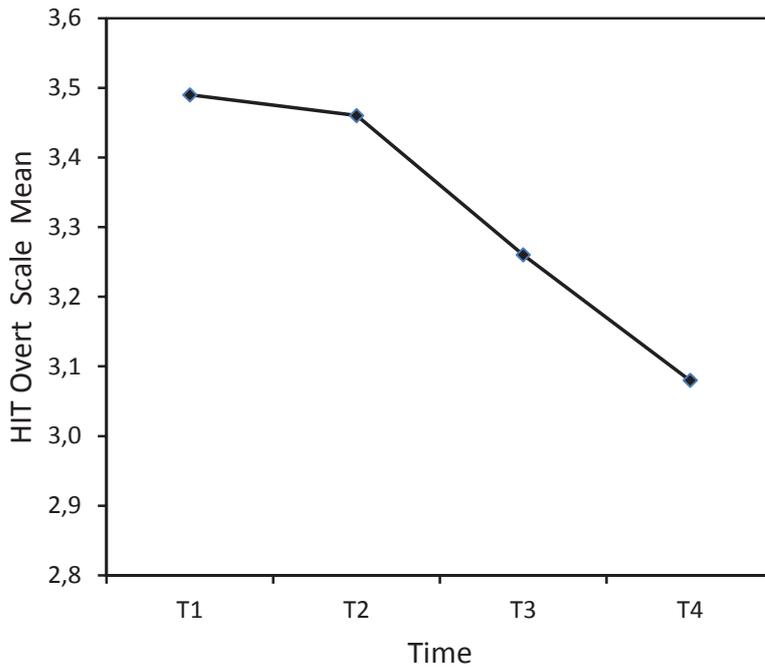


Figure 6.18. Overt scale mean from T1 to T4.

The Overt subscale is comprised of Oppositional Defiance (OD) and Physical Aggression (PA). Only OD showed a significant main effect of time, with a large effect size (see Table 6.8, Figure 6.19). Tukey's HSD post-hoc analyses indicate there was a significant reduction in the mean OD score from T1 to T4 ( $p = .006$ ), from T2 to T4 ( $p = .001$ ), and from T3 to T4 ( $p = .023$ ). The OD mean score reduced from a clinical level at T1 to within the borderline range at T4 (see Table 6.7). Although the main effect of time on PA mean score was non-significant, PA showed a decreasing trend from T1 to T4, with medium effect size (see Table 6.8, Figure 6.20). A t-test found that the reduction in PA mean score neared significance from T1 to T3 but was non-significant from T1 to T4 (T1 to T3:  $t(17) = 2.09$ ,  $p = .052$ ; T1 to T4:  $t(17) = 1.80$ ,  $p = .090$ ). The PA mean score reduced from a clinical level at T1 to within the borderline range at T3 and T4 (see Table 6.7). The ART intervention appears to reduce cognitive biases concerning oppositional defiant behaviour, however reductions in biases concerning physically aggressive behaviour is less clear.

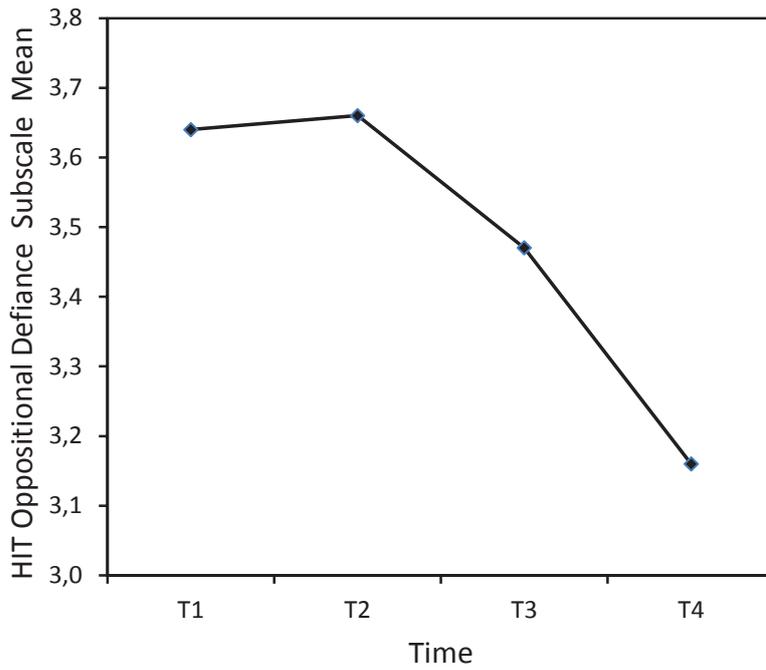


Figure 6.19. Oppositional Defiance subscale mean from T1 to T4.

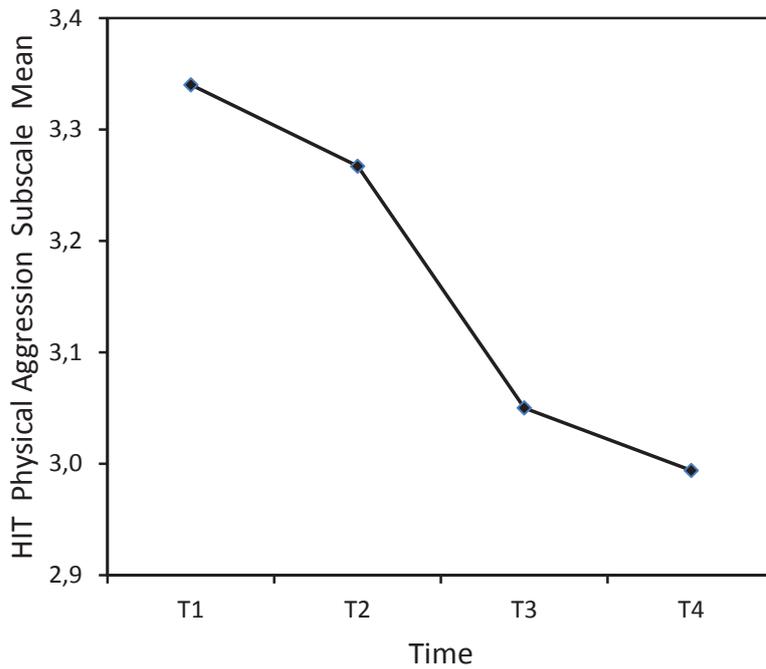


Figure 6.20. Physical Aggression subscale mean from T1 to T4.

Figure 6.21 shows the reduction in mean scores for Covert aggressive biases from T1 to T4. As the main effect of time on Covert aggressive biases trends toward significance with a large effect size (see Table 6.8), t-tests were used to assess change. The reduction in mean scores for Covert aggressive biases was non-significant from T1 to T3, but was significant between T1 to T4 (T1 to T3:  $t(17) = 1.75, p = .098$ ; T1 to T4:  $t(17) = 4.27, p = .001$ ). The Covert mean score reduced from a clinical level at T1 to within the borderline range at T4 (see Table 6.7). The reliable change index analyses indicate that from pre-intervention to follow-up only 11.1% of the sample showed a statistically significant decrease in self-reported Covert aggressive biases (see Table 6.9). Of those who were at a dysfunctional level on Covert aggressive biases at pre-intervention, 30.8% showed improvement to a functional level at follow-up. This partially supports the hypothesis that ART would reduce aggressive biases, with regards to covert behavioural referents.

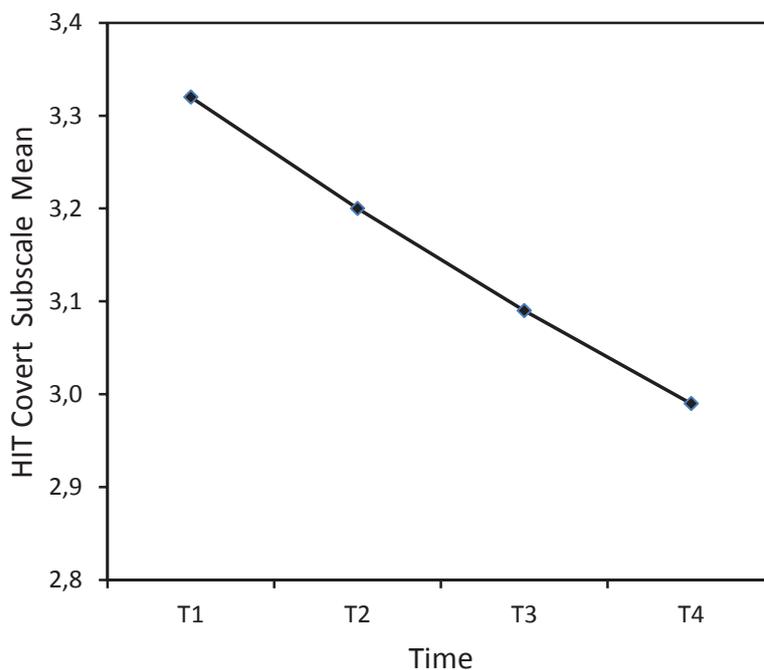


Figure 6.21. Covert scale mean from T1 to T4.

Within the Covert scale the ANOVAs main effects of time were also non-significant for Stealing and Lying. The mean scores both showed a decreasing trend across T1 to T4 and their effect sizes were medium (see Table 6.8 and Figures 6.22 and 6.23). T-tests showed that the reduction in mean Stealing score was non-significant from T1 to T3, but was significant between T1 to T4 (T1 to T3:  $t(17)= 1.96, p=.067$ ; T1 to T4:  $t(17) = 2.28, p=.036$ ). The Stealing mean score reduced from a clinical level at T1 to within the borderline range at T3 and T4. T-tests showed that the reduction in mean Lying score was non-significant from T1 to T3, but was significant between T1 to T4, but remained within the clinical range (T1 to T3:  $t(17)= 1.09, p=.291$ ; T1 to T4:  $t(17) = 2.53, p=.022$ ). The ART intervention appears to reduce cognitive biases concerning both stealing and lying, however participants continued to hold positive attitudes toward lying at a clinical level (see Table 6.7).

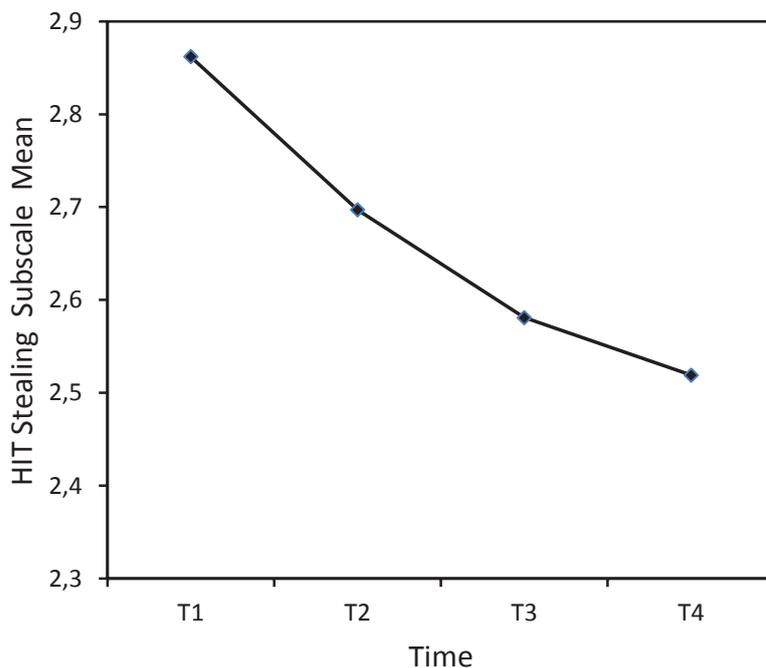


Figure 6.22. Stealing subscale mean from T1 to T4.

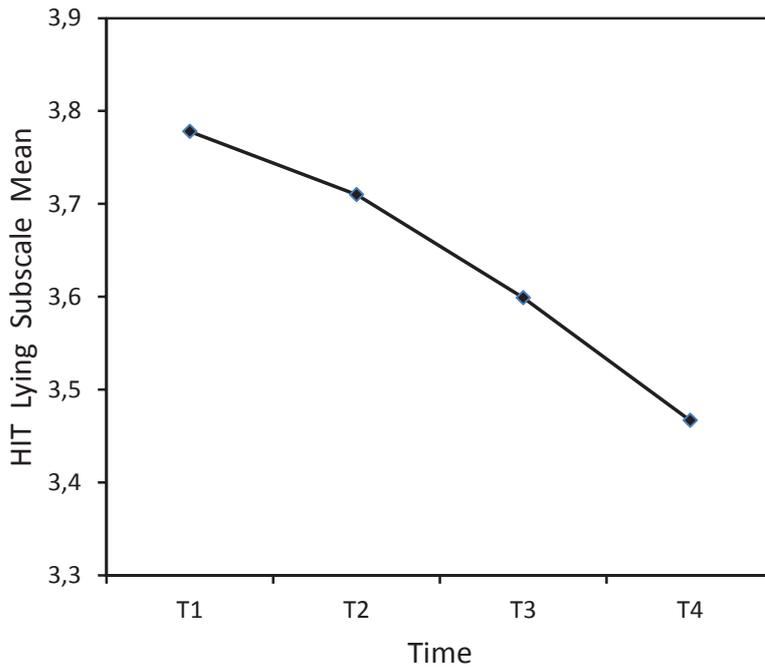


Figure 6.23. Lying subscale mean from T1 to T4.

With regards to cognitive referents, Assuming the Worst (AW) and Blaming Others (BO) showed a significant main effect, both with large effect sizes (see Table 6.8). Figure 6.24 shows the pattern of change for AW. Tukey's HSD post-hoc analyses indicate that there was a significant reduction in the mean score for AW between T1 to T4 ( $p = .024$ ) but this remained within the clinical range at T4. Figure 6.25 shows the pattern of change for BO. There was a significant reduction in the BO mean score from T1 to T3 ( $p = .071$ ), T1 to T4 ( $p = .053$ ), T2 to T3 ( $p = .004$ ), and T2 to T4 ( $p = .022$ ). The mean score for BO reduced from a clinical level at T1 to within the borderline range at T4 (see Table 6.7). The ART intervention appears to reduce cognitive biases concerning AW and BO, however participants continued to self-report a clinical level of biases regarding interpreting others' intent as negative as measured by AW (see Table 6.7).

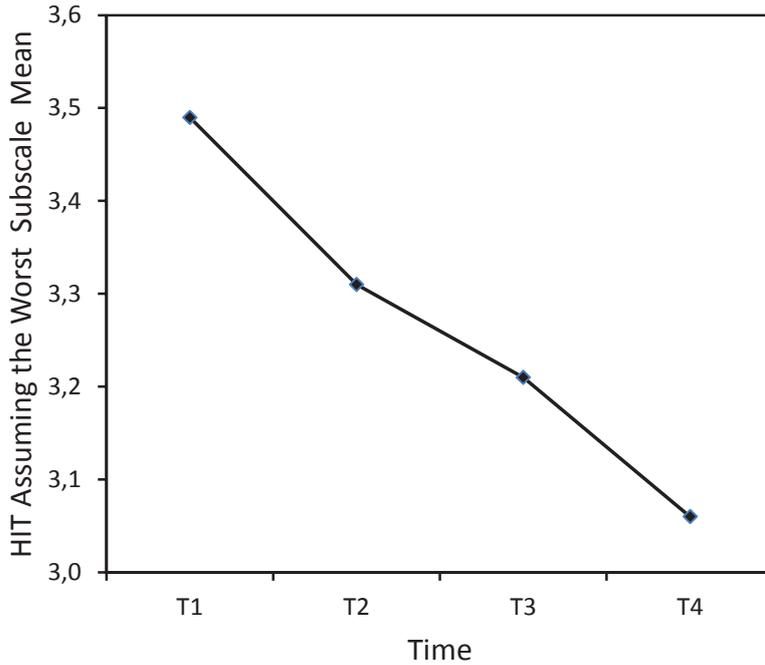


Figure 6.24. Assuming the Worst subscale mean from T1 to T4.

The main effect of time was non-significant for the cognitive referent subscales Minimising/Mislabelling (MM) and Self-Centred (SC), however both mean scores show a decreasing trend (see Figures 6.26 and 6.27). As the effect size was large for MM and medium for SC (see Table 6.8) t-tests were used to assess change. The reduction in mean MM score was non-significant from T1 to T3 but was significant between T1 to T4 (T1 to T3:  $t(17) = 1.19, p = .250$ ; T1 to T4:  $t(17) = 3.41, p = .003$ ). The mean score for MM reduced from a clinical level at T1 to within the borderline range at T4. The reduction in mean SC score was significant from T1 to T3, but was non-significant between T1 to T4 (T1 to T3:  $t(17) = 2.59, p = .019$ ; T1 to T4:  $t(17) = 2.42, p = .027$ ). The mean score for SC reduced from a clinical level at T1 to within the borderline range at T2, T3 and T4. The ART intervention appears to reduce cognitions that minimize or mislabel aggression, or that are self-centred.

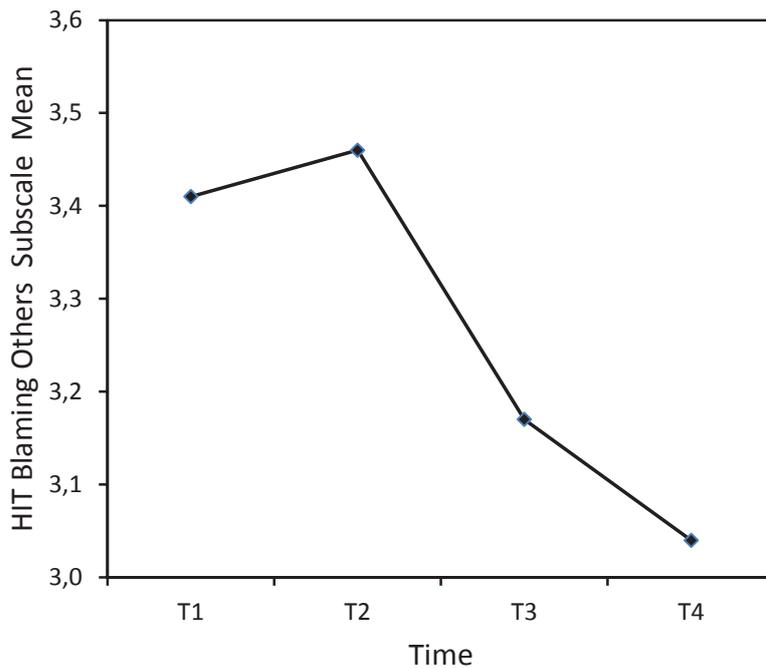


Figure 6.25. Blaming Others subscale mean from T1 to T4.

Analysis of the change in responses to the HIT over time supports the hypothesis that ART would reduce cognitive biases. Although none of the mean scores for HIT scales or subscales reduced to a non-clinical level, six of eight subscales did reduce from a clinical level to within the borderline range. Assuming the Worst and Lying remained at a clinical level. Most of these mean scores did not reach borderline range until follow-up assessment, however several showed earlier reductions, most notably Self-Centred cognitions were reduced to borderline range after anger control and social skills sessions (at T2). The greatest reductions were found in ART participants' cognitive biases regarding overt behavioural referents, particularly Oppositional Defiance. Assuming the Worst and Blaming Others also showed the most robust improvements of the cognitive referent subscales, despite Assuming the Worst remaining at a high level at follow-up assessment. Individual-level analyses were positive with 44.4% of the sample showing a statistically significant increase in HIT Total from pre-intervention to follow-up. As outlined in previous chapters, cognitive biases are

associated with aggressive behaviour. The finding that ART reduces cognitive biases is examined further in the discussion (p.176).

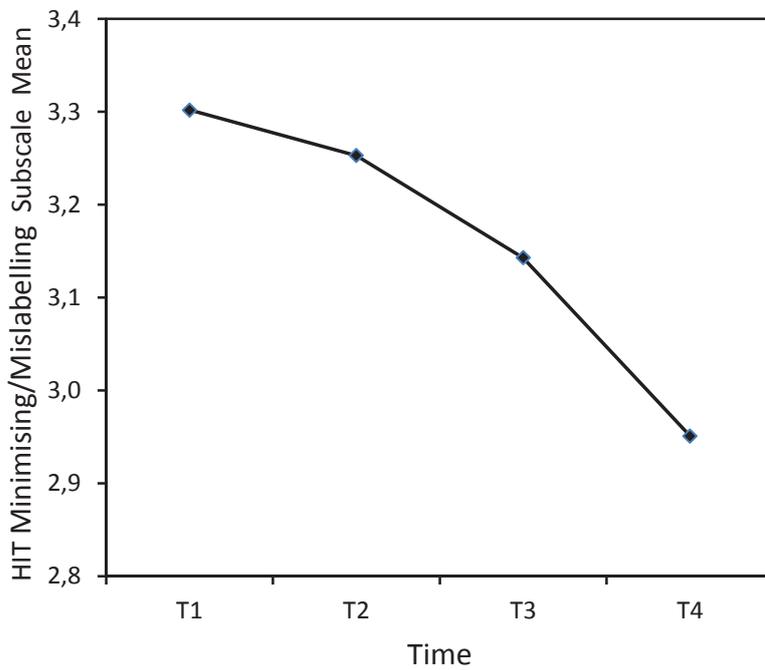


Figure 6.26. Minimising/Mislabelling subscale mean from T1 to T4.

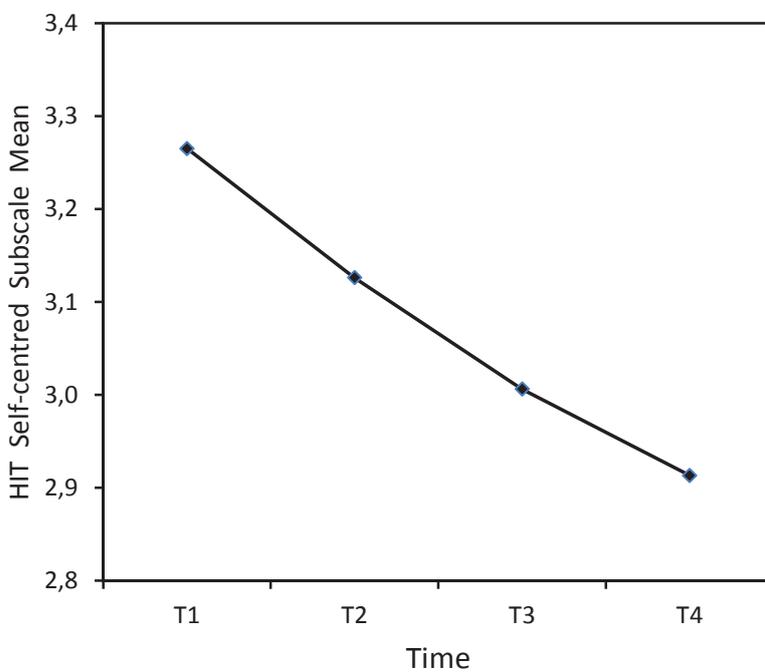


Figure 6.27. Self-Centred subscale mean from T1 to T4.

The analyses of change in the mean scores across the intervention and follow-up period suggest that aspects of emotion regulation, anger control, dysregulated behaviour and aggressive cognitive biases are improved by ART. The next section explains individual-level change, highlighting variations between participants' responses to ART.

### **Clinical Significance of Change**

As reported throughout the above section, the individual-level analyses add another dimension to help explain the influence of ART. The Reliable Change Index (RCI; Jacobson & Truax, 1991) was used to calculate individual-level change for the main scales (as described on p. 114). Table 6.9 provides the percentage of participants who, during the course of ART and the follow-up period, showed a statistically significant improvement (“improved”) or that improved from a dysfunctional to functional status (“changed status”). Note that those who showed a statistically significant improvement may not have reached a functional level. Note also that the percentage reported to have “changed status” is not the percentage of the full sample, but the percentage that were in the dysfunctional range at pre-intervention.<sup>22</sup> The number of participants who changed status is reported in brackets. The RCI was calculated using the Cronbach's alpha<sup>23</sup> and standard deviation from the control or normative comparison sample as reported for each measure (see Tables 6.1, 6.3, 6.5 and 6.7). The cut-off scores for determining change from a dysfunctional to functional status was based on the mean and standard deviation of the same normative population, and the mean of the current ART sample (consistent with the method of Jacobson & Truax, 1991)<sup>24</sup>.

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<sup>22</sup> A “recovered” category, often reported when examining RCI, is omitted here as it is not appropriate in this context.

<sup>23</sup> Cronbach's alpha is suggested to be the most theoretically consistent by Evans, Margison & Barkham (1998).

<sup>24</sup> The descriptive categories used for the SSIS and HIT are different to the dysfunctional/functional descriptions calculated using the RCI.

Table 6.9

*Percentage of participants who achieved RCI on measures showing significant mean difference from pre-intervention to follow-up*

	SEM	SDf	Percent improved (%)	Percent changed status (N changed status)
DERS Total	6.14	8.68	27.8	27.3 (3)
Difficulties with Impulsivity	1.94	2.74	27.8	46.2 (6)
Lack of Clarity	2.11	2.98	16.7	55.5 (5)
Lack of Awareness	2.35	3.32	16.7	41.7 (5)
Goal-Directed Difficulties	1.91	2.70	16.7	38.5 (5)
Anger Control†	4.58	6.48	16.7	54.5 (6)
Trait Anger †	4.47	6.33	27.8	22.2 (2)
Expression Out†	5.48	7.75	5.6	41.7 (5)
Social Skills Total	4.52	6.39	50.0	28.6 (4)
Externalising	2.02	2.86	33.3	33.3 (5)
Problem Behaviours	3.24	4.59	33.3	30.8 (4)
HIT Total	.15	.22	44.4	38.5 (5)
HIT Overt	.23	.32	16.7	57.1 (8)
HIT Covert	.23	.33	11.1	30.8 (4)

*Note:* SEM = Standard Error of Measurement, SDf = Standard Difference, † = T-scores

The percentage of participants who showed statistically significant improvement on at least one of the main measures was 88.9, with 83.3% of the sample showing clinically significant change on multiple measures. The greatest percentage of statistically significant

improvement was found for the SSIS Social Skills Total, with 50.0% of the sample improving, followed by HIT Total (44.4%) and Externalising and Problem Behaviours (33.3%). Trait Anger, Difficulties in Emotion Regulation Total and Difficulties with Impulsivity each showed statistically significant improvement for 27.8% of participants.

The RCI percentages provide some context for understanding the mean score changes across the intervention period. This data supports hypotheses that: i) ART would improve emotion regulation, ii) that ART would improve anger control, and reduce anger experience, anger expression, externalising behaviours and problem behaviours, iii) that ART would improve social skills, and iv) that ART would reduce cognitive biases. The hypothesis regarding anger expression is perhaps least well supported however. Without this individual-level data the intervention would appear to have been unsuccessful regarding improving social skills, whereas half of participants report an improvement. These percentages also show that despite an initial increase in mean scores for Trait Anger (see Figures 6.8 to 6.11), some participants did report significant improvements from pre-intervention to follow-up.

### **Behavioural Observation Scales**

The facilitators' observational ratings of participants' behaviour were recorded during each ART session. The categories of behaviour under observation were volunteering, co-operation, engagement, enthusiasm, understanding of material and disruption. The ratings were based on a 5-point Likert scale from 1 (*minimal level of behaviour observed*) to 5 (*maximum level of behaviour observed*). The full rating scales for each category of behaviour, with descriptions for each of these five points, is included in Appendix B1. For example, co-operation ratings were based on behaviours such as responding to requests to cease a behaviour, requests to start a behaviour, helping without being asked and helping in response

to group expectation. Ratings also took account of how many times a participant needed to be asked and how coercive the request needed to be. To score “1” a participant would be unco-operative, to score “5” a participant would show highly co-operative behaviour. This data was intended to provide an indication of within class behaviour change over the course of the intervention, and also as an adjunct to teacher and parent reports of behavioural change. Given that teacher and parent behavioural data was unable to be analysed, this information is the only data not based on self-reports.

To assess the degree to which the facilitators provided consistency in their observational ratings of behaviours, an analysis of inter-rater reliability was conducted. This analysis was conducted using a one-way random, single-measure inter-class correlation coefficient (ICC) (Halgren, 2012). The ratings for a subset of three ART sessions for all participants in attendance were randomly selected to calculate the ICC for the facilitator and co-facilitator. The ICC was in the fair range,  $ICC = 0.55$  (Cicchetti, 1994), indicating that the facilitators had a reasonable degree of agreement. This ICC suggests that behavioural ratings contained a modest amount of error variance due to differences in subjective ratings given by the independent facilitators. Statistical power for subsequent analyses of improvement across ART sessions may be modestly reduced, although the ratings appear adequate for inclusion in the results section.

Figure 6.28 shows the mean observational ratings (with trend line) for the ART participant group regarding volunteering behaviours across all thirty sessions. This graph was similar for volunteering, engagement, enthusiasm and understanding, showing an upward trend that suggests an improvement in these behaviours (see Appendix B2). The graphs did

not show an upward trend for co-operating or disruptive behaviour, suggesting that these behaviours did not change over the course of ART (see Appendix B2).

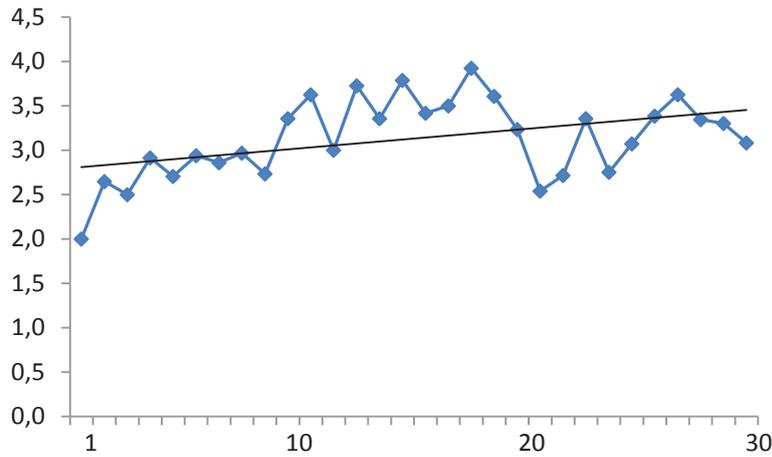


Figure 6.28. Mean volunteering score for participants across all 30 ART sessions

Table 6.10 displays the group mean observational rating given by a single facilitator, across the five behavioural scales for early and late session averages. The early session average is the mean of the first three sessions each participant attended, and late session average is the mean of the last three sessions each participant attended. To ensure that the data met the assumption of normal distribution necessary to perform a t-test, the skewness and kurtosis of each scale was considered using the conservative *p* levels recommended by Tabachnik and Fidell (2001). Using the same criteria, one univariate outlier was identified on the Enthusiasm scale for the early sessions and was replaced with the next closest mean score as suggested by Tabachnick & Fidell (2001). A t-test was used to assess improvement on these scales between the early and late sessions of the ART programme. As suggested by the graphed scores, ART participants were rated as volunteering and engaging more during late sessions than early sessions. They were also rated as demonstrating more enthusiastic behaviours and better understanding of the material during late sessions than during early

sessions. The difference between ART participants' co-operative and disruptive behaviours was non-significant between early and late sessions.

Table 6.10

*Descriptive statistics and t-test results for observational behaviour ratings for early and late ART sessions (N=18)*

	Mean (SD)		N	Df	T	Significance
	Early sessions	Late sessions				
Volunteering	2.44 (1.04)	3.02 (1.06)	18	17	-2.64	.017*
Co-operation	3.32 (0.78)	3.47 (0.48)	18	17	-0.84	.415
Engagement	2.86 (0.74)	3.53 (0.82)	18	17	-3.67	.002**
Enthusiasm	1.40 (0.57)	2.72 (0.67)	18	17	-7.88	.000**
Understanding	3.33 (0.85)	3.83 (0.53)	18	17	-2.25	.038**
Disruption	3.26 (1.13)	3.54 (0.77)	18	17	-1.06	.304

*Note:* SD = Standard Deviation, N=number of participants, Df=degrees of freedom, T=t-test statistic, \*\* = p<.01, \* = p<.05

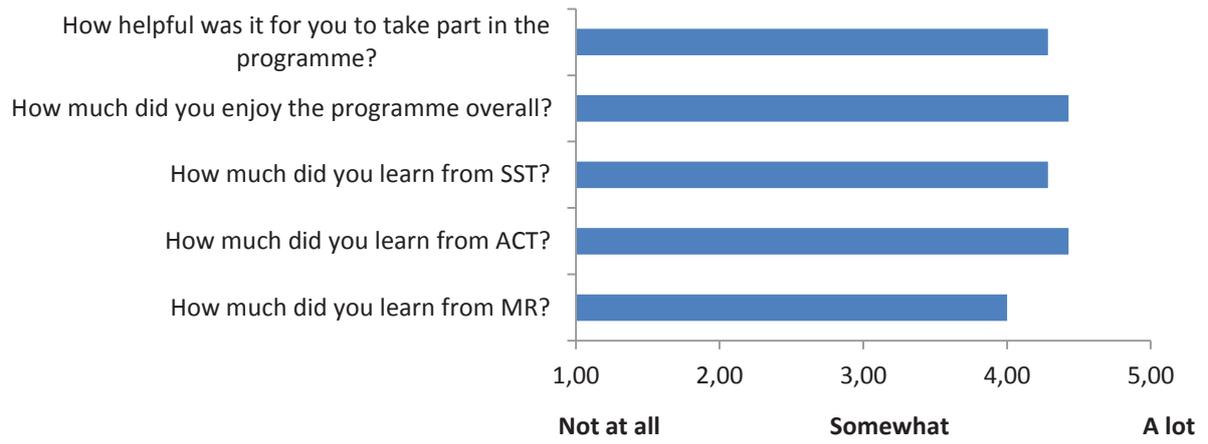
### **Participant Feedback**

Although no predictions were made about participant feedback, it is presented here to provide information about the acceptability and usefulness of ART to participants.

Participants were asked to provide feedback on their experiences of the ART programme, how useful they found it, what they had learned, and their preferences for modules and learning method. At the second assessment session, after all ACT and SST sessions had been delivered, 17 participants gave written feedback to open-ended questions. The two questions that provided the most information were “What do you think about the programme?” and “What have you learned from the programme so far?” In response to the first question, 10 participants used a positive descriptor such as ‘good’, ‘cool’, ‘fun’ or ‘helpful’. Within the feedback there were 12 descriptions of positive aspects of the programme such as (methods

or strategies used in sessions) or a positive consequence of the programme (such as getting into trouble less or being able express emotions). There were four negative comments regarding frustration, timing of the sessions and perceived lack usefulness of the programme. In response to the second question regarding what participants perceived themselves to have learned over the first 20 sessions, 70% of participants stated improved self-control or anger-control.

Although only seven participants gave written feedback at the follow-up assessment the information can still provide some context of a subset of the ART participants overall experience of the programme. Participants' mean ratings of their enjoyment of ART, and how helpful it was for them, on a Likert scale of 1 to 5 (1 = "*not at all*", 3= "*somewhat*", 5 = "*a lot*") were 4.4 and 4.3 respectively (see Figure 6.29). Participants' mean rating of how much they had learnt from each module was 4 or above. In response to what improvements in themselves as a result of ART, all participants responded positively. Each thought they had improved in social skills and anger control, but only two explained improvements in moral reasoning. When asked to choose between the three modules, Anger Control Training was the most preferred for usefulness and enjoyment. Group discussions were the most preferred choice of learning method with explanations including enhanced understanding, enabling sharing of opinions and talking about their difficulties. All students viewed the facilitators positively or neutrally. Only two participants reported that attending the ART sessions had disrupted their overall learning. All participants who responded viewed the rewards system as somewhat to very useful. Class disruption and role-plays were the most common dislikes and the only suggestion for improving the programme was for prompt attendance and less class disruption.



*Figure 6.29.* Participants' feedback about the ART programme and modules.

## CHAPTER 7

### DISCUSSION

This research aimed to investigate the impact of Aggression Replacement Training (ART) on emotional regulation (ER) and aggression, and the relationship between changes in ER and aggressive behaviour. Several hypotheses were made relative to these aims. It was predicted that, compared to pre-intervention, at follow-up ART participants would report: fewer difficulties with ER; increased anger control, and reduced anger expression, externalising and problem behaviours; and would demonstrate fewer externalising behaviours as reported by teachers and parents. In trialling ART in New Zealand schools for the first time, the aim was also to evaluate the feasibility and effectiveness of ART in this new context. Therefore in addition to the above hypotheses, the effectiveness of ART in NZ is compared with other ART research in the following section. In this regard it was predicted that ART participants would report improved social skills and less aggressive cognitive biases at follow-up than at pre-intervention. Although no predictions were made regarding ART participants' within session behaviour, this information is presented in support of the above hypotheses. Implementation challenges and participant feedback is also considered in this evaluation. By drawing theoretical connections between the emotion skills taught in ART, the research aimed to add to existing knowledge about the role of ER in adolescent aggression. In this chapter, each hypothesis and relevant information is discussed, followed by limitations of the research and future directions.

#### **The Impact of Aggression Replacement Training on Emotional Regulation**

Students who participated in ART were expected to experience a reduction in self-reported difficulties with ER. From pre- to post-intervention there was a significant reduction in the mean Difficulties in Emotion Regulation (DERS) total score which remained

significant at follow-up, with a large effect size (partial Eta squared = .29). This suggests that the content and structure of ART may have improved participants' perceived ability to regulate their emotions. The DERS measures six separate emotion skills as a composite assessment of ER. These skills are the targets of change in ART and have theoretical links to the anger control cycle and social skills training aspects of the ART programme (as described in chapter three). This suggests that the ART programme successfully teaches emotion skills and supports the use of ART with individuals who report high levels of emotional dysregulation and aggression.

Despite finding an overall improvement in ER, pre- to post-intervention improvements were not statistically significant for all composite subscales. The most statistically robust improvement was found for self-reported impulsivity when emotionally distressed, with a large effect size (partial Eta squared = .34). Although main effects were non-significant for the five other subscales, the effect sizes were medium to large for lack of emotional clarity, lack of emotional awareness, and difficulty engaging in goal-directed behaviours when emotionally distressed. As such, further analysis was undertaken, with t-tests indicating that mean scores on these scales were significantly lower at post-intervention or follow-up than at pre-intervention. This suggests improvement may have occurred within this particular sample of students, however the findings are more tentative than for overall ER and difficulties with impulsivity. There were no indications of significant improvement in access to ER strategies or acceptance of emotions from pre- to post-intervention.

With regards to impulsivity, the largest reduction occurred during Anger Control Training (ACT) and Social Skills Training (SST) sessions (between T1 and T2). This improvement remained significant at post-intervention and follow-up. This suggests that the

perception of being “out of control” when emotionally distressed, and difficulty managing impulses, occurred less frequently for ART participants over the period they participated in ACT and SST sessions three times per week. As ACT specifically teaches strategies for overriding aggressive urges, in favour of prosocial alternatives, this finding suggests these strategies are beneficial. Of course, given that particular techniques were not directly linked to these improvements (as with the other emotion skills to be discussed here), further investigation would be needed to make this explicit connection. This finding of improved self-efficacy in controlling behaviour when emotionally distressed, is consistent with findings of improved inhibitory control (Riggs et al., 2006), self-regulation (Lochman & Wells, 2002a) and self-control (Langeveld et al., 2012) following interventions focused on social and emotional competency.

There are suggestions that difficulties with emotional clarity and awareness also reduce from pre- to post-intervention. Regarding emotional clarity, ART participants reported being less often confused by, or unable to make sense of, their emotions following ART training. The mean score for lack of clarity at follow-up was lower than the control comparison mean (10.2 and 11.1 respectively). Regarding emotional awareness, ART participants reported more frequently attending to emotions and taking time to understand their emotions at follow-up assessment. This suggests that techniques involved in ART that aimed to improve emotional clarity and awareness, such as evaluating internal cues of emotion and relating these to situational variables (the “cues” and “triggers” part of the anger control cycle), are useful in helping adolescents to understand their emotional experience. Research has shown that higher emotional clarity is associated with higher anger control (Wilkowski & Robinson, 2008). Consistent with this research, ART participants’ lack of

emotional clarity was correlated with lower anger control<sup>25</sup> at pre-intervention, however given the small sample size this finding should be interpreted with caution. Both emotional clarity and awareness are associated with less self-reported aggressive and externalising behaviour (Vasilev et al., 2009). Self-reported improvement in ART participants' emotional understanding could therefore represent a reduced risk factor for aggressive behaviour.

Improvements in goal-directed behaviours did not show an incremental change across the intervention period but mean follow-up scores were lower than pre-intervention scores. Participants reported less frequent difficulties with focus and concentration when emotionally distressed following the ART intervention. The finding of improved ability to engage in goal-directed behaviour when emotional is important, as emotional arousal and mood interfere with social information processing (de Castro et al., 2003a; 2003b; Harper et al., 2010; Lemerise et al., 2005). ART's instructions about anger control, and how to employ strategies to reduce emotional arousal (a "reducer"), was expected to allow individuals to more accurately assess the situation (Lemerise & Arsenio, 2000) and to improve ability to engage in goal-directed behaviour. As with interpretation of changes in emotional awareness and clarity, changes in goal-directed behaviour are more tenuous than overall ER.

Across the intervention and follow-up period there was no significant improvement in self-reported access to ER strategies or acceptance of emotions. The analyses of variance were non-significant and effect sizes were small. This suggests that either ART did not effectively reduce difficulties in these areas for most students, or that the improvements were not large enough to be detected in this sized sample by the methodology employed in this research. To report an improvement in ER strategies, adolescents would need to perceive

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<sup>25</sup> T-score only, not raw score.

improved self-efficacy for enacting ER strategies to produce a positive emotional outcome, there was no change in this regard. The non-acceptance subscale measures adverse secondary emotional responses to emotional distress (such as shame, embarrassment and guilt). Therefore although ART addresses the adaptive nature of emotion and the function of anger, with the intent to reduce adverse responses to anger experience, few gains were made in this area. Mindfulness interventions with adolescents have also failed to find an improvement in acceptance of emotions using the DERS with a smaller effect size than other subscales (Metz et al., 2013); it may be more difficult to effect or detect change in secondary emotional responses with adolescents.

ART appears to improve emotion skills related to the immediate interpersonal situation, particularly control of impulsive behaviour, most robustly. This is the focus of ACT and SST sessions. Emotional understanding and maintaining focus on the goals of interaction also appear to benefit from the programme. ART focuses less on managing emotions beyond these social interactions and therefore may be more beneficial in regulating emotional arousal when it interferes with social rather than intrapersonal processes. Some acceptance-based interventions, that emphasise intrapersonal processes, have had success improving acceptance and lack of strategies with adults who have significant difficulties in these areas (Gratz & Gunderson, 2006). A useful modification of the ART programme may be to extend ER skills beyond that for immediate purposes, to include strategies to reduce persistence of negative emotions, to increase the dosage of skill learning in these areas. This could be informed by the outcomes of Dialectical Behaviour Therapy for Adolescents (DBT-A; Miller et al., 2007), which focuses on emotional dysregulation and has increased behavioural and emotional strengths in adolescents with oppositional defiant disorder (Nelson-Gray et al., 2006). Using

the DERS to measure the changes in ER following DBT-A could be especially useful given the new research into DBT-A in schools (Mazza et al., in press).

Although there is some variation in improvements across emotion-related skills, the findings suggest that ART increases skills underlying reflective processing of emotional information. This information helps individuals form more advanced representations of social situations (de Castro, 2010) and promotes prosocial behaviour (Lemerise et al., 2005). Given that medium to large effect sizes were found for all subscales of the DERS, with the exception of non-acceptance of emotion, these findings indicate that ART has the potential to improve these skills in the school context, however the sample size was not large enough for the changes to be statistically significant. These findings are limited by the number of statistical analyses undertaken with the data, which increases the likelihood of rejecting the null hypothesis (that ART does not induce change in ER) when in fact it is true. Caution must be exercised in assuming these effect sizes would be found in a larger sample. Further research is needed to strengthen findings that ART can improve reflective processing of emotional information during social interactions.

The above findings indicate that ART improves several dimensions of ER to a measurable extent. As discussed in the results section, a measure of clinically significant change can also highlight individual-level improvements. Although the mean DERS total score remained above the control comparison sample mean, taken from Weinberg and Klonsky (2009), 27.3% of those who were at a dysfunctional level for difficulties in ER at pre-intervention improved to functional level at follow-up. Perhaps a better measure of individual-level change, which does not rely on a functional cut-off point, is the percentage of

the sample who experienced a statistically significant improvement from pre-intervention to follow-up, which was greatest for the DERS total score and impulsivity (27.8% for both).

### **Summary of Improvements in Emotion Regulation**

The significant reduction in self-reported difficulties with ER from pre-intervention to follow-up supports the hypothesis that ART improves perceived ER abilities. This research supports the view that ER is not stable, but a modifiable ability. This is consistent with other interventions that improve emotional skills (Metz et al., 2013; Shelton et al., 2011; Nelson-Gray et al., 2006). Training can improve emotional awareness, understanding of triggers and cues of emotion, behavioural and cognitive arousal management techniques, and reflective evaluation of emotion information, and should be a part of aggression interventions (as advocated by McLaughlin et al., 2011; Southam-Gerow & Kendall, 2002; Suveg et al., 2007; Gratz & Tull, 2010). As fewer studies of ER and interventions involve adolescents than younger children, this research is an important demonstration that adolescents are capable of significant perceived improvement in a short amount of time, adding to the view that ER is particularly relevant during adolescence (e.g., Garnefski et al., 2002; Garnefski et al., 2005; Silk et al., 2003; Vasilev et al., 2009; Neumann et al., 2010). Given that ART has an effect on emotion skills, and in particular ability to control behaviour when emotionally distressed, Gratz and Roemer's (2004) skill-based model appears to be a useful conceptualization for intervention with adolescents.

It is difficult to link specific techniques in ART to improvements in particular emotion skills, however there do seem to be strong theoretical connections that suggest how the content of ART improves ER. ART utilises principles of social learning to help individuals form associations between emotions and adaptive responses in teaching ER skills.

Findings of improved ER supports suggestions that the multi-component structure of ART, and the content of ACT in particular, “replicates the normal developmental sequence” of processes that lead to self-regulation (Glick & Gibbs, 2011, p. 53). Improvements in ER over the course of ART, suggests that role-play, modelling, structured feedback and rehearsal of ER skills is useful in re-socialising adaptive ER. From a theoretical perspective, the reduction in ER further supports the effectiveness of these CBT procedures consistent with other research showing improvements in emotional competence resulting from intervention (e.g., Kam et al., 2004; Lochman & Wells, 2002a; Frey et al., 2000).

The adolescents who participated in ART in this study most consistently reported improvement in impulse control when emotionally distressed. Self-efficacy in controlling behaviour when emotionally distressed could be seen as the cornerstone of useful ER in regards to aggression. ART teaches participants that in order to control interpersonal behaviour they should understand their own and others’ emotions, others’ perspectives, causes of emotions and potential regulation strategies. ART also focuses on identifying interpersonal triggers with particular interaction partners, discussing and role-playing typical conflict topics, and the necessary skills to manage them (i.e., negotiation). This includes role-playing different perspectives within the same scenario, building social and situational ER, with the intent for individuals to gain greater control over their behaviour, to avoid aggressive behaviour. Improvements in other emotion-related skills (i.e., emotion understanding, ability to focus when distressed) could also be seen as necessary for improvement in control of behaviour when emotionally distressed.

## **The Relationship between Changes in Emotion Regulation and Aggression**

The second purpose of this research was to investigate the relationship between improvements in ER and changes in aggressive cognitions and behaviour. Although an analysis of the association between change in ER and change aggressive behaviour outcome measures was planned, the sample size was considered too small to allow a robust analysis using correlation or regression. Multiple measures of aggressive behaviour were planned for comparisons of pre- and post-intervention, including parent, teacher and student reports of externalising behaviour, parent and teacher reports of aggressive behaviour, student reports of anger expression and problem behaviours, and school records of behavioural incidents. Unfortunately the data collected for several of these measures was unreliable and will be discussed fully in the following section (the implementation and effectiveness of ART in NZ schools). Students' self-reports of perceived behavioural change are therefore the main measure of behavioural improvements.

### **Anger Experience and Expression**

The State-Trait Anger Expression Inventory – 2 Child and Adolescent version (STAXI-2 C/A) was used to assess change in participants' experience, expression and control of anger over the course of the ART programme. It was predicted that ART participants would report lower anger experience and expression following the intervention. Trait anger assesses the tendency to experience anger more often and with greater intensity, and outward expression of anger assesses verbal or physical aggression. Although trait anger, trait anger reactivity and outward expression of anger showed significant main effects of time, with large effect sizes (partial Eta squared = .20, .14, .20 respectively), the pattern of change was not as expected. Trait anger and outward expression of anger increased non-significantly from pre-intervention to post-ACT and SST sessions (T1 to T2), before reducing significantly

during the Moral Reasoning (MR) sessions and follow-up period (T2 to T4). The pattern of change was the same for both subscales of trait anger, provoked (reactive) and unprovoked (temperamental) anger. An initial increase in these scores during interventions is thought to reflect an increased awareness of anger experiences and aggressive impulsivity, such that awareness of lower intensity experiences increase the perceived frequency of these experiences (Brunner & Spielberger, 2009; McWhirter & Page, 1999). For example, authors of a short-term anger management intervention explain an increase in trait anger and outward expression of anger as indicative of increased sensitivity to internal experiences (McWhirter & Page, 1999); whilst in a longer-term anti-bullying intervention an initial increase in outward expression of anger over the first 8 weeks was followed by a gradual decrease until follow-up (Nickel et al., 2005). The increase in anger experience over the first 7 weeks of ACT and SST in this study may therefore reflect an increase in participants' awareness of how they experience anger and their tendency to express anger in particular ways. ART aims to increase awareness as ACT sessions teach students about the subtle variations in anger experience, and how to describe and express their own cognitive and physical experiences of anger.

An earlier baseline measurement with another assessment after the first several ACT sessions, and/or a control group comparison, would provide a more reliable basis for inferring the influence of ART on anger experience. Although the mean scores for trait anger and outward expression of anger are lower at follow-up than at pre-intervention, the difference was not significant. Despite this, 27.8% of participants reported a statistically significant reduction in trait anger from pre-intervention to follow-up. Given that negative affective states exacerbate hostile interpretations and aggressive response choices (de Castro et al., 2003a; Harper et al., 2010; Lemerise et al., 2005), self-reported decreases in the frequency

and intensity of anger experience (as measured by trait anger) indicate that ART may reduce this risk factor for aggressive behaviour in some individuals. This reduction partially supports the hypothesis that ART participants would report lower anger experience, however changes in anger expression are less clear.

There were no changes in ART participants' self-reported suppression of anger, however only 22 % of the ART sample had an above average level of inward expression of anger at pre-intervention (as measured by the STAXI-2 C/A's Expression-In subscale), therefore this reduces the number of participants that have the potential to show such a reduction. Absence of improvement in inward expression of emotion may be related to the absence of improvement in more intrapersonal ER skills, and the focus of ART on outward expression of emotion. Nickel et al., (2005) also reports on an intervention that is less effective for reducing inward expression of anger.

### **Anger Control**

It was predicted that ART participants would report higher anger control following the intervention. ART participants' self-reports of anger control increased significantly across the intervention and follow-up period with a large effect size (partial Eta squared = .14). This effect size, although large, is of lesser magnitude than the improvements in impulsivity (.34) and overall ER (.29). Participants reported more efforts to manage anger expression or employ a strategy to reduce anger at follow-up than at pre-intervention. This is consistent with the expectation that learning strategies for anger control would lead to reports of increased effort and attempts at managing anger. Of those participants who were in the dysfunctional range for anger control at pre-intervention, 54.5% showed an increase to functional levels, however only 16.7% of the entire sample showed a statistically significant

improvement. The majority of participants who provided feedback noted improved anger control as a consequence of ART. These findings together support the hypothesis that ART participants would report increased anger control following the intervention. . Research has shown that anger is more likely to lead to aggressive behaviour in those with less adaptive ER (Calvete & Orue, 2012), therefore the concurrent reduction in trait anger, increase in anger control, and improvements in ER suggest that ART participants' levels of aggression could also be expected to decrease. These are indications of positive change and reduced risk factors for aggression, but current data limits what inferences can be made about the relationship of these variables with aggressive behaviour.

### **Externalising and Problem Behaviours**

The problem behaviour scale of the Social Skills Improvement System (SSIS) provided an alternative measure of aggressive behaviour to the anger expression scales of the STAXI-2 C/A. The problem behaviour scale comprises externalising, internalising, bullying and hyperactivity/inattention. It was predicted that ART participants would report lower levels of externalising behaviour, problem behaviours and higher levels of social skills following the intervention. Although the ART participants' mean group score for problem behaviours did not reduce significantly between pre- and post-intervention, the mean score did reduce from above average at pre-intervention to within the average range at follow-up. A third of participants also showed a statistically significant decrease in problem behaviours. The hypothesis that ART participants would report lower levels of problem behaviours following the intervention was only partially supported and again.

Within the problem behaviour scale, the externalising subscale assesses self-reported verbal and physical aggression, inability to control temper and arguing. Although the main

effect of time on externalising behaviours was non-significant, mean externalising scores at follow-up were significantly lower than pre-intervention scores, despite remaining above average. A third of participants showed a statistically significant decrease in externalising behaviours from pre-intervention to follow-up. A third of participants who were at a dysfunctional level of externalising behaviours at pre-intervention, also reduced to functional levels by follow-up. The hypothesis that ART participants would report lower levels of externalising behaviour following the intervention was therefore partially supported. For both problem behaviours and externalising behaviours, the potential for attributing change to the effect of ART rather than chance is increased due to the number of statistical analyses performed.

Although the finding of reduced externalising behaviours cannot be attributed to improvements in ER, the concurrent changes after participating in ART is consistent with other research finding a relationship between these two variables (Silk et al., 2003). It is also consistent with the views of other ART researchers such as Langeveld et al., (2012), who found reduced externalising problems and increased self-control following ART. Langeveld et al., suggested that “the pathway to reduced deviant behaviour will [...] partly be mediated by increased self-control” (p.395). The current participants’ improvements in impulse control when emotionally distressed suggest that, following ART, participants are better able to understand emotional information and override antisocial impulses that result in externalising behaviour. Further study would be required to understand whether ER has a mediational role in the process by which ART reduces externalising behaviour however. That ART improves ER and reduces externalising behaviour is also consistent with the E-SIP model (Lemerise & Arsenio, 2000), that posits deficits in emotion skills contribute to less competent social behaviour.

Hyperactive or inattentive behaviour, measured as part of the problem behaviour scale, significantly reduced across the intervention period. Hyperactive or inattentive behaviours reduced from an above average level at pre-intervention to an average level at follow-up. The scale for hyperactivity/inattention asks respondents to rate their agreement with statements regarding impulsivity, distraction, temper, focus and motivation; therefore there is some overlap between this subscale and the externalising subscale. The mean scores on both hyperactivity/inattention and externalising behaviour subscales reduced from pre-intervention to follow-up, showing the greatest reductions during ACT and SST sessions, rather than during MR sessions. This suggests that the techniques and skills taught in ACT and SST are most directly associated with these behavioural improvements.

The behaviours assessed by the hyperactivity/inattention subscale were also reflected in several of the observational rating scales of within-session behaviour. Ratings of “disruption” captured hyperactive and distracting behaviours, whilst “engagement” captured listening, attending and participating in tasks. Although the mean ratings of ART participants’ disruptive behaviours did not improve over the intervention period, there was an improvement in engagement behaviours. It is acknowledged that the observational rating scales are limited by their subjective nature (discussed further on p. 199), however the improvement in engagement is congruent with students’ self-reports of reduced hyperactivity or inattention. This is also of practical significance as individuals who are not engaged typically disturb the class environment and interfere with the individual’s own and others’ learning. Reduced hyperactivity/inattention and improved engagement should be considered in the context of improved impulse control and ability to engage in goal-directed behaviours when emotionally distressed. Taken together this suggests that ART has a positive effect on self-regulatory capacity that is common to these variables. Self-regulation may be an

underlying common element required for individuals to demonstrate self-control, reduced impulsivity and control of behaviour when emotionally distressed. This is again consistent with findings of improved inhibitory control (Riggs et al., 2006), self-regulation (Lochman & Wells, 2002a), self-control (Langeveld et al., 2012) and hyperactivity (Robinson Smith, Miller & Brownell, 1999) following social competence interventions.

### **Social Skills**

One of the aims of ART is to teach prosocial skills to provide an alternative to aggressive behaviour. It was predicted that ART participants would report higher levels of social skills following the intervention. Analyses of variance and t-tests found no significant improvement in ART participants' mean social skills score from pre-intervention to follow-up; this is a somewhat surprising finding given other ART intervention research outcomes of improved social skills. The mean social skills score did increase from the below average range to the average range and improvements were also found on an individual level, suggesting some success with particular participants. The Reliable Change Index (RCI; Jacobson & Truax, 1991) showed that 50% of participants reported improvements in their social skills that were statistically significant. A substantial improvement in social skills, of either a statistically or clinically significant level, indicates an individual believes they have alternative prosocial means of obtaining their goals in social interactions. This suggests that ART may provide motivation and opportunity for some individuals to learn and practice social skills that may improve their ability to pursue relational goals. A perceived increase in social skills may reduce aggressive behaviour, as lower self-efficacy for prosocial behaviours is associated with aggressive responding (Erdley & Asher, 1996). Observational rating scales also indicated a significant increase in volunteering, engagement and enthusiasm, suggesting that as students' perception of their own social skills improved, they were more likely to

display these positive and interactive behaviours. ART has previously been found to improve social competence (particularly for individuals who are low in social skills at pre-intervention) and increases in social competence correlated with reduced aggression (Langeveld et al., 2012). The social skills findings in this study are weaker than those for ER, anger control, externalising behaviours and aggressive cognitions (to be discussed in the next section).

A third of the current sample reported an average level of social skills prior to the ART intervention, therefore these participants may have benefitted less from the intervention, limiting the amount of change seen in mean social skills scores. Other ART researchers have failed to find significant improvements in self-reported social skills using a similar measure as the current research but found improvements as rated by parents and teachers (Gunderson & Svardtal, 2006). Unfortunately the current research did not collect parent or teacher-rated reports of social skills. The hypothesis that ART participants would report higher levels of social skills following the intervention is therefore partially supported.

### **Cognitive Distortions**

It was predicted that ART participants would report less aggressive cognitive biases following the intervention. There was a significant reduction in overall cognitive biases and overt behavioural references, in particular oppositional defiance. Participants also reported less agreement with statements measuring cognitive distortions regarding assuming the worst and blaming others. This supports the hypothesis that ART reduces cognitive biases, however levels of cognitive biases did not improve to a non-clinical level, remaining in the borderline range for most subscales at follow-up.

There was a significant reduction across the intervention and follow-up period in self-reports of aggressive cognitive biases as measured by the HIT total scale, with a large effect size (partial Eta squared = .26). At an individual level, 44.4% of ART participants showed statistically significant reductions in positive beliefs about aggression. The percentage of participants who were in the functional range at follow-up was 56.6% compared to 27.8% at pre-intervention. This suggests that although almost half of the participants improved significantly, some remain vulnerable to cognitive biases that are associated with aggressive behaviours. Other ART research with a longer duration of follow-up did not find improvements in cognitive biases until 6 months after the end of the intervention (Currie et al., 2012), suggesting that participants in the current study may have continued to improve on this measure. Unfortunately the current study did not allow for a delayed effect, and this should be considered in any further evaluation of ART.

There was a significant reduction across the intervention and follow-up period in overt aggressive cognitions and oppositional defiance with effect sizes (partial Eta squared of .28 and .36 respectively) comparable to those for ER. Although only 16.7% of participants showed a statistically significant improvement in overt cognitive biases at follow-up, the percentage of participants who were in the functional range at follow-up was 61.1% compared to 22.2% at pre-intervention. Research with adolescents finds that higher agreement with overt cognitive distortion items is related to increased frequency of self-reported overt antisocial behaviour (Liau, Barriga & Gibbs, 1998). This suggests that a decrease in the mean overt score for ART participants may reduce cognitive distortions as a risk factor for overt aggressive behaviour. The largest decrease in these mean scores occurred between the start of moral reasoning (MR) sessions and follow-up. After MR sessions ART participants agreed less with statements such as “When I lose my temper it is because other

people try to make me mad”, “Rules are meant for other people,” and “Getting what you need is the only important thing”, indicating reduced oppositional defiance. This suggests that when MR follows ACT/SST sessions, ART participants may take more responsibility for their own behaviour. ART participants’ attitudes toward physical aggression reduced from a clinical level at pre-intervention to within the borderline range post-intervention, however the reduction in mean score was non-significant. Again, a longer follow-up may have shown continued improvement however.

Although main effects were non-significant for covert aggression, further analysis using t-tests indicated that the mean scores were significantly lower at follow-up than at pre-intervention. ART participants continued to hold positive attitudes toward lying at a clinical level at follow-up; therefore the hypothesis that ART would reduce aggressive biases with regards to covert behavioural referents is only partially supported. Again research with adolescents finds that higher agreement with covert cognitive distortion items is related to increased frequency of self-reported covert antisocial behaviour (Liau et al., 1998). This suggests that a decrease in the mean covert score for ART participants may reduce cognitive distortions as a risk factor for covert aggressive behaviour. The reductions in covert aggressive cognitions are less clear than in overt aggressive cognitions, and it should not be assumed that these effects would be seen in a larger sample. It is again useful to remember the limitations of undertaking multiple analyses in increasing the risk of type one error.

Several of the HIT cognitive referent subscales had significant and large effect sizes, these were blaming others and assuming the worst (partial Eta squared = .29 and .16 respectively). Again the largest reductions for mean scores in blaming others occurred during MR sessions. Those whose tendency to blame others had reduced during ART, agreed less at

follow-up with statements such as “If I make a mistake it’s because I got mixed up with the wrong crowd” and “If people don’t co-operate with me, it’s not my fault if they get hurt”. Although the mean score for assuming the worst remained at a clinical level at follow-up, those individuals whose tendency to assume the worst had reduced during ART, agreed less with statements such as “You can’t trust people because they will always lie to you”, “You should hurt people first, before they hurt you”. Reductions in biases toward blaming others and assuming the worst may decrease the likelihood overestimates of the negative intent of others contribute to aggressive responses. To a lesser extent there is some suggestion that ART participants reduced in their tendency to agree with cognitions that minimize or mislabel aggression, and in their self-centred cognitions, however this requires further research.

The above reductions in cognitive biases associated with aggressive behaviour, suggests that the ART programme may teach individuals to reflect on how they think about social situations and about the other people involved. It is interesting that for the subscales where the greatest effect sizes were found (oppositional defiance and blaming others) the largest reductions occurred during MR sessions (from T2 to T3). The content of ACT, SST and MR sessions aims to improve the skills necessary for this reflection, but MR sessions are intended to challenge aggressive justifications and provide motivation for prosocial behaviours. It is possible that the MR sessions may have been particularly beneficial in addressing these cognitive biases, however this would need further controlled investigation to confirm this. It may also be that the MR sessions are only beneficial following ACT and SST sessions, therefore separate analyses of the impact of MR is required. The current findings of reduced cognitive biases are consistent with those of ART research with juvenile offenders (Currie et al., 2012; Nas et al., 2005). Currie et al., (2012) found significant reductions of

cognitive and behavioural referents on all HIT subscales with youths in correctional facilities. Whereas Nas et al., (2005) found a reduction in three of the cognitive referents (self-centred, minimizing/mislabelling, blaming others) and two behavioural referents (lying and stealing), following an enhanced version of ART training, which incorporated an additional module aimed at developing positive peer culture within the ART groups.

Research finds that negative mood state increases hostile attribution (de Castro et al., 2003a), and self-focused behaviour (Harper et al., 2010) therefore improving ER may reduce the influence of cognitive biases. ER also moderates the relationship between anger and aggressive behaviour despite hostile attribution (Calvete et al., 2012). Although this does not directly link ER with reduced cognitive biases, improving ER could be expected to increase accuracy of social information processing. Increased accuracy of social information processing may be apparent in reduced cognitive biases. In the current study both improvements in ER and reductions in overt and covert cognitive biases were found, however the relationship between these variables was not investigated. To understand the effect that improving ER has on aggressive biases would require further study. The finding of improved ER and reduced cognitive biases is consistent with the E-SIP model, which posits deficits in emotion skills contribute to less accurate interpretations of social situations (Lemerise & Arsenio, 2000).

### **Summary of the Relationship between Changes in Emotion Regulation and Aggression**

Changes in variables associated with aggressive behaviour, including emotional regulation, anger control, externalising and problem behaviours, social skills and cognitive distortions, provide further support for ART as effective in reducing the risk of aggressive behaviour. The scales and subscales that significantly reduced from pre-intervention to

follow-up, with the largest effect sizes, were impulse control when emotionally distressed, overall emotional regulation, overall cognitive distortions, overt cognitive distortions (particularly oppositional defiance), blaming others and assuming the worst, hyperactivity/inattention and anger control. Individual-level change also indicated that half of the sample reported statistically significant improvements from pre-intervention to follow-up on social skills, and approximately a third reported reductions in externalising, problem behaviours and anger experience. This individual-level analysis can help to contextualise the findings of the group-level analyses, however there is much variation in individual change and the source of this variation cannot be determined by this study. The finding that as ER improves, several of these variables reduce, is a promising indication of the relationship between improvements in ER and reductions in aggression, however further investigation of this relationship is required. These findings are consistent with research demonstrating a relationship between difficulties with ER and increased aggressive behaviour (Vasilev et al., 2009; Neumann et al., 2010; Robertson et al., 2012; McLaughlin et al., 2011; Laible et al., 2010) and externalising behaviour (Silk et al., 2003) in adolescence.

Improved self-efficacy in controlling emotionally driven behaviour is evidenced by self-perceived improvements in anger control, impulse control and goal-directed behaviour when emotionally distressed. This is consistent with improvements in variations of self-regulation reported as a result of social and emotional interventions (Riggs et al., 2006; Lochman & Wells, 2002a; Langeveld et al., 2012). The current research extends these findings from a common thread of self-regulation and inhibitory control, to include emotional regulation as a significant and modifiable risk factor for aggressive behaviour. This validates researchers' advocacy for the inclusion of techniques targeting emotion regulation processes

in intervention programmes (e.g., McLaughlin et al., 2011; Southam-Gerow & Kendall, 2002; Suveg et al., 2007; Gratz & Tull, 2010).

The E-SIP model of social behaviour posits that multiple emotion-related skills deficits contribute to aggressive behaviour. ART targets these emotion-related skills, as well as social deficits and cognitive biases. Participants' improvement in emotional and social skills, and reductions in cognitive distortions, suggest that ART is a comprehensive multi-component programme, as it claims to be (Goldstein et al., 2004; Glick & Gibbs, 2011). Preliminary indications of relationships between emotion skills and social behaviours as described above, support the central positioning of emotion processes in the E-SIP model. This is consistent with much research into E-SIP including that which demonstrates the role of ER in aggressive behaviour (e.g., de Castro et al., 2005; Calvete & Orue 2012). Although it is difficult to relate specific emotion skills to improvements in social information processing, the multidimensional construct of ER appears to be useful when investigating the effects of an aggression intervention. The skill-based model of ER has sound theoretical links with the content of ART and the focus on control of behaviour when emotionally distressed appears to be particularly appropriate for aggression interventions where behaviour is the evident determinant of success. Therefore this supports the use of E-SIP in designing and evaluating aggression interventions as it indicates multiple emotion-related skill deficits that would contribute to aggressive behaviour for remediation.

In understanding for whom ART is most effective, it is important to consider reactive and proactive aggression. Much aggression research differentiates between reactive and proactive aggression despite there being significant overlap of these subtypes within an individual (e.g., Dodge et al., 1997). This suggests that all aggressive individuals would

benefit from training in adaptive ER strategies as part of an intervention. ART is designed to address both reactive and proactive aspects of aggressive behaviour; however there is some suggestion that ART is more effective in reducing overt reactive, rather than overt proactive, aggression (Mills, in press). Mills' findings are based on the same intervention sample as the research presented here, they are limited by the same methodological difficulties. Despite this, adaptive emotion regulation has been shown to predict decreases in reactive *and* proactive aggression (Calvete & Orue, 2012) and interventions that focus on training emotion-related skills have reduced aggressive behaviour (Castillo et al., 2013; Durlak et al., 2011; Riggs et al., 2006); therefore the multi-component nature of ART may be important to address both the emotion skills underlying emotion regulation to enable reflective processing, but also increase the motivation and self-efficacy required to perform prosocial responses.

### **The Feasibility and Effectiveness of ART in New Zealand Schools**

One of the main purposes of this research was to investigate the feasibility and effectiveness of ART in NZ schools. This involves comparing the outcomes of this ART sample in NZ, with the outcomes of ART in other countries. It also involves examining implementation issues including pragmatic aspects of the programme, fidelity to the programme, data collection, school and parent engagement, facilitator experiences, and peer or group influence. The perceived appropriateness (and cultural appropriateness) of the programme for NZ adolescents is discussed in terms of participants' rates of attendance and retention in the programme, and limited qualitative feedback from participants themselves.

## **Comparison with Other Intervention Outcome Research**

ART outcomes for NZ students were similar in many ways to other studies of ART in schools. Firstly, ART participants in NZ reported a reduction in self-reported externalising behaviour and hyperactivity/inattention; on an individual-level a third of participants also reported statistically significant change in problem behaviours. This is consistent with findings of reduced aggression and problem behaviours in school students in Australia (Jones, 1992) and Norway (Gunderson & Svartdal, 2006; Langeveld et al., 2012; Nodarse, 1998;), and juvenile offenders in Australia (Currie et al., 2012) and the Netherlands (Nas et al., 2005). Secondly, following ART 50% of NZ students reported improved social skills, consistent with findings of improved social competence following ART (Jones, 1992; Nodarse, 1998; Gunderson & Svartdal, 2006; Langeveld et al., 2012). The results for problem behaviours and social skills were not as robust as in some of these studies; significant differences in mean sample scores were not found on all measures of problem behaviours and social skills, and only self-report data could be analysed. In comparison Gunderson & Svartdal (2006) found significant mean score improvements on social skills and reductions in problem behaviours across parents and teachers, but not students. Thirdly, the current study found significant reductions in cognitive biases relating to overt and covert aggression. An overall reduction in cognitive biases relating to aggression, has been found in school-based ART research (Gunderson & Svartdal, 2006) and research with juvenile offenders (Currie et al., 2012; Nas et al., 2005). There is some variation in the particular cognitive biases that show significant improvement post-intervention, which Nas et al., (2005) suggest may be addressed by larger sample sizes. Larger samples may provide more consistent findings.

In other school-based ART research, students with high levels of pre-intervention behavioural problems and low levels of social competence show greater improvements (e.g.,

Wilson & Lipsey, 2007; Langeveld et al., 2012). In the current study pre-intervention levels of problem behaviour and social skills deficits could have been correlated with the extent of change on these measures, however with such as small sample and no control group for comparison this would not be a reliable indication of whether this effect was also found with NZ participants. Students in the current study were included based on the severity of parent- or teacher-reported aggressive or externalising behaviour, however changes in these behaviours observed by parents and teachers could not be analysed. Many students did not perceive themselves to be at a dysfunctional level at pre-intervention on outcome measures that were used to assess change over the course of ART, which may have reduced the likelihood of finding significant improvements. For example only 50% of the sample perceived themselves to have social skills deficits. More robust findings have been reported for higher risk offenders who had higher initial levels of dysfunction (i.e., Currie et al., 2012). Overall the similarities discussed above suggest that the outcomes of ART with NZ students are comparable to outcomes of ART with other populations of students and young offenders.

It is more difficult to compare the outcomes of the current study with other types of school-based aggression interventions due to the lack of school incident data and parent- and teacher-report measures. For example, Solomon et al's (2012) review of School-Wide Positive Behaviour Support programmes measured reductions in disciplinary referrals and observed problem behaviours. Reports about Second Step (Frey et al., 2000) are more comparable to ART; Second Step is a universal school-based intervention but is based on SIP theory, as ART is. Second Step participants report reductions in aggressive attitudes (Van Schoiack-Edstrom, Frey & Beland, 2002), externalising behaviours (Holsen, Smith & Frey, 2008) and improved social skills (Holsen et al., 2008; Van Schoiack-Edstrom et al., 2002). In

this respect, these findings are consistent with those of the current study and support interventions based on SIP.

A comparison with targeted individual programmes, such as Check & Connect (C&C; Christenson et al., 2008; Lehr, Sinclair & Christenson, 2004), is also not straightforward, as these programmes tend to concentrate on school attendance and engagement outcomes, and are not aimed solely at aggressive individuals. One targeted individual programme (Prevent-Teach-Reinforce; Iovannone et al., 2009) does use the Social Skills Improvement System as in the current study, to report improvements in problem behaviours and social skills (although it uses teacher-report not student-report). This suggests that individualised targeted programmes have a similar impact to group ART, in finding comparable changes in externalising problems and social skills.

A targeted group intervention with preadolescents, the Coping Power Programme (CPP), has found parent and teacher rated improvements in proactive aggression, teacher-rated improvements in social competence (Lochman & Wells, 2002a), and reductions in self-reported covert delinquency (Lochman & Wells, 2004). Reductions in hostile attributions and anger following this intervention were also associated with lower levels of delinquency, school problems and substance use in early adolescence (Lochman & Wells, 2002b). Overall, although the measures used in the CPP research are different to those used in the current study, the constructs under investigation are similar; both ART and the CPP appear to improve social skills, and reduce anger, cognitive biases and behavioural problems. This suggests school-based interventions, whether universal, targeted, individual or group, can effect change in problem behaviours and social skills, and that the outcomes tend to reflect the focus of the programme, as one would expect. ART may therefore be considered to have

a wider impact due to the programme's multi-modal approach; indeed the current ART participants reported improvements across emotional, behavioural and cognitive domains.

The current study also extends our understanding of how school-based interventions influence emotional functioning. It demonstrates that ART has a positive impact on emotional experience, expression and regulation, and is one of the few school-based interventions to report specifically on changes in ER. The ACT module of ART has been referred to as the affective component of ART since original publications of the programme, however research into the impact of ART on emotion skills has lagged behind. The significant improvement of anger control and reduction in difficulties with impulsivity when emotionally distressed, reported by the current ART participants, is consistent with previous findings of improvements in self-regulatory or self-control capacities (Jones, 1992; Langeveld et al., 2012; Lochman & Wells, 2002a; Riggs et al., 2006). The current study extends these findings to self-regulation in an emotional state (or the construct of ER) and highlights the requisite skills that can be taught to improve ER. Previously Nas et al., (2005) identified a trend toward significant improvement in ER as measured by coded analysis of participants' responses to open-ended questions about social conflict scenarios. The authors suggest that a larger sample may have found significant effects (Nas et al., 2005), thus it is notable that even with the current study's small sample, a significant improvement in self-reported ER was found.

### **Summary of Comparisons with Other Intervention Outcome Research**

Despite the limitations of the current study, a small sample of NZ students appear to benefit from ART. Students' improvements in externalising behaviour, social skills and aggressive cognitive biases are consistent with other ART research, which provides a strong

indication that these changes would not have occurred without intervention. Improved anger control and ER are consistent with previous findings of improved self-regulation following ART, but also extend this to provide preliminary support that ART improves ER skills. ART can therefore be expected to have positive benefits for NZ school students. There is much variation in the etiology of adolescent anger and aggression and, although ART may not be universally effective, as a multi-component programme it targets diverse individual-level risk factors for aggression. The current research provides preliminary support for the multi-component design of ART by showing positive behavioural, cognitive and emotional outcomes. This is consistent with findings that programmes combining behavioural and cognitive aspects can successfully influence multiple outcomes related to antisocial behaviour (Wilson & Lipsey, 2007; Weare & Nind, 2011). Multi-component programmes are more successful than single-component ones (Dodge & Pettit, 2003) and interventions targeting individual-level factors may also be more successful than those that attempt to remove multiple risk factors from the environment (Prinstein et al., 2001). These positive outcomes of ART with NZ students also support ART being used in conjunction with other school-wide or individual initiatives. Although systemic interventions with at-risk adolescents are thought to be most successful (von Sydow et al., 2013) the components that comprise systemic interventions (such as ART) also require evaluating (Dodge & Pettit, 2003).

### **Implementation Challenges**

Although the outcomes of this ART programme are an initial indication of the benefit to NZ adolescents, the implementation of the programme was not without challenges. There were hurdles in the school recruitment process and in implementing the programme once initiated. Although the current research did not collect information from schools as to the reasons they did not express interest in running an ART programme, many schools in NZ

experience resource shortages. Teachers and specialist behavioural support staff are overstretched and their availability is inconsistent across NZ schools (MSD, 2007). This means that for schools to support optional interventions there is a considerable amount of goodwill involved.

During the intervention period, programme fidelity was controlled where possible. Programme fidelity was only recently recognised as being related to larger effect sizes of school-based interventions (Wilson & Lipsey, 2007; Durlak et al., 2011), and many school-based programmes do not monitor programme fidelity (43%; Durlak et al., 2011). Programme fidelity can be affected by facilitator competence or implementation issues that cannot be controlled by the facilitator. ART research has found that facilitator competence was crucial for effectively reducing recidivism rates among juvenile offenders (Barnoski & Aos, 2004). Although facilitator competence was not evaluated in the current study, the facilitators had received training by a Master ART trainer and received supervision on implementation issues as they arose. In the current study, facilitators followed the delivery of the programme as prescribed by the manual and the co-facilitator completed a Session Evaluation Checklist (see Appendix E for an example) for each session.

In regards to practical issues, both behaviour management and programme engagement were problematic. Firstly, behaviour management was a substantial challenge during sessions, which is likely to have interfered with the learning of some individuals in the group and reduced the amount of time spent on productive skill training in each session. Early on in ART sessions the facilitators introduced a behavioural management system, to reward good behaviour. The success of this system varied across the three ART groups, however the effect of disruptive behaviour on outcomes was not measured in this study.

Despite difficulties with behaviour management, the inclusion of peers in ART does appear to be important (see peer influences on p. 191). Secondly, homework sheets were rarely completed between sessions and parent/teacher training notes were under-utilised. Facilitators did not have a reliable method for teachers and parents to receive these training notes, and students rarely returned the notes. In this respect programme fidelity was also compromised, as this aspect of ART was not delivered as intended. This limited the extent of reinforcement students received from other individuals and therefore is likely to have reduced generalisation of skills from within ART sessions to other social contexts. Despite this, generalisation is encouraged through other learning processes in ART such as stimulus variation in role playing (i.e., variety in role-play scenarios).

Difficulty engaging parents and teachers is not only likely to have adversely affected generalisation, but also prevented adequate behavioural outcome measurement. Teacher Report Forms (Achenbach & Rescorla, 2001) were not returned for every student at pre- or post-intervention assessment despite much effort by the ART school liaison personnel. Some were also completed by different individuals at pre- and post-intervention due to staff changes which undermined the reliability of data. Similarly, many parents did not return CBCL forms, particularly at post-intervention assessment. This lack of observational data restricted the possible analysis of participants' behavioural changes, and therefore limited evaluative outcomes of the ART programme to self-reported changes. The inclusion criteria for this ART programme was based on the severity of observed externalising behaviour, therefore it could be expected that this is where the most significant change would have occurred.

It is not unusual to have difficulties with reliability of staff or teacher behavioural measures; the reliability of behavioural measures can be compromised by variation in the observer's interaction with, or knowledge about, a participant (Currie et al., 2012). Any further evaluation of ART in schools should have an agreement with staff about their involvement in training notes and any assessment measures, ideally with a small team for each student to mitigate the risk of staff changes during the programme. Although school manager's fully endorsed the ART programmes, there was little communication between facilitators and teachers, which is likely to have adversely affected teachers' involvement with assessments. It can be even more difficult to ensure parent involvement, for example parents attended only 49% of parent training groups as part of one school-based intervention (Lochman & Wells, 2004). Students should not be excluded from participating in ART due to the risk of low involvement from parents however, as these individuals may be among those who are most in need of the programme. Indeed one of the advantages of interventions that are more directly focused on the adolescent is that the parents of individuals with behavioural problems are not always willing or able to participate in treatment programmes (e.g., Nelson-Gray et al., 2006).

Some research has used number of referrals to the office or other disciplinary incident data as an indication of intervention success (e.g., Bonhanon et al., 2006; Solomon et al., 2012). In the current study there were difficulties with collecting school records regarding behavioural incidents; these records were planned to be an objective outcome measure. There were differences between how the schools involved collected information and there was variation in the level of detail provided in incident reports. After data collection, discrepancies in reports were also noticed, for example some incidents were entered by more than one staff member and there were inconsistencies within reports of the same incident.

Given that the reliability of the data was uncertain, the frequency of behavioural incidents was not used as an indicator in assessment of change across the intervention period. This highlights how important a co-ordinated approach with a pre-determined team of school personnel, responsible for each student in an intervention, is crucial for accurate outcome measurement. Implementation difficulties should be understood in the context of accommodating the constraints of ecologically valid research, rather than prioritising optimal conditions that do not resemble how a programme will actually be implemented (Bowen et al., 2009).

### **Peer Influence**

Group interventions with behaviourally disordered students have been criticised for exacerbating antisocial behaviour through increased exposure to adverse peer influences (e.g., Dishion & Tipsord, 2011). In the current study there was only one instance of an increase in the self-reported mean score for externalising behaviours. Although some participants' disruptive behaviour at times interfered with delivery of the learning material, the group format appeared to have some benefits over individual interventions. Several aspects of the group delivery method stood out to facilitators as useful in motivating prosocial behaviours, but were not formally measured. For example, some group members held strong opinions about the negative impacts of self-harm behaviours as an ER strategy, and challenged their effectiveness for others. As discussed by Yap et al., (2007), many ART participants' psychosocial demands exceeded adequate ER capacities such that maladaptive ER strategies were used without awareness of their negative consequences. On occasion ART sessions also appeared to operate as a forum for sorting out issues such that disputes between two ART participants were discussed in some sessions. This is consistent with research finding aggressive children are more likely to pursue relational goals with known peers,

suggesting that the group format may provide motivation for learning these skills (Burgess et al., 2006). The group format is also supported by research that shows increased disclosure to peers relative to parents occurs from early adolescence (Zeman & Shipman, 1997), and this is consistent with participant feedback that group discussions enhanced understanding, enabled sharing of opinions and talking about their difficulties and emotions. Aggressive children are also less likely to pursue relational goals when they are emotionally aroused (Harper et al., 2010), therefore peer role-play and peer feedback, which is likely to elicit arousal, creates appropriate conditions under which individuals can practice emotional awareness and how to recognise their behavioural impulses.

### **Participant Attendance and Feedback**

Aside from general behavioural management issues most students were amenable to participating in ART. Participants' perceptions of acceptability of the programme can be understood by examining both attendance, retention and their qualitative feedback about the programme. Only one student who began the programme voluntarily discontinued sessions, indicating that ART was acceptable to 96% of participants who started the programme. Three other participants were unable to complete the programme as described in the method, therefore the retention rate was 82.6%. The attrition rate was therefore similar to the average rate of 12% for school-based aggression interventions (Wilson & Lipsey, 2007). This is a good indication that the acceptability of the programme is not detrimental to outcome, as lower attrition rates are related to larger effect sizes for youth interventions (Matjasko et al., 2012; Wilson & Lipsey, 2007). The mean attendance rate was 81.6% of sessions, with the majority of students attending over 80% of sessions. As many of these students had poor school attendance in general, this suggests that students were motivated to attend ART sessions.

Although very few intervention studies (including ART studies) appear to report attendance rates, one exception is Lochman & Wells (2004) who state that preadolescents attended 83% of their school-based sessions. Participants' qualitative feedback suggests that motivation to attend and participate was due to finding ART sessions both enjoyable and useful, with many participants describing ART positively. Participants also showed improvements in within-session behaviours demonstrating increased engagement, volunteering and enthusiasm. This suggests that they found the programme interesting and were willing to take part in sessions. Two participants believed that the ART programme had disrupted their learning, however of these participants one reported that they 'needed' the programme and both reported positive consequences resulting from ART. All participants viewed the facilitators positively or neutrally and their calm approach was referred to in feedback.

There was very limited criticism from participants however others' disruptive behaviour was the most common negative comment. An attempt to mitigate disruptive behaviour involved the introduction of a behavioural management system in which students received points for participating and were rewarded with the choice of food brought for the next session. All participants who gave feedback viewed the reward system as "somewhat" to "very" useful. Some participants also reported their difficulties with role-play, which was the least preferred method of learning. There were few refusals to participate in role-plays during sessions however. Overall this suggests that the ART programme was found to be an acceptable and worthwhile intervention by the participants, who all reported improvements in at least one aspect of their behaviour.

Improving cultural appropriateness of conduct programmes for ethnic minorities involves adaptation of generic programmes to be more culturally relevant (ACGP, 2013). As ART is a manualised programme, only minor adaptations were made to enhance cultural appropriateness in order to maintain a balance between sufficient adaptation and retaining programme fidelity (as discussed by Cherington, 2009). The cultural appropriateness of the programme was not formally evaluated in this research, however several modifications in delivery of the programme were made to ensure that participants felt that their cultural needs were valued (as discussed by OPMSAC, 2011). For example, the facilitators began the programme with a mihi-mihi, to which all participants responded positively by sharing some information about their own family (whanau) and heritage (whakapapa). The facilitators also encouraged group discussion of issues raised by participants regarding cultural practices, identity and prejudice. Various cultural and family differences in home arrangements, parenting practices, communication styles, and ways of demonstrating respect for others were discussed in the course of ART. In this way ART offered an opportunity for participants to explore these issues and how this affected their social interactions. With a high proportion of Māori and Pasifika students reporting pride in their cultural heritage, but fewer satisfied with their knowledge of that culture (Crengle et al., 2013), this indicates the importance of providing forums such as ART for discussing issues of culture. Facilitators' cultural sensitivity is also thought to minimise the impact of cultural differences between facilitator and participant (Glick & Gibbs, 2011; Goldstein et al., 2004), therefore it is important that the ART facilitators in this research had a post-graduate level of cultural education as relevant to psychological interventions.

The sample size of the current study was too small to allow a comparison of attendance, retention and clinical change between ethnic minority and non-minority

participants (as suggested by Huey & Polo, 2010). Giving a “voice” to ethnic minority participants through inviting ongoing informal feedback and written feedback (as suggested by Macfarlane, 2012) indicated general satisfaction with the content and delivery of ART. This suggests that ART may be appropriate for further larger scale implementation with Māori and Pasifika students attending NZ schools.

### **Summary of Implementation Challenges**

As with 35-40% of school-based interventions (Durlak et al., 2011; Wilson & Lipsey, 2007) the application of the ART programme in NZ schools was also affected by implementation difficulties. Despite the challenges of information collection, parent engagement and student homework completion and in-session disruption, ART participants reported positive consequences of the programme. These are reflected in average rates of attrition and attendance, in similar improvements to other ART research and in participant feedback. There were also no indications of negative consequences of the programme. The group format appeared to increase ecological validity of intervention in providing realistic conditions under which to learn social skills and emotion regulation.

ART appears to be suitable for application in NZ schools but may be more effective when supported by the school environment, for example when implemented as an adjunct to school-wide programmes. ART could be expected to produce more consistent improvements if fully implemented as prescribed in the manual. Pre-intervention training for staff and a more co-ordinated team approach for student assessment could improve outcomes without substantially increasing pressures on resources. As programme fidelity often reduces outside of researcher-facilitated programmes, this suggests that ease and quality of implementation should be prioritised for staff (Wilson & Lipsey, 2007). Staff training in ART may also help

reduce ambiguous sanctions and punitive attitudes shown to increase rates of problem behaviours (Mayer & Leone, 1999). By referring students to attend ART sessions as a consequence of antisocial behaviour, the “punishment” is logically related to their behaviour. ART provides an alternative to exclusionary discipline, which is ineffective in producing long-term positive change in aggressive or disruptive behaviour, deprives individuals from learning the skills necessary for prosocial behaviour and has other detrimental academic consequences (McGinnis, 2003). It is acknowledged that it is important to have various intervention options available to meet the needs of adolescents with problematic behaviours, however this research suggests that ART could be considered as one such option. ART could be taught to teachers or counsellors and incorporated into the curriculum as an adjunct to school-wide positive behaviour programmes. Alternatively students could be referred to ART sessions instead of detention or stand-down.

ART represents a viable option for adolescents over age 14 years as demonstrated by this research. It is important to disseminate the positive outcomes of ART with this age group as it indicates it is not only preadolescents who benefit from school-based interventions, those over age 13 or 14 years should not be overlooked. This may be the last opportunity to provide group intervention to adolescents in an environment other than juvenile justice, by which time adolescents have usually become involved with criminal behaviours.

### **Limitations**

The results of this research must be interpreted with caution. As well as the limitations already mentioned in the discussion as appropriate, there are several areas that require further attention. The lack of baseline measurements and/or a control group allows only tentative statements to be made about a small sample of NZ school students. In finding an

improvement in ER over the ART intervention period, maturational changes must be considered. Research indicates that ER typically increases over the adolescent period (Silvers et al., 2009) and may stabilise from age 16 years. The nature of change within individuals is not well understood as the majority of these studies are cross-sectional, however finding a significant change in ER over a 3 month period with a small sample suggests this is more likely due to an intervention than maturational changes alone. Establishing a stable baseline of ER prior to the intervention would have been useful in demonstrating a temporal relation between the start of the intervention and an improvement and added weight to the findings of change across the intervention period. Similarly, a control group would have allowed a comparison of the differences between improvement in emotional regulation due to maturation and that due to the intervention. Unfortunately recruiting a control group would have required screening and selecting a sample of adolescents at risk of emotional and behavioural dysregulation, and withholding treatment. A waitlist control group may have been an acceptable alternative had funding and time allowed.

With any intervention in the community, other changes in an individual's environment that are not controlled for may explain improvements. By ensuring participants were not receiving any other behavioural or cognitive interventions over the same period, an attempt to mitigate this confound was made. Although the outcomes of ART should be interpreted in the context of potential external influences, the current research does provide ecologically valid results such that similar results could be expected regardless of other changes in an individual's environment. Research under controlled experimental conditions would be less useful for evaluating the effectiveness of interventions aimed at changing behaviour in real social interactions (see Bowen et al, 2009, for a discussion). It should also be acknowledged that a larger sample would also have provided a more robust result; in such

a small sample it is difficult to conclude that the changes are not due to an alternative variable. Reference to type one error has been made throughout the discussion of statistical findings, and should be a primary consideration in extrapolating information from this research.

The current research is also limited by the sole use of self-reports of behavioural and psychological change across the intervention period. Although the intention was to compare multiple sources of information from students, staff and parents regarding behavioural change, this was not possible. Relying on self-reported change reduces opportunities for comparing results across informants for more accurate representations of outcomes. Relying on self-reports also magnifies the problems introduced by socially desirable responding. Participants may have learned to endorse more socially desirable items on self-report measures over assessment points. The likelihood of this confounding variable is increased by the psychoeducational nature of the ART programme (the students were being taught about the benefits of appropriate ER and prosocial behaviour), and by the programme facilitators administering the psychometrics. The effect of research allegiance in the above process should be considered as a possible confound, as although honesty was encouraged in responding to psychometrics, students may have been aware of the researchers intended outcomes of the programme. Impartial administrators of psychometrics were not permissible due to funding constraints. If social desirability were influential, improvements would have been expected across the range of self-report measures. As improvements were not found universally this suggests students' self-reported improvements are an accurate reflection of their perception of change.

There are several possible actions to ensure that other-reports are available and reliable. Firstly each participant could have a team of three or four individuals (i.e., tutor, dean, parent, ART facilitator) that collaboratively complete assessment measures of a participant's behaviour. Secondly, observational measurements could be utilised more effectively by external observers rating participants' classroom behaviour (such as in Frey et al., 2000) to establish baseline levels, which could be compared with behaviour during the ART intervention, post-intervention and follow-up. This would be preferable to facilitators rating classroom behaviour within ART sessions and only for the duration of the intervention. The ratings of external observers would also be less affected by the students' past behaviours and relational factors than facilitator ratings may have been, and as such would increase their objectivity. External observers could be blind to condition and rate students involved in the ART programme and control participants, therefore avoiding difficulties of researcher allegiance. These ratings are likely to be most useful for assessing change in aggression and prosocial behaviours within the school environment. Another option would be to consider more tangible outcome measures such as attendance at school or academic progress, which have the benefit of being more objective and may act as indicators of longer-term benefits of the programme. These measures are commonly used in school-based interventions (e.g., Curtis et al., 2009; Lehr et al., 2004) and therefore would have provided an opportunity for comparing programme efficacy.

The implementation difficulties, as described above, may also have limited the positive impact of ART. The facilitators in the current study sought to strike a balance between asserting within-session disciplinary actions and retaining the student in the programme. The participants were selected due to their problematic behaviour; therefore to exclude them from the ART programme due to non-compliance with the programme

requirements (such as returning homework sheets) would have been inappropriate. Excluding those who did not comply may have resulted in higher numbers of individuals not completing the programme, but a more comprehensive understanding of the key concepts for those that did complete the programme. Given that non-compliant behaviour was part of the problem targeted by ART discipline remained a difficult task throughout the intervention, however it appears that this did not prevent positive outcomes.

Despite the methodological and implementation limitations of this research, there are lessons to be learned for future intervention research in NZ schools. Estimations of the amount of time and resources necessary to practically implement school-based interventions should include margins for error. A conservative methodology, such as a series of single case studies with repeated baseline measures, or a benchmarking study to remove the need for a control group are possibilities for feasibility research. A comprehensive memorandum of understanding between the school, staff facilitators and researchers may provide a basis for contingency planning to help avoid disruptions to the programme due to staff changes. Separation of facilitation, implementation and research tasks may also benefit those involved. Protecting outcome measures from the outset by ensuring a team assessment approach, and involving the adolescent, may be an interesting and worthwhile avenue to investigate.

### **Future Directions**

Given the challenges regarding methodology and implementation, there are areas of potential improvements suggested throughout the discussion that future research could address. Future ART evaluation research would benefit from investing more time in embedding the programme into the school environment, training teachers, and where possible parents, in the session material and engaging these individuals as skill-coaches to encourage

generalisation of the participants' prosocial behaviours. ART is well suited to act as a targeted adjunct intervention where a school-wide positive behaviour system is already in place. It would be useful to supplement self-report measures with other-report behavioural measures, a team assessment approach, attendance data and school performance indicators. The tangible outcome measures would help with disseminating the positive impact of ART in a manner that is relevant to education and social agencies, school personnel and parents.

This study was restricted to a small sample of adolescents without a control group or sufficient baseline, substantially limiting the conclusions that can be drawn from the results. The positive findings do support a larger implementation of the programme with a waitlist control and the above modifications to ensure more robust outcome measures. A larger sample would enable the statistical power necessary for analysis for the relationship between ER and aggression, and a comparison of effectiveness for minority and non-minority ethnicity. A longer follow-up period would also be useful in evaluating whether improvements found at 3 months post-intervention were maintained at 12 months, at school leaving and in early adulthood. Longitudinal research is lacking for both emotion regulation and intervention research with adolescents, therefore school-based programmes should aim to address this by building these follow-up assessments into research designs. A single case study design with a repeated baseline would be an alternative methodology that could be useful in exploring individual variation in response to ART, and to help determine which participants are more likely to benefit from ART.

This research also used a self-report measure for ER, which is a typical method for assessing perceptions of ability in adolescents. ART teaches ER skills for use in the immediate interpersonal situation however, therefore an alternative measurement of ER that

is more objective may be more appropriate. Much SIP research asks participants questions regarding ambiguous vignettes and codes answers to assess reported SIP and ER skills (e.g., Calvete & Orue, 2012; Nas et al., 2005), however this again does not reflect actual use of the skills. Experience sampling methods have also been utilised by Silk et al., (2003) which may provide more information about the persistence of ER difficulties resulting from intrapersonal processes. As suggested above, a useful modification of the ART programme would be to extend ER skills beyond that for immediate purposes, to include strategies to reduce persistence of negative emotions, for which experience sampling may be useful. The emerging use of Dialectical Behaviour Therapy in schools may be an important area in future programme development (refer to Mazza et al., in press).

As this research highlights the importance of incorporating ER skills training into aggression interventions and measuring the impact of these interventions on ER, it would also be useful to assess whether improvements in ER mediate the impact of an intervention on aggressive behaviour. This would indicate to what extent ER skill training influences the effectiveness of interventions. Given the associations of ER with reactive aggression, but the inconsistent research evidence regarding associations between ER and proactive aggression, it would also be useful to understand whether teaching ER skills is more useful for reactive aggression or whether those with proactive aggression also benefit (a discussion of this can be found in Mills, in press).

Most importantly, this research indicates that ART is effective with adolescents aged over 14 years. Although early intervention in childhood and preadolescence may be more effective than at older ages, intervening with adolescents *earlier* than after the development of criminal behaviour is still likely to be more cost-effective than youth justice proceedings.

This calls for more attention to adolescent interventions internationally and in NZ, to enable development of a sound research base on which to make funding decisions regarding the future support of NZ adolescents with problem behaviours. This research goes some way to address the findings of the Advisory Group on Conduct Problems (2013) that there has been little evaluation of the effectiveness of interventions aimed at conduct problems in adolescence in NZ, however this research should instigate some confidence in the value of such evaluation by demonstrating the potential for advancing school-based programmes.

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# APPENDICES

## Appendix A1

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 to 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. If 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](mailto: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 A2

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

### **PARENT/CAREGIVER INFORMATION SHEET**

#### **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 these 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 XXX. 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 manage 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](mailto: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](mailto: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](mailto:nzartresearch@gmail.com) or one of the following people:

Dr Ruth Gammon  
(number supplied)

Freya Smith  
(number supplied)

Jessica Mills  
(number supplied)

## Appendix A3

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

### STUDENT INFORMATION SHEET

#### **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](mailto: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](mailto:nzartresearch@gmail.com) or feel free to talk to us before or after any of the sessions.

## Appendix A4



**MASSEY UNIVERSITY**  
TE KUNENGA KI PŪREHUROA

11 October 2011

Freya Smith  
Apartment 5b  
82 Cable Street  
Te Aro  
WELLINGTON 6011

Dear Freya

**Re: HEC: Southern B Application – 11/52**  
**Teaching pro-social skills in New Zealand schools: Aggression Replacement**

Thank you for your letter dated 10 October 2011.

On behalf of the Massey University Human Ethics Committee: Southern B I am pleased to advise you that the ethics of your application are now approved. Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

A handwritten signature in black ink, appearing to read 'N. Matthews'.

Dr Nathan Matthews, Chair  
**Massey University Human Ethics Committee: Southern B**

cc: Dr Ruth Gammon  
School of Psychology  
WELLINGTON

A/Prof Mandy Morgan, HoS  
School of Psychology  
PN320

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Massey University Human Ethics Committee  
Accredited by the Health Research Council

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[www.massey.ac.nz](http://www.massey.ac.nz)

## Appendix B1

Table B1

*In-session observational rating scale*

Scale	Description	Rating
<b>Volunteering</b> Volunteering to role play, to be co-actor, to answer questions, give feedback to others, to help the facilitator or calling out answers to questions.	no volunteering	1
	minimal volunteering (once or twice)	2
	volunteered occasionally	3
	volunteered often	4
	volunteered almost always	5
<b>Co-operating</b> Responding to requests to cease a behaviour, requests to start a behaviour, helping without being asked, helping in response to group expectation, accounting for how many times they need to be asked, how coercive the request needs to be.	unco-operative	1
	minimal co-operation (does not respond immediately, needs much coercion)	2
	variable co-operation on request	3
	co-operation on request	4
	highly co-operative behaviour (did not need to be asked, shows initiative)	5
<b>Engagement</b> Listening, attending, asking relevant questions, completing worksheets, talking about personally relevant situations – to other students or to the facilitator.	no engagement	1
	minimal engagement (passive)	2
	minimal engagement (active)	3
	variable engagement (engaging at times during the session)	4
	consistent engagement (engaging for the majority of the session)	5
<b>Enthusiasm</b> 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)	no enthusiasm	1
	minimal enthusiasm	2
	some enthusiastic behaviours	3
	variable enthusiasm	4
	consistent enthusiasm	5

Scale	Description	Rating
<b>Understanding of material</b> 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	unclear to facilitator	0
	no understanding	1
	poor understanding (parrots answers, cannot give examples, cannot define)	2
	yes (superficial, basic examples but cannot define or weak definition)	3
	yes, good (can give examples and basic definition)	4
	yes, excellent (can give examples, clear definition)	5
<b>Disruptive behaviour</b> Making noise (tapping desk, banging, talking, shouting, singing, talking over others), fidgeting (playing with objects, tipping desk, getting out of seat, moving around the room), distracting others (touching other students, calling names, provoking, making faces) and asking irrelevant questions of facilitators or others	high level of disruptive behaviour, majority of session	1
	variable-high level of disruptive behaviour	2
	variable-low level of disruptive behaviour	3
	low level of disruptive behaviour	4
	no/very minimal disruptive behaviour	5

## Appendix B2: In-session behavioural observation changes across sessions

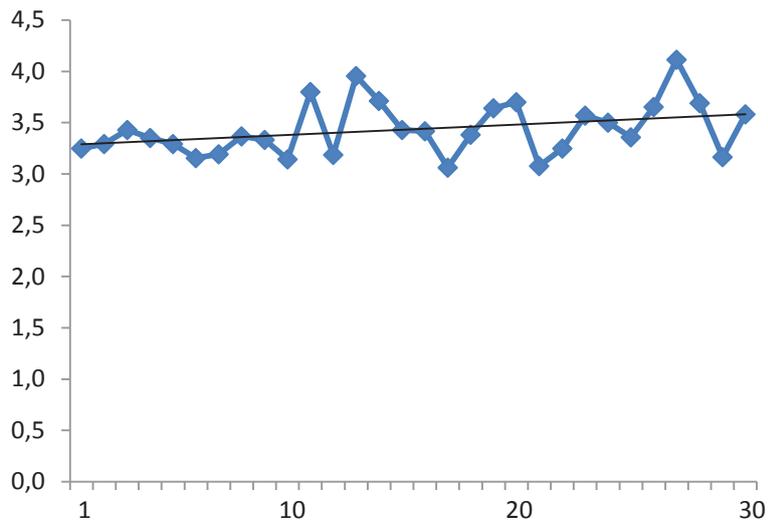


Figure B2.1. Mean co-operating score for participants across all ART sessions

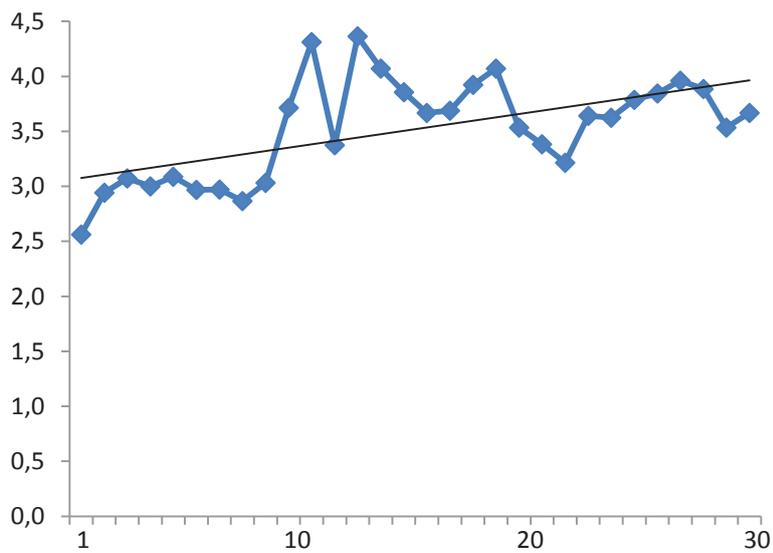


Figure B2.2. Mean engagement score for participants across all ART sessions

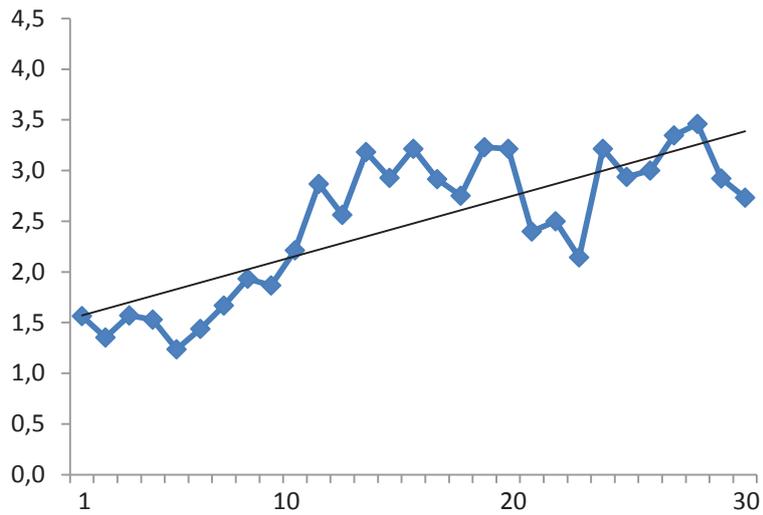


Figure B2.3. Mean enthusiasm score for participants across all ART sessions

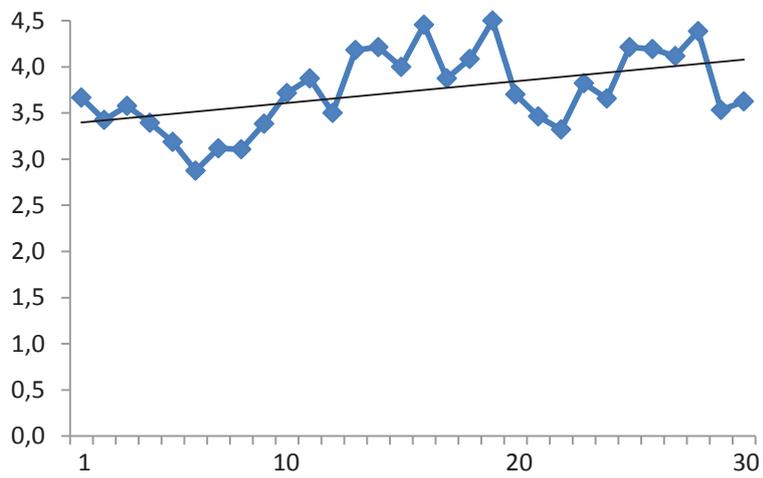


Figure B2.4. Mean understanding score for participants across all ART sessions

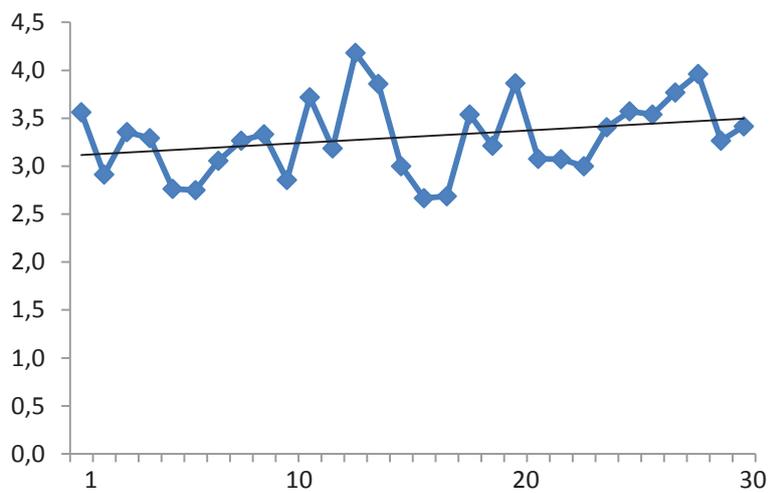


Figure B2.5. Mean disruption score for participants across all ART sessions

## Appendix C

### ART Feedback.

These questions are a chance for you to tell us what *you thought* about the programme. The information you give us in these questions may be used to change the way the programme is delivered to other students in the future so please be as open and honest as you can.

1. On a scale of 1-5 how helpful do you think the programme for you to take part in (*circle one*)?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not helpful</b>		<b>Somewhat</b>		<b>Very helpful</b>

2. On a scale of 1-5 (with 1 being not at all and 5 being a lot) how much, overall, did you enjoy the programme (*circle one*)?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not at all</b>		<b>Somewhat</b>		<b>A lot</b>

3. What did you **like** most about the programme?

4. Were there any other things that you liked about the programme?

5. What did you **dislike** most about the programme?

6. Were there any other things you disliked about the programme?

7. How do you think the programme could be made **better**?

8. What is the main thing you think you have **learnt** from the programme?

9. Do you think you have changed in any way because of this programme? If so how?

10. What did you think about how Jess and Freya taught the programme?

11. On a scale of 1-5 how much do you think missing class to attend the programme has disrupted your overall learning (*circle one*)?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not at all</b>		<b>Somewhat</b>		<b>A lot</b>

12. On a scale of 1-5 how well do you think the reward points system worked (*circle one*)?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Not well</b>		<b>Okay</b>		<b>Very well</b>

13. Which of the three sessions did you enjoy the **most** (*circle one*)?

*Social skills*                      *anger control*                      *moral reasoning*

14. Which of the three sessions did you enjoy the **least** (*circle one*)?

*Social skills*                      *anger control*                      *moral reasoning*

15. Which of the three sessions was the most **useful** for you (*circle one*)?

*Social skills*                      *anger control*                      *moral reasoning*

16. Was there anything that you think stopped you from learning more from the programme?

**17. Social Skills:**

17a. On a scale of 1-5 how much do you think you learnt from the social skills classes (*circle one*)?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Nothing</b>		<b>Some</b>		<b>A lot</b>

17b. Do you think your social skills have improved? If so how?

17c. Do you think the social skill worksheets were easy to complete? **Yes / No** (circle one)

17d. What was the most helpful part of the social skill sessions (*discussions/roleplays/worksheets*)?

**18. Anger Control:**

18a. On a scale of 1-5 how much do you think you learnt from the anger control classes (*circle one*)?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Nothing</b>		<b>Some</b>		<b>A lot</b>

18b. Do you think your anger control skills have improved? If so how?

18c. Do you think the anger control worksheets were easy to complete? **Yes / No** (circle one)

18d. What was the most helpful part of the anger control sessions (*discussions/roleplays/worksheets*)?

**19. Moral Reasoning:**

19a. On a scale of 1-5 how much do you think you learnt from the moral reasoning classes(*circle one*)?

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Nothing</b>		<b>Some</b>		<b>A lot</b>

19b. Do you think your moral reasoning has changed/improved? If so how?

19c. Do you think the moral reasoning worksheets were easy to complete? **Yes / No** (circle one)

19d. What was the most helpful part of the moral reasoning sessions (*discussions/decision chart/worksheets*)?

20. Is there anything else that you would like to tell us about?

## Appendix D

Table D1

*Pre-interventions (Time1) DERS scale intercorrelations and correlations with STAXI-2C/A, SSIS, HIT*

	1.	2.	3.	4.	5.	6.	7.
1. Lack of Awareness							
2. Lack of Clarity	.203						
3. Impulse Difficulties	.041	.454					
4. Goal Directed Difficulties	.247	.371	.616*				
5. Non-Acceptance	-.176	.215	.544*	.555*			
6. Lack of Strategies	-.128	.309	.643**	.722**	.809**		
7. DERS Total	.160	.517*	.808**	.850**	.799**	.900**	
8. Trait Anger	.100	.219	.598**	.326	.474*	.438	.539*
9. Trait Anger-Temperament	-.031	-.095	.465	.137	.238	.207	.259
10. Trait Anger-Reactivity	.193	.451	.498*	.389	.527*	.500*	.611**
11. Anger Expression Out	.142	-.060	.253	.091	.079	-.063	.090
12. Anger Expression In	-.176	.144	.010	-.270	.085	.062	-.017
13. Anger Control	-.234	-.468	-.524*	-.476*	-.173	-.141	-.416
14. Communication	-.499*	-.219	.100	.018	.362	.356	.142
15. Co-operation	-.317	-.126	-.005	-.017	.422	.395	.183
16. Assertion	-.533*	-.190	.108	-.243	.467	.300	.097
17. Responsibility	-.191	-.388	-.111	-.120	.236	.098	-.035
18. Empathy	-.228	.167	.108	.048	.456	.174	.200
19. Engagement	-.627**	-.121	-.406	-.518*	-.118	-.247	-.444
20. Self-control	-.151	.015	-.167	-.343	.143	-.110	-.137
21. Social Skills Total	-.465	-.144	-.071	-.234	.358	.164	-.007
22. Bullying	.454	-.050	.101	.029	-.097	-.150	.018
23. Hyperactivity	-.119	.226	.471*	.220	.256	.228	.317
24. Internalising	-.109	.018	.362	.211	.443	.411	.381
25. Externalising	-.010	.103	.568*	.111	.262	.201	.312
26. Problem Behaviours	.142	.091	.384	.131	.357	.202	.321
27. Self-Centred	-.001	.223	.095	.059	.066	.028	.091
28. Blaming Others	.208	.157	.470*	.355	.326	.237	.410
29. Minimising/Mislabelling	.235	.028	.298	.202	.051	-.018	.160
30. Assume the Worst	.079	.317	.483*	.412	.417	.333	.483*
31. Oppositional Defiance	-.057	.246	.392	.283	.327	.248	.349
32. Physical Aggression	.050	.023	.589*	.363	.312	.317	.423
33. Lying	.058	.240	-.065	.042	-.118	-.086	-.029
34. Stealing	.361	.246	.274	.273	.251	.072	.303
35. Overt	.004	.129	.540*	.352	.342	.308	.420
36. Covert	.256	.260	.145	.190	.110	.007	.179
37. HIT Total	.140	.202	.374	.290	.244	.169	.323

*Note:* DERS=Difficulties in Emotion Regulation Scale, STAXI-2 C/A = State-Trait Anger Expression Inventory-2 Child and Adolescent, SSIS = Social Skills Improvement System, HIT = How I Think, \*= p<.05, \*\*=p<.01

Table D2

*Pre-intervention (Time 1) STAXI-2 C/A scale intercorrelations and correlations with SSIS and HIT*

	8.	9.	10.	11.	12.	13.
8. Trait Anger						
9. Trait Anger-Temperament	.808**					
10. Trait Anger-Reactivity	.802**	.296				
11. Anger Expression Out	.532*	.781**	.070			
12. Anger Expression In	-.053	-.363	.283	-.450		
13. Anger Control	-.127	-.245	.044	-.371	.428	
14. Communication	.193	.042	.270	-.111	.145	.334
15. Co-operation	.121	-.055	.253	-.109	.202	.373
16. Assertion	.361	.232	.351	.075	.459	.396
17. Responsibility	.162	.042	.220	.087	.188	.443
18. Empathy	-.066	-.365	.264	-.412	.428	.047
19. Engagement	-.309	-.419	-.076	-.420	.443	.461
20. Self-control	-.169	-.310	.041	-.309	.482*	.150
21. Social Skills Total	.048	-.158	.237	-.226	.451	.395
22. Bullying	.444	.404	.310	.278	-.154	.028
23. Hyperactivity	.577*	.337	.594**	.070	.396	-.061
24. Internalising	.514*	.445	.383	.259	.305	.164
25. Externalising	.623**	.554*	.448	.271	.210	-.149
26. Problem Behaviours	.637*	.462	.564*	.277	.382	.060
27. Self-Centred	.102	-.033	.199	-.204	.137	-.149
28. Blaming Others	.333	.288	.247	.149	-.010	-.282
29. Minimising/Mislabelling	.225	.300	.060	.173	-.149	-.401
30. Assume the Worst	.410	.306	.355	.184	.052	-.380
31. Oppositional Defiance	.318	.240	.273	.120	-.030	-.284
32. Physical Aggression	.460	.473*	.267	.207	.049	-.195
33. Lying	-.047	-.133	.059	-.255	.146	-.162
34. Stealing	.210	.130	.208	.111	-.066	-.450
35. Overt	.428	.399	.289	.182	.016	-.251
36. Covert	.113	.026	.157	-.038	.021	-.357
37. HIT Total	.295	.235	.239	.084	.015	-.327

Note: STAXI-2 C/A = State-Trait Anger Expression Inventory-2 Child and Adolescent, SSIS = Social Skills Improvement System, HIT = How I Think, \*= $p < .05$ , \*\*= $p < .01$

Table D3

*Pre-intervention (Time 1) SSIS scale intercorrelations and correlations with HIT*

	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.
14. Communication													
15. Co-operation	.749**												
16. Assertion	.695*	.748**											
17. Responsibility	.738**	.796**	.751**										
18. Empathy	.498*	.341	.395	.343									
19. Engagement	.550*	.501*	.546*	.458	.532*								
20. Self-control	.278	.539*	.475*	.469*	.595**	.531*							
21. Social Skills Total	.797**	.844**	.844**	.815**	.681**	.756**	.737**						
22. Bullying	-.010	.133	.063	.357	-.044	-.160	.235	.105					
23. Hyperactivity	.076	-.177	.256	.047	.243	-.019	0.000	.083	.224				
24. Internalising	.100	.337	.504*	.370	-.033	-.090	.163	.254	.437	.475*			
25. Externalising	.117	.175	.407	.287	.164	-.078	.377	.280	.654**	.646**	.647**		
26. Problem Behaviours	.077	.170	.445	.373	.210	-.091	.316	.286	.667**	.680**	.833**	.825**	
27. Self-Centred	-.128	.064	.079	.067	.211	.055	.556*	.191	.353	.343	.150	.574*	.316
28. Blaming Others	-.218	-.024	.053	.071	.104	-.371	.282	-.001	.497*	.321	.442	.709**	.548*
29. Minimising/ Mislabelling	-.315	-.232	-.115	-.102	.073	-.310	.215	-.124	.458	.267	.097	.620**	.343
30. Assume the Worst	-.205	-.068	.128	.012	.149	-.299	.221	.008	.310	.491*	.417	.661**	.524*
31. Oppositional Defiance	-.172	.007	.122	.029	.089	-.199	.269	.046	.251	.417	.314	.624**	.364
32. Physical Aggression	-.126	-.088	.148	.046	.018	-.364	.051	-.047	.429	.469*	.535*	.755**	.595**
33. Lying	-.197	-.072	-.068	-.049	.223	.111	.483*	.103	.323	.256	.015	.418	.225
34. Stealing	-.306	-.083	-.065	.004	.205	-.318	.424	-.001	.458	.223	.166	.564*	.411
35. Overt	-.157	-.050	.147	.042	.052	-.314	.157	-.007	.377	.480*	.471*	.750**	.531*
36. Covert	-.281	-.083	-.070	-.017	.229	-.154	.482*	.046	.434	.252	.113	.542*	.361
37. HIT Total	-.235	-.070	.043	.014	.147	-.256	.340	.019	.437	.391	.315	.697**	.479*

Note: SSIS = Social Skills Improvement System, HIT = How I Think, \* $p < .05$ , \*\* $p < .01$

Table D4  
*Pre-intervention (Time 1) HIT intercorrelations*

	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.
27. Self-Centred										
28. Blaming Others	.724**									
29. Minimising/Mislabeling	.728**	.838**								
30. Assume the Worst	.767**	.911**	.801**							
31. Oppositional Defiance	.846**	.853**	.748**	.916**						
32. Physical Aggression	.534*	.903**	.785**	.836**	.729**					
33. Lying	.901**	.590**	.728**	.664**	.643**	.441				
34. Stealing	.809**	.881**	.865**	.864**	.804**	.658**	.729**			
35. Overt	.719**	.947**	.826**	.936**	.910**	.948**	.568*	.774**		
36. Covert	.907**	.819**	.868**	.840**	.791**	.611**	.898**	.956**	.740**	
37. HIT Total	.868**	.949**	.910**	.951**	.914**	.839**	.777**	.927**	.936**	.929**

Note: HIT = How I Think, \*= $p < .05$ , \*\*= $p < .01$

Table D5

*Follow-up (Time 4) DERS scale intercorrelations and correlations with STAXI-2 C/A, SSIS and HIT*

	1.	2.	3.	4.	5.	6.	7.
1. Lack of Awareness							
2. Lack of Clarity	.383						
3. Impulse Difficulties	-.094	.198					
4. Goal Directed Difficulties	-.040	.113	.540*				
5. Non-Acceptance	-.388	-.001	.553*	.364			
6. Lack of Strategies	-.322	.317	.682**	.486*	.739**		
7. DERS Total	.047	.486*	.818**	.687**	.690**	.860**	
8. Trait Anger	-.363	-.066	.122	-.092	.336	.325	.123
9. Trait Anger-Temperament	-.368	.059	.036	-.041	.260	.225	.080
10. Trait Anger-Reactivity	-.275	-.137	.153	-.106	.310	.319	.123
11. Anger Expression Out	-.019	.135	.304	-.309	.225	.169	.147
12. Anger Expression In	-.074	-.343	-.038	.088	.356	.179	.087
13. Anger Control	-.070	-.032	-.278	-.152	.118	.075	-.075
14. Communication	-.061	-.065	-.226	-.496*	.103	.032	-.174
15. Co-operation	-.212	.043	-.010	-.102	.181	.391	.124
16. Assertion	-.202	.096	.283	-.069	.322	.548*	.318
17. Responsibility	.058	.066	-.098	-.448	.056	.161	-.039
18. Empathy	-.170	-.002	-.112	-.166	.088	.206	-.012
19. Engagement	-.231	-.156	-.264	-.091	.105	.062	-.126
20. Self-control	-.038	-.136	-.366	-.368	-.025	-.017	-.239
21. Social Skills Total	-.147	-.026	-.134	-.286	.141	.242	-.020
22. Bullying	-.116	.640**	.076	-.065	.031	.244	.204
23. Hyperactivity	-.106	.347	-.062	.397	.328	.239	.307
24. Internalising	-.474*	.302	.246	.138	.281	.623**	.358
25. Externalising	-.077	.389	.203	.276	.056	.118	.244
26. Problem Behaviours	-.379	.269	.226	.315	.428	.517*	.413
27. Self-Centred	.170	.596**	.251	.015	.069	.103	.286
28. Blaming Others	.115	.366	.438	.177	.327	.201	.422
29. Minimising/Mislabelling	.088	.363	.117	.074	.131	.019	.185
30. Assume the Worst	.010	.461	.290	.135	.251	.160	.333
31. Oppositional Defiance	-.015	.489*	.389	.161	.302	.248	.411
32. Physical Aggression	.072	.482*	.273	-.039	.105	.082	.234
33. Lying	-.017	.486*	.167	.262	.335	.315	.411
34. Stealing	.227	.272	.209	.045	.073	-.073	.166
35. Overt	.028	.499*	.342	.067	.212	.172	.334
36. Covert	.136	.410	.214	.155	.210	.107	.306
37. HIT Total	.093	.468	.289	.111	.210	.136	.327

*Note:* DERS=Difficulties in Emotion Regulation Scale, STAXI-2 C/A = State-Trait Anger Expression Inventory-2 Child and Adolescent, SSIS = Social Skills Improvement System, HIT = How I Think, \*= $p < .05$ , \*\*= $p < .01$

Table D6

*Follow-up (Time 4) STAXI-2 C/A scale intercorrelations and correlations with SSIS and HIT*

	8.	9.	10.	11.	12.	13.
8. Trait Anger						
9. Trait Anger-Temperament	.796**					
10. Trait Anger-Reactivity	.908**	.468				
11. Anger Expression Out	.513*	.234	.587*			
12. Anger Expression In	.124	.010	.174	-.295		
13. Anger Control	-.012	-.116	.064	.020	.444	
14. Communication	.214	-.046	.344	.202	.495*	.414
15. Co-operation	.161	.006	.232	-.159	.461	.425
16. Assertion	.281	.037	.384	.197	.331	.485*
17. Responsibility	.236	.034	.321	.163	.475*	.486*
18. Empathy	.367	.185	.407	.251	.475*	.622**
19. Engagement	.395	.166	.461	-.048	.578*	.597**
20. Self-control	.157	.011	.221	-.089	.616**	.504*
21. Social Skills Total	.300	.064	.393	.062	.586*	.597**
22. Bullying	.215	.220	.161	.116	-.255	.087
23. Hyperactivity	.427	.493*	.282	.031	.103	.252
24. Internalising	.618**	.491*	.561*	.344	-.012	.230
25. Externalising	.314	.434	.158	.379	-.548*	-.183
26. Problem Behaviours	.663**	.623**	.535*	.381	-.047	.169
27. Self-Centred	-.246	.001	-.360	.110	-.227	-.185
28. Blaming Others	-.142	.072	-.256	.196	-.188	-.210
29. Minimising/Mislabelling	-.305	-.046	-.412	-.062	-.096	-.028
30. Assume the Worst	-.025	.197	-.173	.156	-.254	-.287
31. Oppositional Defiance	.013	.199	-.119	.218	-.194	-.251
32. Physical Aggression	-.073	.151	-.210	.267	-.416	-.280
33. Lying	.097	.207	-.002	.095	.026	.078
34. Stealing	-.476*	-.183	-.568*	-.083	-.131	-.183
35. Overt	-.029	.180	-.167	.248	-.309	-.272
36. Covert	-.256	-.016	-.362	-.006	-.070	-.078
37. HIT Total	-.164	.075	-.291	.117	-.200	-.187

Note: STAXI-2 C/A = State-Trait Anger Expression Inventory-2 Child and Adolescent, SSIS = Social Skills Improvement System, HIT = How I Think, \*= $p < .05$ , \*\*= $p < .01$

Table D7

*Follow-up (Time 4) SSIS scale intercorrelations and correlations with the HIT*

	14.	15.	16.	17.	18.	19.	20.	21.	22.	23.	24.	25.	26.
14. Communication													
15. Co-operation	.673**												
16. Assertion	.525*	.790**											
17. Responsibility	.808**	.805**	.687**										
18. Empathy	.651**	.524*	.551*	.550*									
19. Engagement	.689**	.615**	.462	.562*	.758**								
20. Self-control	.707**	.662**	.586*	.748**	.665**	.667**							
21. Social Skills Total	.849**	.881**	.793**	.886**	.780**	.804**	.863**						
22. Bullying	.166	.381	.361	.249	.177	.150	.076	.272					
23. Hyperactivity	-.194	-.115	-.064	-.179	.203	.304	.024	-.007	.310				
24. Internalising	.023	.289	.530*	.184	.412	.255	.179	.319	.406	.480*			
25. Externalising	-.534*	-.491*	-.304	-.406	-.129	-.232	-.397	-.432	.277	.617**	.397		
26. Problem Behaviours	-.183	-.021	.256	-.074	.272	.172	.033	.074	.319	.789**	.848**	.676**	
27. Self-Centred	-.130	-.054	-.019	.005	-.220	-.496*	-.179	-.183	.510*	.040	.031	.198	.060
28. Blaming Others	-.245	-.155	.033	-.147	-.323	-.565*	-.330	-.292	.322	.041	-.025	.161	.125
29. Minimising/ Mislabelling	-.187	-.091	-.023	-.089	-.315	-.470*	-.184	-.224	.400	.092	-.057	.062	.050
30. Assume the Worst	-.261	-.160	-.064	-.187	-.294	-.508*	-.282	-.296	.524*	.224	.096	.322	.257
31. Oppositional Defiance	-.195	-.124	-.013	-.157	-.160	-.443	-.281	-.237	.552*	.215	.141	.307	.264
32. Physical Aggression	-.157	-.159	-.015	-.115	-.293	-.544*	-.339	-.278	.546*	.004	.022	.258	.111
33. Lying	-.058	.121	.164	.027	.031	-.147	-.027	.023	.593**	.480*	.314	.252	.454
34. Stealing	-.300	-.199	-.129	-.122	-.496*	-.642**	-.230	-.348	.113	-.134	-.244	.003	-.152
35. Overt	-.181	-.145	-.014	-.140	-.230	-.505*	-.317	-.263	.563*	.116	.085	.291	.195
36. Covert	-.218	-.066	-.001	-.063	-.300	-.480*	-.158	-.209	.362	.147	-.002	.123	.124
37. HIT Total	-.213	-.117	-.015	-.109	-.288	-.522*	-.252	-.254	.467	.120	.029	.207	.149

Note: SSIS = Social Skills Improvement System, HIT = How I Think. \* =  $p < .05$ , \*\* =  $p < .01$

Table D8

*Follow-up (Time 4) HIT intercorrelations*

	27.	28.	29.	30.	31.	32.	33.	34.	35.	36.
27. Self-Centred										
28. Blaming Others	.869**									
29. Minimising/Mislabelling	.889**	.893**								
30. Assume the Worst	.911**	.923**	.887**							
31. Oppositional Defiance	.904**	.904**	.837**	.975**						
32. Physical Aggression	.885**	.903**	.854**	.918**	.899**					
33. Lying	.777**	.769**	.816**	.863**	.854**	.725**				
34. Stealing	.849**	.859**	.890**	.777**	.707**	.733**	.573*			
35. Overt	.918**	.927**	.867**	.972**	.976**	.973**	.813**	.738**		
36. Covert	.920**	.922**	.965**	.916**	.867**	.820**	.853**	.917**	.867**	
37. HIT Total	.954**	.959**	.951**	.974**	.949**	.929**	.851**	.867**	.964**	.968**

Note: HIT = How I Think, \*= $p < .05$ , \*\*= $p < .01$

## Appendix E

### Anger Control Training Session Evaluation Checklist

Facilitator \_\_\_\_\_ Group \_\_\_\_\_

Co-facilitator \_\_\_\_\_ Week \_\_\_\_\_

*Instructions: Please place a check in the box that best describes what happened in this session.*

1. Were students welcomed and a positive climate established? Yes / No
2. Were group norms reviewed and positive participation emphasize Yes / No
3. Were any issues from the last Anger Control Training session reviewed? Yes / No
4. Did all youth complete at least one Hassle Log as homework? Yes / No
5. Were the Hassle Logs used to review the last week's anger control concept(s)? Yes / No
6. Were homework efforts honestly and genuinely acknowledged and rewarded? Yes / No
7. Were Hassle Logs collected or placed in student folders or binders? Yes / No
8. Was the Anger Control Chain correctly reviewed? Yes / No
9. Were visual aids used (posters displayed)? Yes / No
10. Was the new Anger Control Training concept correctly introduced, defined, and explained without unnecessary complication? Yes / No
11. Was the new concept perfectly modeled by the facilitator and co-facilitator? Yes / No
12. Did the co-facilitator point to the Anger Control Chain concepts during the modeling and role-plays? Yes / No
13. Did the modeling demonstration involve a situation relevant to group members? Yes / No
14. Did each youth correctly role-play the concepts as the main actor? Yes / No
15. Did each youth choose his or her own role-play partner? Yes / No
16. Did each youth provide performance feedback? Yes / No
17. Was the order of performance feedback correct (coactor, group members, facilitators, main actor)? Yes / No
18. Were new Hassle Logs given to each youth and homework assigned? Yes / No
19. Was behavior management an issue during the session? Yes / No
20. Did the session pace keep the group members interested and active? Yes / No
21. Did the group members appear to understand the Anger Control Training concept being taught in the session? Yes / No
22. Did the primary facilitator effectively interact with the youth? Yes / No
23. Did the co-facilitator interact effectively with the youth? Yes / No
24. Was the session especially well delivered to the group? Yes / No
25. Is any corrective action needed? Yes / No

#### Comments

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From *Aggression Replacement Training®: A Comprehensive Intervention for Aggressive Youth* (3<sup>rd</sup> ed.), by B. Glick & J. C. Gibbs, © 2011, Champaign, IL: Research Press (800-519-2707, [www.researchpress.com](http://www.researchpress.com)).

## Appendix F

Table F1

*Division of measures with partner study*

<b>Current study</b>	<b>Partner study</b>
<p><b>Title: The Impact of School-Based Aggression Replacement Training on Emotional Regulation and Aggression</b></p>	<p><b>Title: The Efficacy of ART on Interpersonal Deficits and Aggressive Subtypes (Mills, in press)</b></p>
<p>Social Skills Improvement System –Student form for ages 13-18 years (SSIS; Gresham &amp; Elliot, 2008)</p> <p style="text-align: center;">How I Think (HIT; Gibbs, Barriga &amp; Potter, 2001)</p> <p>Difficulties in Emotion Regulation Scale (DERS; Gratz &amp; Roemer, 2004)</p> <p>State-Trait Anger Expression Inventory-2 Child/Adolescent Version (STAXI-2 C/A; Brunner &amp; Spielberger, 2009)</p>	<p>Interpersonal Reactivity Index (IRI; Davis, 1983)</p> <p>Little et al’s Proactive/Reactive Aggression measure (Little, Henrich, Jones &amp; Hawley, 2003)</p> <p style="text-align: center;">Sociomoral Reflection Measure –Short Form (SMR-SF; Gibbs, Basinger &amp; Fuller, 1992)</p>