



THE UNIVERSITY
of ADELAIDE

Implementation Evaluation Report
iMsocial™ at School

CRICOS PROVIDER 00123M

adelaide.edu.au

seek LIGHT

© December 2016

Authors

Dr Neil Kirby (School of Psychology, University of Adelaide)

Dr Julia Harries (School of Psychology, University of Adelaide)

Acknowledgements

The authors gratefully acknowledge the generous gift from Professor Warren Bebbington (Vice Chancellor, University of Adelaide) to fund this research into the effectiveness of the iMsocial video modelling program for students with Asperger's Syndrome and other Autism Spectrum Disorders.

The authors express their sincere appreciation to Merel Purmer from Autism SA for her assistance with the recruitment of schools to participate in the research and for her involvement with, and support of, the school personnel who trialled the iMsocial programs.

The authors would also like to acknowledge the very generous contribution made by school personnel from the three schools that participated in this research. School personnel provided invaluable assistance to this research that included both the trialling of the iMsocial program with groups of students and significant input into the evaluation of the program effectiveness and outcomes.

The authors would also like to thank the parents and student iMsocial participants for their willingness to help with this research and to provide the feedback that was needed to enable an effective evaluation of the iMsocial program in schools.

We would also like to acknowledge the Autism SA Professional Practice Committee and Catholic Education South Australia for their guidance regarding the ethical considerations involved in undertaking this evaluation.

Contact Information: Dr Neil Kirby
School of Psychology
University of Adelaide
Phone: (08) 8313 5739
Email: neil.kirby@adelaide.edu.au

Table of Contents

	List of Tables	5
	List of Figures	6
	Executive Summary	7
1	Introduction	13
	1.1 iMsocial Background	13
	1.2 Research Objectives	16
2	Project Overview	18
	2.1 iMsocial Program Description	18
	2.2 iMsocial at School Trial Evaluation Stages	19
	2.3 Ethical Approvals	20
3	Research Method	21
	3.1 Participants	21
	3.2 Outcome Evaluation Method	21
	3.3 Process Evaluation Method	24
4	Research Findings	24
	4.1 Outcome Evaluation Findings	24
	4.1.1 Pre-intervention Findings	24
	4.1.1.1 Contextual and Individual factors	24
	4.1.1.2 Pre-intervention Levels of Functioning	26
	4.1.1.3 Social and Communication Competency Needs	28
	4.1.2 Post-intervention Findings	32
	4.1.2.1 Social Skill Changes at School (Teacher and Student Post-intervention Findings)	32
	4.1.2.2 Skill Generalisation Beyond School (Parent Post-intervention Findings)	40
	4.1.3 Follow-up Findings	42
	4.1.3.1 Maintenance of Social Skill Changes at School (Teacher and Student Post-intervention Findings)	43
	4.1.3.2 Maintenance of Skill Generalisation Beyond School (Parent Post-intervention Findings)	45
	4.1.3.3 Future Social Skill Training Needs	47
	4.2 Process Evaluation Findings	47
5	Summary and Recommendations for Use of iMsocial in Schools	54
	References	62

Appendix A: iMsocial Group Program Overview	65
Appendix B: Example iMsocial Session Plan	66
Appendix C: Poster presented at the ASfAR 2016 conference	69

List of Tables

Table 1	Research stages for the iMsocial at School trial.	20
Table 2	Participant details in the iMsocial trial.	21
Table 3	SSiS reports and interviews completed at the three evaluation time points (N=19).	23
Table 4	SSiS Standard Score means (standard deviations) for parent and teacher ratings at the three measurement times (pre-intervention, post-intervention and follow-up) for the iMsocial school trial with mean comparisons to the SSiS ASD sample.	26
Table 5	SSiS means (standard deviations) for parent, teacher, and student ratings at the three measurement times (pre-intervention, post-intervention and follow-up) for the iMsocial school trial with mean comparisons to the SSiS ASD sample.	27
Table 6	Response themes and example responses from student pre-intervention qualitative question “ <i>What do you want the iMsocial program to help you with?</i> ”	32
Table 7	Examples of social skill improvements noted by teachers at post-intervention.	33
Table 8	Response themes from teacher interviews regarding changes in teaching and support requirements of students following the iMsocial program.	38
Table 9	Response themes and comments from student post-intervention qualitative question “ <i>Which of these skills do you think the iMsocial program that you did at school helped you most?</i> ”	39
Table 10	<i>Response themes and comments from student post-intervention qualitative question “Which of these skills learnt in the iMsocial program have helped you at school?”</i>	40
Table 11	Examples of social skill improvements noted by parents at post-intervention.	42
Table 12	Additional social competency improvements noted by teachers at follow-up interviews.	45
Table 13	Additional social competency improvements noted by parents at follow-up interviews.	46

List of Figures

Figure 1	Percentage of parents, teachers and students who assessed performance in the below average behaviour level on each social skill subscale.	28
Figure 2	Mean importance ratings provided by parents for each of the SSiS social skill items at pre-intervention.	30
Figure 3	Mean importance ratings provided by teachers for each of the SSiS social skill items at pre-intervention.	31
Figure 4	Pre and post-intervention mean scores for teacher ratings of the responsibility and self-control SSiS subscales for each of the three schools.	34
Figure 5	Mean importance ratings provided by teachers at pre-intervention for the social skill items with significant mean improvements from pre to post-intervention.	35
Figure 6	Numbers of students assessed by teachers as improved from below average to average functioning or as deteriorating from average to below average functioning on each SSiS social skill subscale from pre to post intervention.	36
Figure 7	Number of students who improved or deteriorated on self-assessments of SSiS social skill subscales from pre to post intervention.	38
Figure 8	Numbers of students assessed by parents as improved from below average to average functioning or as deteriorating from average to below average functioning on each SSiS social skill subscale from pre to post intervention.	40
Figure 9	Pre-intervention and follow-up mean scores for teacher ratings of the autism spectrum subscale for the three schools.	44
Figure 10	iMsocial program effectiveness ratings from facilitators, teachers, and parents at post-intervention.	53

Executive Summary

Thanks to your social skills program [child] now has a very nice boy as his best friend. This has made a huge impact for him socially. We have never had this before. It is absolutely wonderful! Thank you very much ☺¹

Social communication difficulties are defining features of Autism Spectrum Disorders (ASD). For children with ASD, difficulties they experience communicating and interacting socially with others can impact all aspects of their daily lives and emotional wellbeing, including at home, at school, in the community and with friends. Consequently, numerous interventions have been developed to address social and communication skill deficits for children with ASD. One such intervention is the iMsocial program, a video-based social communication program developed by Autism SA.

The iMsocial program targets two major areas of social learning: the first 18 sessions target communication and social interaction skills and the remaining 16 sessions target self-protective social behaviours (e.g., feelings, friendships, peer pressure, bullying, internet safety, boundaries of touch) and self-awareness with understanding ASD. The iMsocial program has been evaluated by the Wellbeing Research Unit² from the University of Adelaide over a five year period (2009-2013). When delivered by Autism SA, the evaluation findings showed the program contributed to successful social and communication outcomes for most participants.

A key recommendation arising from these evaluations involved trialling the iMsocial program in schools to determine the viability of using teaching and support staff as facilitators to deliver the program and to determine whether skills learnt in the program generalised to classroom environments. Two considerations underlie the recommendation to trial the program in schools. The first relates to the nature of classrooms. Classrooms are social environments in which there is a strong reliance on being able to communicate, interact and socialise with others and they are environments that can present a challenge for students with ASD (Saggers, 2016; Tutt, Powell, & Thornton, 2006). The second relates to the opportunities that delivery of an effective school-based intervention would offer. Importantly these include not only identifying and providing training specific to the school related social learning needs of students but also the opportunity to equip teaching and support staff with the knowledge, tools and skills needed to support student social, academic and behavioural successes on an ongoing basis in the school environments.

¹ Note received from a parent of student in the *iMsocial at school* trial.

² Previously called the Disabilities Research Unit.

The evaluation reported here involves school-based trials of the iMsocial program undertaken in three schools by teaching and support staff. Each of the schools participated in a trial of the 18 communication and social interaction skill sessions of the iMsocial program for the purposes of this evaluation. The focus on the 18 communication and social interaction skill sessions was in part driven by the grant timetable for the evaluation but also to examine the extent to which the iMsocial program could effectively be separated and delivered as separate modules to address the social learning needs of students with ASD.

The iMsocial program combines multiple evidence based practices including video modelling undertaken in social groups using iPads. Increasingly practitioners are combining multiple practices within interventions designed to address the social learning needs of individuals with ASD (Wong et al., 2015). Video modelling has not commonly been combined with group social communication skills interventions; however, studies have demonstrated that the combination produces favourable outcomes (Harries, Kirby, & Guscia, 2016; Kroeger, Schultz, & Newsom, 2007; Plavnick, Sam, Hume, & Odom, 2013). In addition to combining the video modelling and group instruction, the iMsocial program also incorporates Social Stories that involve short written or illustrated descriptions of situations the student may encounter to help them understand how to respond in those situations. The use of social stories is another established intervention and evidence based practice (National Autism Center, 2015; P. Wang & Spillane, 2009; Wong et al., 2015).

Selected teachers and educational support officers in each of the participating schools ran the weekly sessions of the iMsocial program over the first two terms of the school year. They were supported with advice by the Autism SA trainer who had conducted the previous iMsocial programs at Autism SA. Sessions ran for 90 minutes and involved videoing students as they participated in the various session activities including: group games (e.g., a teamwork game for the 'taking turns' session), skill instruction (e.g., using social stories, role plays), and shared game time (involving computer and board games undertaken in pairs). Best examples of student video modelling of targeted social behaviors were viewed in group and examples for each student were emailed to their parents for students and parents to view at home. In addition to the activities used for skill instruction and videoing, each session also included sensory and relaxation activities (e.g. relaxation and yoga exercises) to help students to improve their self-regulation and self-control skills and to provide relaxation strategies to help students manage anxiety and improve their attention.

Evaluation of the iMsocial school trials involved consideration of outcomes achieved and the implementation process. The evaluation of outcomes associated with the iMsocial program involved a repeated-measures design to assess the social and communication skills of the 19 students with ASD (aged 7-13 years) who participated in the program at three time points: pre-intervention, post-intervention and three months following program completion. Information for the evaluation was obtained from teachers, parents, and participating students using the same measure of social skills (the Social Skills Improvement System; SSiS) as used in previous evaluations of the program, and qualitative questions. The process evaluation included information obtained from teachers, parents and students about practical aspects of the program and also involved interviews with the facilitators who implemented the program at the schools and the Special Education Coordinator/Director from each school. Evaluation findings are considered in terms of the eight research objectives identified for the iMsocial at school trials.

Objective 1: *To provide teaching and support staff with an easily accessed and evidence based video modelling tool and associated small group program that targets the social learning needs of students with ASD.*

The evaluation findings for the current trials showed the program was effective when delivered by teaching and support staff in schools. Comparisons of targeted and non-targeted social skills using teacher reports on the SSiS at pre and post-intervention and three months following program completion showed support for skill acquisition and maintenance consistent with program content rather than general development associated with maturation over the program timeframe. These findings were supported by qualitative examples of the improved social behaviours from teachers and parents and suggest the iMsocial program when delivered by teaching and support staff in schools contributed to social skills improvements for a number of students in the areas of need identified by teachers (i.e., engagement, communication, and self-control). Many of these improvements were considered by their teachers as having practical implications for the students in terms of observed improvements in levels of functioning relative to same age peers.

Objective 2: *To provide a social learning program for students with ASD that optimises educational experiences through the development of social interaction and communication skills with the associated behavioural, academic, and quality of life benefits.*

Teachers reported social skill improvements over the course of the iMsocial program for all students, albeit to differing degrees and across different areas of social need. Improvements were associated with behavioural benefits (e.g., student is calmer and less upset by change) and quality of life benefits (e.g., student has made friends) in classroom and playground settings. Teachers reported academic benefits associated with social improvements (e.g., student involved in mainstream group programs as they interact more effectively with peers, student will ask for help without having to be as closely monitored). Nonetheless, teachers noted that for students to achieve habitual performance and skill consolidation they required ongoing support and that classroom teachers needed the knowledge and expertise to effectively support social learning.

Objective 3: *To engage the students with ASD and their families in the evaluation of the school-based iMsocial program to ensure the program best meets the needs and goals of end-users.*

Evaluation findings showed the program targeted the social needs and goals identified by parents and students. Two directly targeted skill areas (i.e., engagement and communication) were identified as areas of greatest need by parents in addition to empathy – an area covered in the iMsocial self-protective social behaviour module -- and self-control. Social improvements reported by parents fell largely in the areas of engagement, communication, and self-control, with a significant mean improvement associated with parent reports on the SSiS engagement subscales from pre-intervention to follow-up. Most commonly students indicated they wanted help with making and keeping friends, to converse and interact with others, and to stay calm. Following the program, these were most commonly the areas students felt the program had helped them with as well as with recognising others' emotions, improved academic performance, speaking up, making eye contact and good manners.

Objective 4: *To trial the web-based iMsocial program in schools to ensure this innovative program can be effectively delivered by teaching and support staff using the program specifications and resources on an ongoing basis.*

There was a strong consensus that the iMsocial program was suited to being a school-based program, and in its current form ideal for students aged 8-12 years. Few modifications to program structure or content were required to suit school environments, and changes needed were easily accommodated. There was agreement regarding the high standard of the iMsocial program and resource materials available from the iMsocial website. Similarly there was high consensus regarding the value of the video modelling in the program although difficulties with video uploading for viewing at home and viewing of videos models between sessions were reported. From a school perspective, the program was resource intensive, although when balanced against the behavioural, academic, and quality of life benefits for students, all three schools said they thought the program was so worthwhile for students and their teachers that they would run it again for students with ASD or other students with similar social skill needs.

Objective 5: *To understand individual and contextual influences for children with respect to outcomes from participation in the iMsocial group program.*

At interviews informants noted various individual and contextual factors for students that may be relevant to the outcomes associated with involvement in the iMsocial program, including factors internal and external to the school. Consideration of the composition of the groups (e.g., ensuring students have similar skill levels and are of a similar age) was an important factor that either facilitated or impeded student potential to benefit from the program. Facilitator and teacher monitoring of student attitudes to involvement in the program were considered important to ensure maximum benefit from participation.

Objective 6: *To contribute to the knowledge, skills, and self-efficacy of teaching and support staff in the implementation of programs to respond to the individual educational and developmental needs of students with ASD.*

All teachers indicated they had previous experience teaching students with ASD and most had undertaken professional development sessions on teaching students with ASD, yet they also indicated that further support to translate theory and strategies into practice in classroom environments would be desirable. During the iMsocial trial some of the teachers were able to apply iMsocial strategies in the classroom and reported both positive impacts on student performance and increased self-efficacy for teaching students with ASD. The advantages of teachers receiving information and instruction in the use of strategies such as used in the iMsocial program was recognised by teachers.

Objective 7: *To contribute towards the development of the “toolbox” of educational practices and resources available for teaching and support staff working with children with ASD to use and to raise awareness of the available resources.*

Special Education Coordinators/Directors and facilitators from all three trial schools reported that the iMsocial program had been effective and indicated that they intended to include the program in the school's “toolbox” of practices and resources for supporting students with social skill needs, including students who may not have an ASD diagnosis. Similarly, teaching staff at the trial schools indicated that the gains they had observed in

student social and communication skills and the favourable student responses to participation in the program supported the ongoing use of the iMsocial program in their schools for students with ASD or with similar social skill needs.

Objective 8: *To contribute towards future research associated with equipping teaching and support staff with the educational tools, protocols and knowledge to support the social, behavioural and academic needs of students with ASD.*

Schools are an ideal environment for the delivery of social skill programs for students with ASD, yet the findings in the research literature regarding school-based programs have not demonstrated the expected beneficial outcomes (Bellini et al., 2007). However, the findings from this evaluation have shown that the iMsocial program when delivered as a school-based program can improve important social skills for students with ASD with relatively high levels of skill maintenance evident. This evaluation contributes important information related to understanding factors critical to the effective use of social skill programs in schools, including adequate resourcing for program delivery (e.g., adequate preparation time, facilitators with suitable expertise), methods to ensure transfer of skills to classrooms, commitment of families to support the program, and the targeting of those skills appropriate to the students' developmental life stage that facilitate positive classroom and social outcomes for students within their school context.

Summary and Future Research: Findings from this evaluation indicate the effectiveness and feasibility of implementing the video-based iMsocial program in schools. Feedback from those involved indicated that for the majority of the students the program was enjoyable, valued, and beneficial, albeit to different degrees. Nonetheless, involvement in a single program is unlikely to be sufficient to address all current and future social skill needs of students with ASD, with ongoing support likely to be required to manage increasingly complex social challenges for students as they develop. A key research finding arising from this and previous iMsocial evaluations involves the need for ongoing social learning for students with ASD. All informant sources identified the need for further social skill training, particularly to address the anticipated social challenges of adolescence. As has been demonstrated with the iMsocial program, schools present as an ideal environment for the delivery of developmentally targeted social skill programs to assist students to learn the skills needed to cope at the different developmental life stages of childhood and adolescence and to facilitate effective life-stage transitions particularly with respect to their educational experience both in the classroom and with other students. To achieve these outcomes there is a need to determine at what critical stages during the school years programs such as iMsocial can be beneficial in terms of content and training formats. To be optimally effective, there might need to be a series of iMsocial programs targeting the early, middle and later school years to assist with the social skills challenges during those years. It would also be necessary to equip teaching and support staff at each of these developmental stages with the educational tools, protocols and knowledge to support the social, behavioural and academic needs of students with ASD.

1. Introduction

1.1 iMsocial Background

Social communication difficulties are defining features of Autism Spectrum Disorders (ASD). For children with ASD, the difficulties they experience communicating and interacting socially with others can impact all aspects of their daily lives and their wellbeing. For example, research has shown social competency deficits to be associated with lower levels of academic performance than would be expected based on levels of intellectual functioning for primary school aged children with ASD (Estes, Rivera, Bryan, Cali, & Dawson, 2011). The heavy reliance on social communication for learning in classrooms is thought to contribute to this academic underperformance (Tutt et al., 2006). Children spend a large part of their day at school, yet a recent survey conducted by Sagger et al. (2016) showed children with ASD reported low levels of school connectedness, where connectedness is considered to represent “the extent to which students feel personally accepted, respected, included, and supported by others in the school social environment” (Goodenow, 1993, p. 80). The challenges associated with navigating the social world of school are considered to intensify levels of stress, anxiety, and depression experienced by students with ASD (Saggers, 2016; Shochet et al., 2016; White & Roberson-Nay, 2009), with these emotional problems further impacting relationships with others and ability to participate in schooling (Sagger et al., 2016; Shochet et al., 2016). Thus, there are compelling reasons to implement interventions to address the social communication needs of children with ASD. One such intervention is the iMsocial program developed by Autism SA, an Australian not-for-profit organisation providing specialist intervention and support services to individuals with ASD.

Initially funded by the Telstra Foundation, the iMsocial program was developed in two stages over a five year period. Autism SA committed to the external evaluation of the iMsocial program³ development to guide refinements and, importantly, to empirically validate efficacy for different cohorts of children and delivery contexts. The iMsocial program is a 34 week video-based social communication program and includes a modified version of the program developed for children with ASD and an intellectual disability. In the first stage of the iMsocial development, the program was delivered at Autism SA to small groups of approximately eight children and young adolescents aged between 8 and 15 years. Stage 2 of the iMsocial development involved both the group program and an individual program that could be delivered by parents, making the program accessible for families who were not able to attend Autism SA for the weekly group sessions (e.g., as they lived outside of Adelaide metropolitan area). This individual or outreach program was enabled by the development of software applications (i.e., apps) that could be used on handheld devices (e.g. an iPad[®]) to support the learning objectives of the program. The iMsocial program is now more broadly available from Autism SA as a web-based program, with registered users able to access the necessary session materials for the group and individual programs and the supporting software applications.

Video modelling has been a core component of the iMsocial program since its inception. Video modelling involves participants viewing a videotaped demonstration of a target behaviour, followed by opportunities to engage in the modelled behaviour (Bellini & Akullian, 2007). In recent decades video modelling has been

³ Previously called the iModeling program

widely used as an intervention for teaching social communication skills and there is a growing body of evidence supporting its efficacy (Allen, Wallace, Renes, Bowen, & Burke, 2010; Charlop, Dennis, Carpenter, & Greenberg, 2010; Ganz, Earles-Vollrath, & Cook, 2011; Rayner, Denholm, & Sigafoos, 2009; White, Keonig, & Scahill, 2007), although Reichow and Volkmar (2010) have recommended further research to understand the parameters impacting intervention effectiveness. Studies have also reported effective social communication skill generalisation and maintenance over time following video modelling interventions (Bellini & Akullian, 2007; Delano, 2007). Recent reviews of empirical evidence of interventions for individuals with ASD have led to video modelling being classified as an established intervention (National Autism Center, 2015) and an evidence based practice (P. Wang & Spillane, 2009; Wong et al., 2015).

In the iMsocial group program offered at Autism SA, the videoing of participants occurred in the weekly group sessions that were conducted by trained facilitators, although the viewing of video footage by participants was undertaken as homework. This method of viewing the video models deviates from that generally utilised in video modelling interventions -- where footage is generally viewed during session time --- was a modification made to accommodate the group setting in which the program was conducted. Although video modelling has not commonly been combined with group social communication skills interventions, studies have shown the combination can produce favourable outcomes (Kroeger et al., 2007; Plavnick et al., 2013). The benefits of using social groups include opportunities to simulate social situations and a safe supportive environment to practise new skills where social successes are supported, thereby enhancing social motivation and long-lasting behavioural change (White et al., 2010). Reichow and Volkmar (2010) have classified social skill groups as established evidence based practice for school-aged children with ASD, although they noted that mixed findings had been reported in terms of skill maintenance and generalization and recommended further research on the feasibility and validity of social skills groups delivered in school settings.

Increasingly practitioners are combining multiple intervention approaches or practices -- such as occurred in the iMsocial program -- to provide interventions for individuals with ASD (Wong et al., 2015). Combining interventions has been reported to be effective (Beaumont & Sofronoff, 2008; Wong et al., 2015) as multi-component practices allow for individual learning style preferences and as the practices may contribute differentially to the development, maintenance and generalisation of targeted skills, although further research has been recommended to understand the relative benefits of individual components (Gelbar, Anderson, McCarthy, & Buggey, 2012). In addition to combining the video modelling and group instruction, the iMsocial program also incorporates Social Stories, another established intervention and evidence based practice that involve short written or illustrated descriptions of situations the student may encounter to help them understand how to respond in those situations. The use of social stories is another established intervention and evidence based practice (National Autism Center, 2015; P. Wang & Spillane, 2009; Wong et al., 2015).

Video modelling in the currently offered iMsocial program is undertaken on handheld devices using the software applications developed by Autism SA. Traditionally video modelling has involved use of a television or computer screen and video cassette recorder or DVD player for watching video modelling materials. However, handheld devices are increasingly being used for video modelling due to the portability of such devices thereby enabling interventions to be undertaken in the appropriate setting for the targeted skills (e.g., in a classroom) and as using such devices are considered acceptable and desirable for typically developing

individuals, thereby reducing the stigma associated with interventions (Miltenberger & Charlop, 2015). Nevertheless while emerging evidence exists supporting use of such handheld devices for video modelling, the efficacy of such devices has not yet been widely investigated (Cardon, 2012; Stephenson & Limbrick, 2015). Kagohara et al. (2013) examined 15 studies reporting on the use of handheld devices for programs for individuals with developmental disabilities including ASD, with programs addressing academic skills, communication, employment, leisure, and transitioning across school settings. They considered that the handheld devices were viable technological aids but concluded that the findings remained tentative because of the broad age range groups and small numbers of participants in the studies reviewed.

Recent studies have compared the effectiveness of video modelling on handheld devices compared to traditional approaches using large screen devices (e.g., Mechling & Ayres, 2012; Mechling & Youhouse, 2012; Miltenberger & Charlop, 2015), with mixed findings reported. Miltenberger and Charlop (2015) examined social communication target behaviours (e.g., interactive play, conversational speech, asking questions) to compare the effectiveness of video modelling on televisions to video modelling on iPads for five children with ASD aged 5 to 12 years. While target behaviour mastery occurred with both delivery modes, acquisition was slightly slower on iPads for four of the five children, yet generalization and maintenance were slightly higher using iPads. The authors suggested the better generalisation findings may be associated with the greater prevalence of iPads in natural settings or, alternately, that the extra treatment sessions required to achieve acquisition criteria had contributed to outcomes. Although additional research is required to understand the effectiveness of handheld devices for video modelling, the findings do highlight the importance of empirically examining the impact of technology changes for interventions such as video modelling.

To date the iMsocial program has been delivered and evaluated in small group and outreach contexts using both large screen and handheld devices, conducted outside of school environments. The iMsocial program's success at delivering social skill outcomes has been demonstrated in evaluations conducted by the Wellbeing Research Unit (WRU) at the University of Adelaide over a five year period (Harries, Guscia, & Kirby, 2014; Harries, Hampel, Guscia, Wilson, & Kirby, 2012; Harries et al., 2016). These evaluations have shown both the video modelling and small group participation involved in the program each contributed to social skill developments, with homework exercises completed with parents using the software applications on handheld devices contributing to skill maintenance and generalisation to other environments.

Previous evaluations of the iMsocial program conducted by the WRU for Autism SA led to two key research and development recommendations:

1. *Undertake research into a series of iMsocial programs targeting different developmental stages of childhood and adolescence to facilitate effective life-stage transitions.*

Stage one of the iMsocial program targeted two age groups, 8 to 12 year olds and 13 to 15 year olds. However, while many older participants demonstrated social communication improvements following involvement in the iMsocial program, parent and facilitator feedback suggested they were less engaged with the video modelling in the program, and particularly with watching a DVD of themselves and/or other group members as homework between sessions. While some support has been obtained for the effectiveness of video modelling for adolescents with ASD (Plavnick et al., 2013), a meta-analysis

identified age as a significant moderator of video modelling effectiveness, such that effectiveness decreased as age increased (S.-Y. Wang, Cui, & Parrila, 2011). Consequently, subsequent iMsocial programs have focused on delivery to the 8 to 12 year old age groups. Yet it is also recognised that the nature of social emotional challenges vary across the developmental lifespan and suggest the need for programs that target the unique social needs at different life stages. Furthermore, the social and behavioural developmental trajectories of those with ASD will vary and may include periods of improvement, stability, or even regression, with contextual factors (e.g., educational context) increasingly recognised as important influences on such trajectories (Seltzer, Shattuck, Abbeduto, & Greenberg, 2004; Woodman, Smith, Greenberg, & Mailick, 2016). The availability of social learning interventions that target the major developmental periods from childhood through adolescence to adulthood are therefore likely to be required.

2. *Trial and evaluate the iMsocial program in schools to determine the logistical viability of the program being delivered using teaching and support staff (e.g. Educational Support Officers) and to facilitate the integration of what was learnt into classrooms.*

Two considerations underlie the recommendation to trial the program in schools. The first relates to the nature of classrooms. Classrooms are social environments in which there is a strong reliance on being able to communicate, interact and socialise with others. The socially interactive nature of classrooms can present difficulties for students with ASD which in turn presents unique challenges for their teachers (Saggers, 2016; Tutt et al., 2006). The second relates to the opportunities that delivery of an effective school-based intervention would offer. Importantly these include not only the social learning opportunities available for the students but also the opportunity to equip teaching and support staff with the tools and skills needed to support student social, academic and behavioural successes on an ongoing basis in the school environments. A further consideration underlying this recommendation was the potential for more children to benefit from the program if it was offered in schools than if it was only run at Autism SA, an important consideration in view of the increased incidence of ASD diagnoses over recent years (Shochet et al., 2016).

1.2 Research Objectives

The evaluation findings reported here involve a trial designed to investigate the second of the recommendations noted above; that is, a trial of the iMsocial™ web-based social communication training program in school environments for students with behaviours that can be classified as consistent with a diagnosis of higher functioning ASD, allowing participation in a normal school environment. This level of ASD is still referred to as Asperger's Syndrome although the Diagnostic and Statistical Manual of Mental Disorders, 5th Edition (DSM-5, 2013) has now deleted this term in favour of higher functioning Autism. In this report the term Asperger's Syndrome will be retained for convenience.

Schools have been identified as an important environment for teaching social skills, yet Ostmeier and Scarpa (2012) note a lack of school-based programs for children with ASD that have research supporting program efficacy. Despite the anticipated benefits associated with the delivery of social skill programs in schools (e.g., improved generalisation with programs delivered in situ, improved targeting of key classroom skills, presence

of peer models etc) the findings reported in the literature regarding school-based programs are ambivalent and suggest the need for further research to understand the factors that contribute to successful school-based programs. For example, a meta-analysis conducted of single-subject school-based social skills programs for children and adolescents with ASD found the programs had been minimally effective with low generalisation although moderate levels of skill maintenance were found (Bellini, Peters, Benner, & Hopf, 2007). More recently, Ratcliffe, Wong, Dossetor, and Hayes (2014) investigated a small group emotion-based social skills program delivered by school psychologists and found improvements on teacher ratings on a measure of emotional competency but no improvements on parent or teacher ratings of general social skills. Iadarola et al. (2015) speculate that reasons for the lack of success of school-based social skill programs include a lack of consideration by developers of the resources available in schools for delivering programs and a misalignment between the program goals in research trials and the learning goals the school has for the students.

The primary purpose of this research is to provide an evidence based social communication skills program for students with higher functioning ASD, aged approximately 8 to 12 years that can be effectively delivered by teaching and support staff in small group situations in a school environment. Particular objectives associated with this research are as follows:

1. To provide teaching and support staff with an easily accessed and evidence based video modelling tool and associated small group program that targets the social learning needs of students with ASD.
2. To provide a social learning program for students with ASD that optimises educational experiences through the development of social interaction and communication skills with the associated behavioural, academic, and quality of life benefits.
3. To engage the students with ASD and their families in the evaluation of the school-based iMsocial program to ensure the program best meets the needs and goals of end-users.
4. To trial the web-based iMsocial program in schools to ensure this innovative program can be effectively delivered by teaching and support staff using the program specifications and resources on an ongoing basis.
5. To understand individual and contextual influences for children with respect to outcomes from participation in the iMsocial group program.
6. To contribute to the knowledge, skills, and self-efficacy of teaching and support staff in the implementation of programs to respond to the individual educational and developmental needs of students with ASD.
7. To contribute towards the development of the “toolbox” of educational practices and resources available for teaching and support staff working with children with ASD to use and to raise awareness of the available resources.
8. To contribute towards future research associated with equipping teaching and support staff with the educational tools, protocols and knowledge to support the social, behavioural and academic needs of students with ASD.

More specifically this research into the use of the iMsocial program in schools involving video modelling on hand-held devices with the associated software application aims to understand:

1. The extent to which the existing program and software applications can be applied in a school environment by teachers and support staff using small groups of students with ASD;
2. The extent to which the iMsocial program needs to be modified for use in school environments to improve program outcomes for teachers and students;
3. The extent to which the iMsocial program targets the student needs for school environments as identified by teachers, parents, and students;
4. The adequacy of available materials and training modules/sessions for use in school environments;
5. The extent to which students are able to utilise the skills they have learnt in the iMsocial program in the school and other environments;
6. The contextual and individual factors that may be influential in determining the success of the program for individual students;
7. The extent to which the teachers are able to generalise the educational practices involved in the iMsocial program to improve educational outcomes for students in other classroom situations; and
8. The extent to which parents can effectively support the iMsocial program when it is run in the school environment and the assistance that may be required to facilitate parental involvement.

2. Project Overview

2.1 iMsocial Program Description

The iMsocial program is available as a web-based program from Autism SA⁴. Registration to use the program is currently free of charge, although a small fee applies for the purchase of the two software applications used with the program. These two software applications developed by Autism SA are available from the iTunes App Store and have been designed for use on iOS devices (e.g., iPad, iPhone or iPod Touch). The first software application, called the *iModeling app*, is a video modelling application that enables users to plan, film, edit, and watch video footage on a handheld device. This iModeling app is used throughout the iMsocial program. The second software application, called the *iModeling Boundaries app*, is used to teach boundaries of touch in the safety skill sessions of the program.

The full iMsocial program runs for 34 weeks and targets the following areas:

- **Communication skills** (e.g. saying hello/goodbye; joining or interrupting a conversation)
- **Interaction skills** (e.g. interacting with others, taking turns)
- **Emotions** (e.g. use of facial expressions and body language to express emotions)
- **Sensory and relaxation skills** (e.g. self-regulation and self-control skills, relaxation skills to reduce anxiety and improve attention)
- **Safety skills** (e.g. bullying defence strategies, boundaries of touch)

The evaluation findings reported here involve the first 18 sessions of the group iMsocial program where the program focus is on communication and social interaction skills, with the remaining sessions addressing self-protective social behaviours including feelings, friendships, peer pressure, bullying, internet safety, boundaries

⁴ Program available at iMsocial.org.au

of touch, and self-awareness with understanding ASD. The individual topics covered in the first 18 sessions are shown in Appendix A. The decision to focus the evaluation on the first 18 weeks of the iMsocial program was associated with the grant timetable conditions. As all previous evaluations of the iMsocial program have involved the full 34 sessions, this provided an opportunity to investigate the viability of offering the program in more discrete skill modules (e.g., a program addressing social and interaction skills). At the beginning of the evaluation all three participating schools committed to trialling the iMsocial program for the 18 communication and social interaction sessions.

Materials required for the program are available from the iMsocial website. These include participant selection questionnaires; details about resources that need to be prepared before the program commences (e.g., visuals for use in sessions, suggested games, materials for sensory time); and weekly session plans (see Appendix B for a session plan example). The iMsocial sessions have been designed to run for 1½ hours and are usually conducted by two facilitators. The format for each weekly session is similar and generally involves:

1. Group games (e.g., a teamwork game for taking turns session);
2. Skill instruction (e.g., using social stories, role plays);
3. Snack time;
4. Sensory time (e.g., relaxation, yoga exercises); and
5. Shared game time (involving computer and board games undertaken in pairs).

Video models are prepared for participants in these sessions utilising two video modelling approaches: Feed forward and Positive self-review (Dowrick, Kim-Rupnow, & Power, 2006).

Feed forward involves creating video footage of skills not yet mastered or of the participants performing the skill in a new or challenging context during skill instruction. Video model footage is created by editing together components of successful skill performance with instructions or guidance edited out for the participants to watch.

Positive self-review involves videoing participants performing skills when interacting naturally (e.g., having a conversation at snack time, during shared game time) and selectively editing the footage to leave best performance and edit out negative interactions (e.g., swearing or snatching) for the participants to watch.

Participants are provided with copies of these video models and are asked to watch their videos as homework 5-10 times a fortnight. When possible participants received a video model of themselves performing the skills; however, if no suitable footage is available of a skill for the participant then footage of another group member can be used (i.e., they were provided with peer model instead of a self-model footage).

Support to run the iMsocial program is available from the iMsocial Program Leader via phone or email. In addition an iMsocial online forum exists for registered users to contact the Program Leader or to share questions and comments with other registered users.

2.2 iMsocial at School Trial Evaluation Stages

This project involved a pilot study to undertake an evaluation of the effectiveness of the iMsocial small group program using video modelling with hand-held devices, to provide an evidence base for its use as an

educational program and tool to support the social, behavioural, and academic outcomes for students with behaviours consistent with a diagnosis of Asperger’s Syndrome. The research stages and timeframes are shown in Table 1.

2.3 Ethical Approvals

Ethical approval for this evaluation was obtained from the University of Adelaide Human Research Ethics Committee, the Autism SA Professional Practice Committee, and from Catholic Education (South Australia). In addition to these approvals, letters of agreement for participation in the program evaluation were obtained from the Principals of each of the schools. Consents to participate in the iMsocial program and associated evaluation was obtained from parents and teachers of the student participants.

Table 1 Research stages for the iMsocial at School trial.

Stage #	Project Stage Title	Timeframe
1	<p>Commence iMsocial program implementation preparation.</p> <ul style="list-style-type: none"> > Meet with the Autism SA Chief Executive Officer, the Autism SA Executive Manager of Service Development, and iMsocial Program Leader to organise the trial of the iMsocial program in schools. > Commence recruitment of schools for the iMsocial trial. > Obtain ethics approvals from the University of Adelaide, Autism SA, and relevant school ethics committees. > Obtain approvals to participate from Principals of schools. > Conduct parent information sessions and obtain signed consents from parents and teachers for students participating in the iMsocial trial. > Assist participating schools with preparations for the iMsocial trial. > Complete pre-intervention interviews and social skill assessments with teachers, parents and students. 	May 2015 – March 2016
2	<p>Program implementation and post-intervention iMsocial data collection.</p> <ul style="list-style-type: none"> > Participating schools implement the iMsocial program. > Conduct regular checks on program progress with schools. > At completion of the 18 week program meet with facilitators and Special Education Coordinators/Directors to determine the viability of conducting the program in schools using teaching and/or support staff and any modification recommendations. > Complete post-intervention interviews and social skill assessments with teachers, parents and students. 	February – August 2016
3	<p>Complete final follow-up interviews and assessments for the iMsocial program evaluation.</p> <ul style="list-style-type: none"> > Complete follow-up interviews and social skill assessments with teachers, parents and students 10-12 weeks after the program is completed. 	September – November 2016
4	<p>Dissemination of research findings.</p> <ul style="list-style-type: none"> > Complete and distribute evaluation report. > Disseminate findings in other forums (e.g., conferences, presentation to relevant groups, manuscript preparation) 	September 2016 onwards
5	<p>Final financial acquittals</p>	January 2017

2. Research Method

3.1 Participants

Three schools in the Adelaide metropolitan area participated in this evaluation of the iMsocial program, all were non-government co-educational schools. Across the three schools, 24 students commenced the iMsocial program including 20 students with diagnoses of higher level ASD. Two schools included students without ASD for whom it was considered a social skill program would be beneficial. Of the 20 students with ASD, one student withdrew from the program after two weeks, with the reason provided that he was a shy student who was new to the school and was finding participating in the group overwhelming. The profiles of the 19 students with ASD at each school are provided in Table 2.

Table 2 Participant details in the iMsocial trial.

School	Number of students with ASD	Age at commencement		Number of program facilitators	Number of school teaching and support staff in evaluation
		Range	Average		
1	5 (2 girls, 3 boys)	9-11 years	10.4 years	2	4
2	7 (2 girls, 5 boys)	7-11 years	9.4 years	1	2
3	7 (2 girls, 5 boys)	13 years	13.2 years	2	2 (ESOs)
Total	19 (6 girls, 13 boys)	7-13 years	11.2 years	5	8

As can be seen in Table 2, Schools 1 and 3 ran the iMsocial program with two facilitators. In each case these were school staff and included three Educational Support Officers (ESOs) and the Head of Special Education. A volunteer ran the sessions at School 2, with program oversight from the Director of Special Education. The volunteer facilitator had previous experience working with students with ASD and was a parent of a student with ASD at the school. A total of eight teaching and support staff were involved in the evaluation of the iMsocial program. Most staff had taught the students for 1-2 months (n=13 students); however, six students had been taught by the staff for 12 or more months⁵.

Students at two schools (Schools 1 and 2) were Junior School level and as such there was a class teacher who assisted with the evaluation of the program. However, students at School 3 were Middle School students who moved between classes over the course of the day and therefore no single class teacher was available to assist with the evaluation. To address this issue the two program facilitators, who also worked with the students as Educational Support Officers in their various classes, assisted with completing evaluation measures for School 3 students.

3.2 Outcome Evaluation Method

The evaluation of outcomes associated with the iMsocial program involved a repeated-measures design to assess the social and communication skills of students at three time points (pre-intervention, post-intervention

⁵ Length of time known categories used: less than 1 month; 1-2 months; 3-5 months; 6-11 months; 12 or more months.

and three months following program completion). Interviews were also conducted with parents and teachers at each time point. Qualitative questions were used to determine the extent to which students had applied the skills in the school situation and whether parents had observed generalisation of skills to other environments. Questions were also asked about perceptions of the child's reaction and engagement with the program and to determine whether there were any contextual and/or individual factors that had been influential in determining the success of the program for individual students.

The social skills of participating students were assessed by parents and teachers using the Social Skills Improvement System (SSiS; Gresham & Elliott, 2008) at each of the three time points. The SSiS is a measure that assesses both social skills (46 items) and problem social behaviours (30 items), although generally only changes in social skills are considered in this evaluation. In the SSiS social skills are assessed across seven subscales (communication, cooperation, assertion, empathy, responsibility, engagement, and self-control). The frequency of performance of skills are rated in the parent and teacher SSiS scales using a 4-point rating scale.⁶ In addition, the parent and teacher SSiS scales include an importance rating for each item to rate how important the skill is for development and/or classroom success using a 3-point rating scale.⁷

The SSiS also includes a subscale called the Autism Spectrum subscale in which items from three social skill subscales (communication = 4 items, engagement = 3 items, and empathy = 1 item) are combined with seven problem behaviour items (e.g., becomes upset when routines change) to produce the subscale score. Consequently the combination of both social skills and problem behaviours means a lower Autism Spectrum subscale score may be associated with lower levels of problem behaviors and/or social skills in communication, engagement, and/or empathy.

In addition to assessing social skills and problem social behaviours, the teacher SSiS version includes a brief measure of academic competence, determined using seven questions rated on a 5-point rating scale⁸ (e.g., In reading, how does this student compare with other students?). SSiS Behaviour levels are provided for the overall standard score (e.g., well below average, below average, average, above average, well above average) and subscale scores (e.g., below average, average, above average), which indicate the position of scores in relation to the SSiS normative group.

SSiS parent and teacher reports were used to determine program effectiveness as observational measurements were not viable due to the number of participants and locations. Consequently, effectiveness was determined by comparing subscales that addressed the skills directly taught in the program relative to the other subscales. To determine the target skill areas, the iMsocial Program leader was provided with a list of the 46 SSiS social skill items in the order they appear in the scale and was asked to indicate which skills were explicitly taught in the first 18 weeks of the program. Ten social skill items were identified as targeted skills (e.g., take turns in a conversation, introduces self to others) and the percentages of items represented in each subscale were: communication = 71%, engagement = 57%, cooperation = 17%, empathy = 0%, assertion = 0%, self-control = 0% and responsibility = 0%. Effectiveness of the intervention was examined according to

⁶ Social skills and problem behaviours rating scale: 1 = never; 2 = seldom; 3 = often; 4 = almost always.

⁷ Importance rating scale: 1 = not important; 2 = important; 3 = critical.

⁸ Academic competence rating scale: 1 = Lowest 10%; 2 = Next lowest 20%; 3 = Middle 40%; 4 = Next highest 20%; 5 = Highest 10%.

whether improvements on the SSiS occurred predominantly in the targeted areas of communication and engagement and to a greater extent than in the remaining four social skill subscales. Based on previous evaluations of the iMsocial program (Harries et al., 2016), it was anticipated that the involvement in the program group activities and developmental maturation would also contribute to gains in social skills areas other than communication and engagement, although to a lesser degree. Skills identified by the Program Leader as indirectly targeted during the program through group involvement (e.g., pays attention to your instructions, takes responsibility for part of a group activity) were also identified by the iMsocial Program leader. The percentages of directly and indirectly targeted items represented in each subscale were: engagement =100%, communication = 86%, cooperation = 67%, self-control = 57%, assertion = 57%, responsibility = 50%, and empathy = 33%.

In addition to having the parents and teachers of participants complete the SSiS items, students who undertook the program were also asked to complete, with the help of their parents if needed, a self-report questionnaire that included items from three subscales of the student version of the SSiS. Two of these subscales were skill areas targeted in the first 18 weeks of the iMsocial program (i.e., communication and engagement) whereas the third (the self-control subscale) is an area of importance for students with ASD but which was not directly targeted by the program. Items in the student SSiS scale are rated using a 4-point scale of 1= it is not true for me, 2 = it is a little true for me, 3 =it is a lot true for me, and 4 =it is very true for me. In addition to asking the students to provide ratings regarding their perceptions of their social skills, they were also asked qualitative questions developed by the researchers to understand their perceptions of their social skill needs and benefits gained from the program.

Table 3 SSiS reports and interviews completed at the three evaluation time points (N=19).

		Baseline	Post-intervention	Follow-up
SSiS Reports Completed	Teachers	19	19	19
	Parents	14	9	9
	Students	13	8	9
Interviews Conducted	Teachers	10	19	19
	Parents	18	15	11

Table 3 provides details of the numbers of interviews and SSiS questionnaires completed at each of the three evaluation time points. As can be seen at each time point all teachers completed the SSiS reports whereas fewer parents returned the completed SSiS reports. Parents were provided with two reminders about returning the SSiS surveys and were also offered the incentive of being included in a gift voucher draw for their participation. As in previous iMsocial programs, not all students were able to complete their self-assessments. Participation rates in interviews were higher. Most teachers and the majority of parents were able to be interviewed at each of the three time points. Parents and teachers received two invitations to participate in interviews by phone or email. Reasons for non-participation in the evaluation included ill health and demands associated with completing National Disability Insurance Agency applications.

3.3 Process Evaluation Method

Interviews were held with facilitators and Special Education Coordinators/Directors at each school at the completion of the 18 weeks of the program to evaluate the extent that teaching and support staff had been able to effectively implement the iMsocial program and whether the program was considered to be a viable school-based program. These interviews were also used to determine the adequacy of available materials and training modules/sessions and the need for modifications for use in school environments. In addition, information obtained from interviews with parents and teachers at the completion of the program supplemented that obtained from facilitators and Special Education Coordinators/Directors to determine the extent to which parent and teachers were able to effectively support the iMsocial program when it is run in the school environment.

Information obtained from interviews has been considered in terms of the following topics:

- Group composition (e.g., participant age range, gender, group size, selection procedures);
- Program content and structure (e.g., in terms of age appropriateness, skill areas covered, session format);
- Teaching and learning strategies and resources (e.g., materials from the iMsocial website, ease of use of video modelling software application, use of visual supports, suitability of session activity suggestions);
- Program feasibility in schools (e.g., in terms of preparation time, staff resources required, session length and timetabling issues, impact of missed class time for students, methods for watching video models, monitoring of homework);
- Program delivery support (e.g., assistance from iMsocial Program Leader, use of forum); and
- Future use of the program.

4. Research Findings

4.1 Outcome Evaluation Findings

The following information summarises the findings from interviews and parent, teacher and student SSiS reports at each of the three time points (pre-intervention, post-intervention and three months following program completion).

4.1.1 Pre-intervention Findings

4.1.1.1 Contextual and Individual Factors

Pre-intervention parent and teacher interviews were used to understand the contextual and individual factors that may impact the success of the program for individual students. In particular, interviews were used to understand the suitability of each student's educational situation, the additional assistance they received and required to help their learning and participation at school (including social and communication needs), previous experiences of social skill intervention programs, and any other factors that may affect participation or likelihood of gaining benefit from the program.

Most parents (61%) felt their child's current educational situation was suitable and that the assistance needed to support their learning and participation was being received. Responses from these parents included comments such as the school *"is fantastic"*, *"absolutely brilliant"*, *"a game changer"*, and *"very supportive"*. Others considered their child's current educational situation as suitable although noted academic and/or social concerns (39%) with comments such as *"educationally [child] is getting the support she needs but she has social problems"*, *"has been going OK at [school] although he gets teased"*, *"mainstream schooling is good but needs more support in class"*. One parent indicated that they were satisfied with their child's situation but wondered if they required a more specialised ASD learning environment. During interviews five parents commented that their child had moved schools to their current situation, largely due to bullying but also due to the physical environment of the previous school (i.e., a lack of fencing to prevent absconding).

Parents and teachers indicated that the schools provided a range of accommodations and/or modifications to support students with ASD (e.g., ESO support, modified curriculum, wellbeing rooms, "chill-out" areas in classrooms, self-regulation and sensory tools). Parent comments on additional assistance they felt was required included more ESO time to support academic and social needs and more professional training for teachers in ASD. All class teachers interviewed indicated they had previous experience teaching students with ASD and most had undertaken professional development sessions on teaching students with ASD. However, they also indicated that further support to translate theory and strategies into practice in classroom environments and additional ESO support were needed.

All teachers commented on positive experiences associated with teaching students with ASD (e.g., seeing student growth and achievements, the empathy and understanding demonstrated by other class members). However, they also commented on challenges they encountered supporting the ASD students in their class while ensuring lessons ran smoothly and all students received teacher attention, with these challenges involving behavioural, sensory, social, fatigue, and emotional issues. Additional ESO classroom and playground support were frequently identified by teachers as means of addressing identified challenges, although teachers also considered an effective social learning program would likely be beneficial for students but they reinforced the importance of teachers being supported to transfer the practices and strategies into the classroom.

Each of the participating schools ran other social skill programs for students and over half of the parents reported that their child had undertaken a school-based social skills program. Parent interviews revealed that all but one child had previously undertaken a social skills training program, and a number had attended multiple programs at school and with external providers. Parents generally commented positively about the school-based programs, particularly the fact that they were group-based programs that involved students their child was familiar with, whereas comments regarding the success of the external programs varied. Comments ranged from positive themes (e.g., child enjoyed the program, it seemed to be beneficial) to less favourable response themes (e.g., child was excluded from the program as they lacked the foundation skills or had behaviour problems, children in the group were not well matched with respect to age or skill levels, other participants were unknown to the child and they never saw them again). When asked whether they anticipated the iMSocial program undertaken at school would be helpful for their child, all but one parent indicated they felt it was likely to be somewhat or very helpful with reasons including: the child knew some of the kids or had a

close friend also doing the program, they were not the only child from their class going and so wouldn't feel different, the program was visually based, the explicit teaching methods (rather than informal modelling), the program was of longer duration than other available social skills programs, the child was familiar with the staff running the program, and the child had an interest in filming or being filmed. One parent indicated that the program may be slightly helpful for their child and commented that based on classroom performance there may be a reluctance to participate.

4.1.1.2 Pre-intervention Levels of Functioning

SSiS reports completed at pre-intervention provided a profile of student social competency and baseline measures for assessing changes over time according to parents, teachers and the students. Table 4 shows the social skill and problem behaviour standard score means as assessed by parents and teachers and academic competence standard score means as assessed by teachers. As can be seen in Table 4, at pre-intervention two significant differences to the SSiS ASD sample mean are apparent: the iMsocial means are higher for problem behaviours using parent ratings and there are higher social skills using teacher ratings. In terms of academic competence as assessed by teachers at pre-intervention, the mean score was slightly but not significantly lower than the SSiS ASD sample with standard scores ranging from the well below average level to the average level compared to same aged peers (score range = 60 to 112), with most participating students in the below average level (63%).

Table 4 SSiS Standard Score means (standard deviations) for parent and teacher ratings at the three measurement times (pre-intervention, post-intervention and follow-up) for the iMsocial school trial with mean comparisons to the SSiS ASD sample.

	Parents ⁹				Teachers			
	SSiS Sample (n=50)	Pre (n=14)	Post (n=9)	Follow-up (n=9)	SSiS Sample (n=41)	Pre (n=19)	Post (n=19)	Follow-up (n=19)
Social Skills	75.8 (16.2)	76.2 (11.6)	79.1 (7.9)	78.2 (9.7)	74.6 (15.9)	85.7** (14.3)	92.6** (10.0)	92.3** (12.7)
Problem Behaviour	119.3 (15.5)	131.4** (12.2)	128.6* (8.8)	129.2* (10.1)	122.2 (10.0)	127.3 (18.7)	120.0 (17.5)	121.8 (18.5)
Academic Competence	n/a	n/a	n/a	n/a	85.9 (14.5)	82.6 (10.7)	84.5 (12.2)	86.6 (10.5)

* $p < .05$ ** $p < .01$

Table 5 shows the pre-intervention mean scores for each of the social skill subscales and the autism spectrum subscale as assessed by each group of informants and compared to the SSiS ASD sample. As can be seen the mean social skill subscale scores from parents did not differ significantly from this sample other than with respect to higher mean scores on the assertion and responsibility subscales for the students in the iMsocial trial. Teacher mean scores were significantly higher than the ASD sample on four subscales: communication, assertion, responsibility, and empathy. Students rated their self-control significantly lower than was the case for the SSiS ASD sample, with this subscale also lower than the two other subscales completed by students in

⁹ Parent SSiS report numbers varied across the measurement times

the iMsocial trial. Whilst finding some differences to the SSiS ASD sample with respect to social skill subscale means, there were no significant mean differences for the autism spectrum subscale for either parents or teachers

In general mean social skill subscale scores from teachers were higher than parent means except for the assertion subscale, similar to pattern of findings by Macintosh and Dissanayake (2006) when comparing teacher and parent ratings of social skills for children with high functioning autism and Asperger's Syndrome. The different levels of familiarity with skills and behaviour may be relevant in such findings as may be the different contexts in which parents and teachers interact with the children (Macintosh & Dissanayake, 2006). In fact, a number of parents interviewed for the iMsocial trial commented about differences they perceived in their child's performance at school and at home. For example, some commented that they felt their child worked hard during the day to maintain their performance at an acceptable level, particularly so they did not embarrass themselves, and as a consequence were very tired at the end of the school and "let it out" when they got home. With respect to student ratings of their social skills, these mean scores were generally higher than parent and teacher means, consistent with previous findings comparing reports of social skills (Gresham & Elliott, 2008; McMahon & Solomon, 2015), although in this trial self-control was rated lower by the students than by teachers.

Table 5 SSiS means (standard deviations) for parent, teacher, and student ratings at the three measurement times (pre-intervention, post-intervention and follow-up) for the iMsocial school trial with mean comparisons to the SSiS ASD sample.

SSiS Social Skills Subscales	Parents				Teachers				Students ¹⁰			
	SSiS Sample (n=50)	Pre (n=14)	Post (n=9)	Follow-up (n=9)	SSiS Sample (n=41)	Pre (n=19)	Post (n=19)	Follow-up (n=19)	SSiS Sample (n=9)	Pre (n=13)	Post (n=8)	Follow-up (n=9)
Communication	11.6 (3.4)	11.0 (2.5)	12.0 (2.0)	11.7 (2.3)	9.6 (4.5)	12.4** (2.7)	14.5** (2.9)	14.1** (2.9)	11.9 (4.6)	11.6 (3.6)	11.4 (2.4)	10.9 (3.0)
Cooperation	10.3 (3.1)	10.3 (2.1)	10.7 (2.3)	10.3 (1.7)	9.6 (3.1)	11.3 (3.9)	12.3** (3.1)	12.4** (3.4)	-	-	-	-
Assertion	10.2 (4.2)	12.2* (3.4)	12.4* (2.9)	11.6 (2.9)	7.4 (4.3)	11.4** (2.6)	12.0** (2.8)	11.9** (3.4)	-	-	-	-
Responsibility	8.7 (4.3)	10.8** (2.6)	11.2** (2.4)	10.2 (3.5)	8.2 (4.1)	10.9** (2.8)	12.8** (2.5)	12.9** (2.8)	-	-	-	-
Empathy	8.5 (3.8)	9.2 (3.0)	9.6 (2.7)	10.1 (3.2)	7.0 (4.7)	9.8* (4.7)	10.6** (3.8)	11.4** (3.6)	-	-	-	-
Engagement	9.4 (4.5)	8.4 (3.0)	9.4 (3.5)	10.8 (4.1)	8.1 (3.8)	9.6 (3.7)	11.3** (3.0)	10.8** (3.4)	11.8 (4.1)	11.3 (4.4)	11.8 (5.4)	11.1 (3.6)
Self-control	7.4 (3.6)	6.7 (3.0)	7.1 (2.0)	7.8 (3.5)	8.1 (4.2)	8.4 (4.9)	10.7** (2.8)	10.6* (3.7)	10.7 (4.4)	6.9** (3.6)	7.9* (3.3)	8.7 (4.7)
Autism Spectrum	22.6 (7.6)	22.7 (4.2)	19.6 (5.2)	19.3 (5.8)	23.9 (7.8)	20.6 (7.6)	16.1** (6.6)	16.5** (7.1)	-	-	-	-

* $p < .05$ ** $p < .01$

¹⁰ Student SSiS report numbers varied across the measurement times

4.1.1.3 Social and Communication Competency Needs

The SSiS reports completed at pre-intervention also served to provide information about areas of greatest need for student participants determined by the number of students with below average functioning relative to their same age peers for each social skills subscale as rated by each of the informants. As can be seen in Figure 1¹¹, parents provided social skill ratings that fell in the below average behaviour level more often than did teachers. Nonetheless, while differences in levels of below average performance were evident, it can be seen that the skill areas targeted in the first 18 weeks of iMsocial, that is engagement and communication, were identified as areas of high need by both parents and teachers along with self-control and empathy. Students provided ratings on three SSiS social skill subscales with levels of below average performance reported quite markedly lower than those reported by parents and slightly lower than reported by teachers.

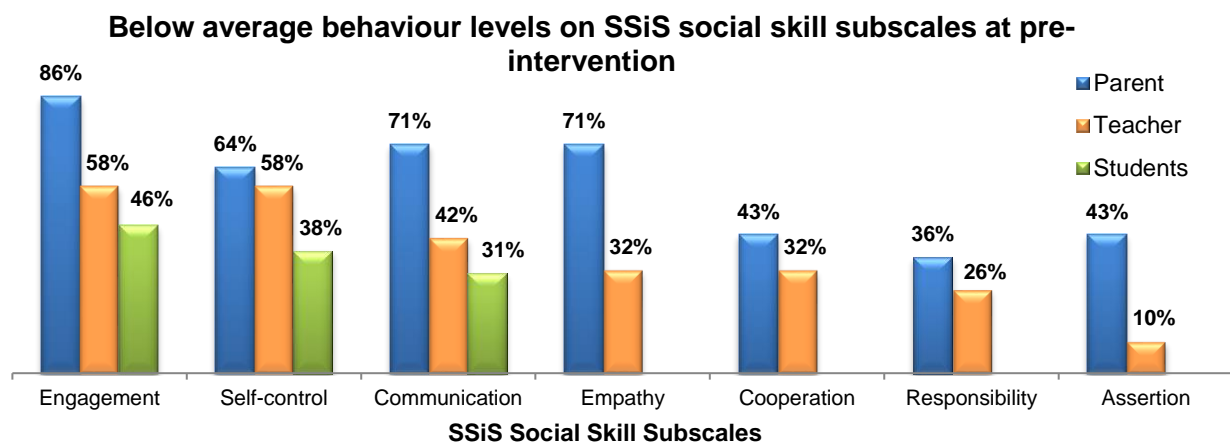


Figure 1 Percentage of parents, teachers and students who assessed performance in the below average behaviour level on each social skill subscale.

In addition to providing information about areas of student need, the importance ratings provided for each social skill item in the pre-intervention SSiS measures indicated the extent to which the program targeted skills (directly or indirectly) that were considered to be key areas of social learning by parents and teachers. Figures 2 and 3 show the mean values for the parent and teacher importance ratings for each of the social skill items in the SSiS, with the majority falling between the important and critical levels for both. With respect to the parent importance ratings, all directly and indirectly targeted skills in the iMsocial program fell in this range, suggesting the program targeted skills were considered important to parents. Only one directly targeted skill (makes eye contact when talking) had a mean value that fell below this range according to the teacher importance ratings.

During interviews parents and teachers were asked to comment on key areas of social learning for each of the participating students. By and large the skill areas noted by parents – sometimes quite emotionally – were covered in the SSiS social skill items. Additional areas of need mentioned included:

- Use of an appropriate voice volume;
- Managing changes in routines;
- Ability to be flexible with respect to rules or procedures;

¹¹ Percentages rather than numbers of students used as the number of parent and teacher assessments were not the same.

-
- An awareness of social boundaries (and stranger danger);
 - To be more confident in social situations; and
 - To learn to manage their anxiety.

Similarly, most of the areas of social learning identified by teachers were included in the SSiS social skill items. Other areas identified by teachers included:

- To be able to talk about topics other than their own interest with fellow students; and
- To use ‘safe words’ (i.e., to not swear or speak inappropriately to others) in the classroom.

Parent social skill item mean importance ratings at pre-intervention

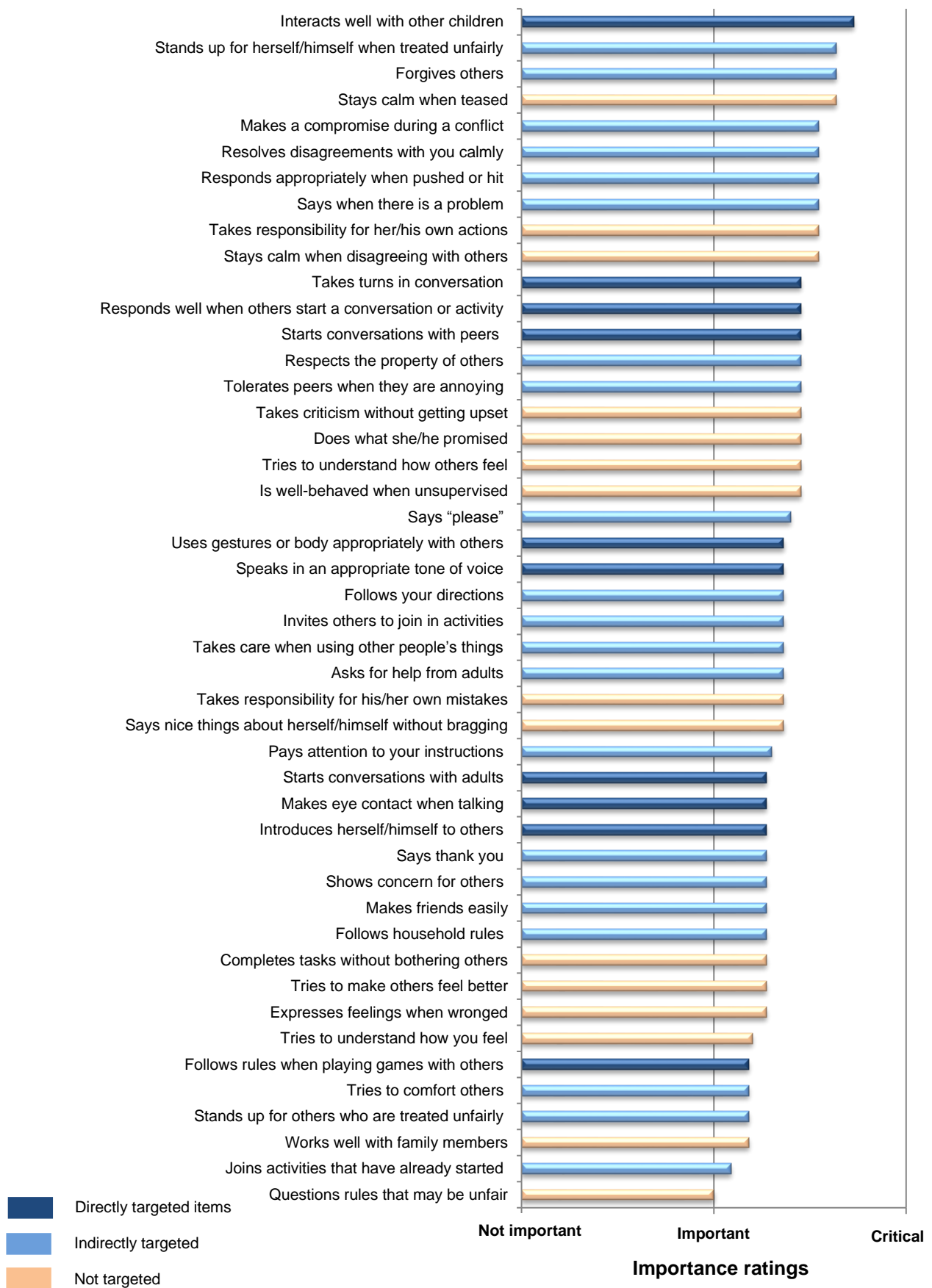


Figure 2 Mean importance ratings provided by parents for each of the SSiS social skill items at pre-intervention.

Teacher social skill item mean importance ratings at pre-intervention

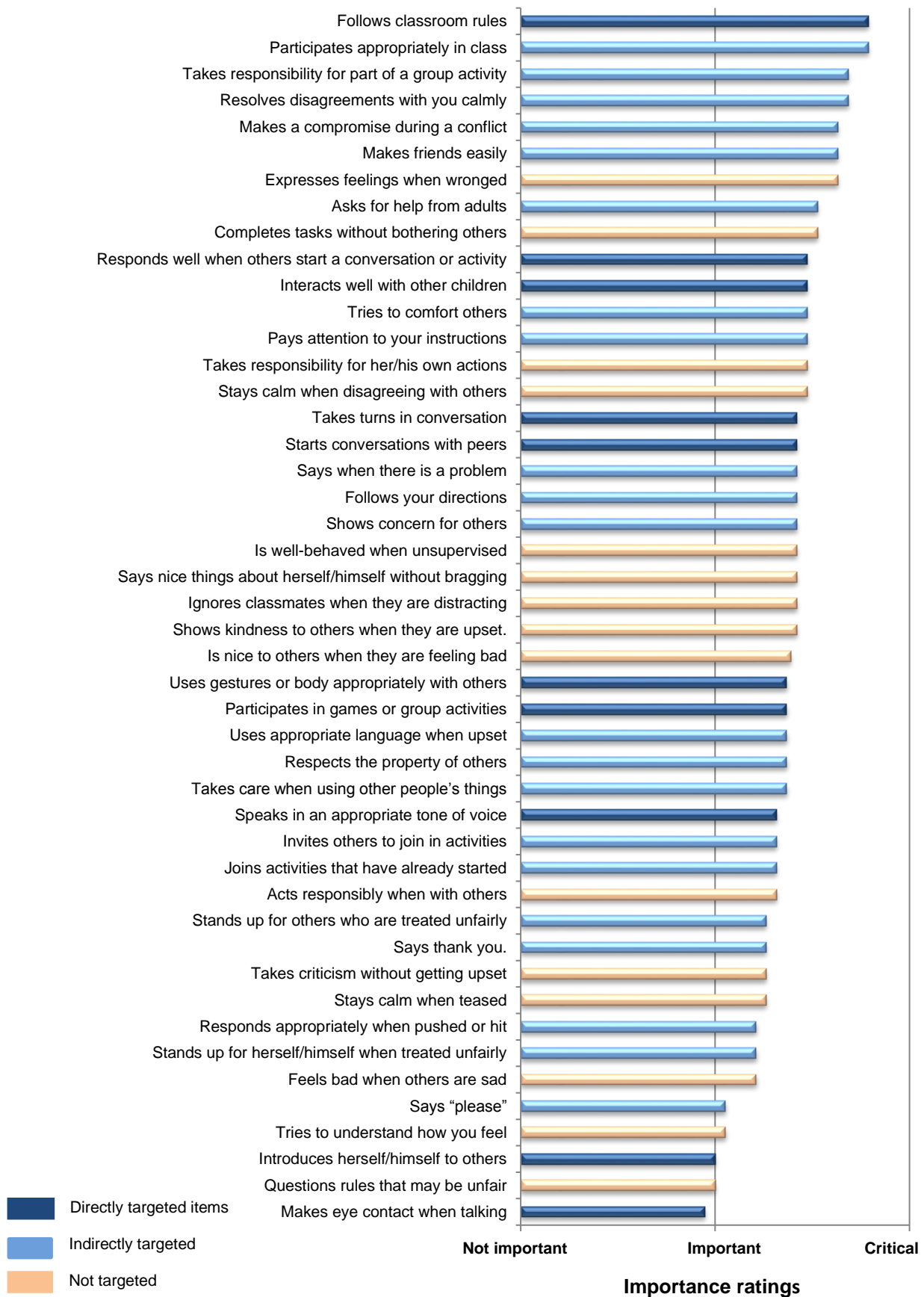


Figure 3 Mean importance ratings provided by teachers for each of the SSiS social skill items at pre-intervention.

At pre-intervention thirteen students completed the SSiS surveys which included a qualitative question that asked students about what they hoped involvement in the iMsocial program would help them with. Response themes and examples of student responses are shown in Table 6. Not all students responded to the question but as can be seen from the example responses provided, students frequently identified more than one skill area that they hoped the program would help them with. The most common responses from students involved being able to make and keep friends, to be able to converse and interact with others, and to stay calm.

Table 6 Response themes and example responses from student pre-intervention qualitative question “What do you want the iMsocial program to help you with?”

Response themes	Examples of comments
<p>What do you want the iMsocial program to help you with?</p> <ul style="list-style-type: none"> • Engagement (e.g., to make and keep friends) • Communication (e.g., to converse with others; understand social rules) • Self-control (e.g., to stay calm, deal with stress) • Self-protective skills (e.g., deal with bullies) • Skills to support classroom participation and learning (e.g., self-confidence, to understand work) 	<p><i>“Help me to meet new people and not get stage fright. I don't want new people to think I am stupid.”</i></p> <p><i>“I would like to talk more to some of my friends.”</i></p> <p><i>“Join in conversations. Go to the chill out corner if I'm a 3.”</i></p> <p><i>“Keep calm when others upset me. Also make friends I can hang out with at school.”</i></p> <p><i>“Making friends ‘I am forever alone’ [said with a big smile on his face] - ‘not the song’.”</i></p> <p><i>“Stay calm when others upset me. Be able to make friends easier. Talk easier with people and adults.”</i></p> <p><i>“Staying calm. Join in a conversation. Being able to make friends.”</i></p> <p><i>“To make new friends.”</i></p> <p><i>“Bullies, Bystanders, Stress”</i></p> <p><i>“Understand my work better in class. Confidence in myself. Understand social rules better.”</i></p> <p><i>“I don't think I have anything that needs improving, except for my bad writing lol.”</i></p>

4.1.2 Post-intervention Findings

4.1.2.1 Social Skill Changes at School (Teacher and Student Post-intervention Findings)

Teacher Findings: At post-intervention interviews teachers reported that they considered there had been social skill improvements for all participating students, albeit in different areas and to differing degrees. Examples of the types of changes reported by teachers are listed in Table 7. As can be seen in Table 7, the teachers noted improvements in social skills in both classroom and playground settings. Though commenting that they were not able to say exactly to what extent the changes were associated with participation in the iMsocial program or due to general maturity, they did comment on obvious attempts by the students to implement strategies taught in iMsocial in class. For example, one teacher commented *“It's not 100% of the time, but he tries to use his protocols about interrupting and now he only needs small reminders”*.

Table 7 Examples of social skill improvements noted by teachers at post-intervention.		
Social Skill Area	Examples of skills observed	Examples of comments
Engagement	<ul style="list-style-type: none"> • Has made friends • Plays with others during breaks • Joins in class and playground activities • More social with other students in class • Participates in class activities and discussions • Initiates interactions and/or activities with others 	<p><i>“Now has a close friend in the classroom and they also spend time together in the playground.”</i></p> <p><i>“He seems to be more proactive at engaging; with initiating and organising his friendships. At the beginning of the day he will say things like ‘What are you doing at lunch today?’ or ‘Are you going to chess club today?’ to the other kids.”</i></p>
Self-control	<ul style="list-style-type: none"> • More accepting of changes • Calmer in class • Tries to control their actions in class • Asks for breaks when upset or angry • Uses “safe hands” more 	<p><i>“Before he would get very frightened of changes and would panic; now he is more accepting of changes and seems happier in the classroom.”</i></p> <p><i>“She is doing less scratching and hitting [of other kids] - there has been less negative behaviour – now the other kids are happier to have her work with them.”</i></p>
Communication	<ul style="list-style-type: none"> • Talks with other students • Talks more to the teacher • Shares information with others • Puts hand up and waits for turn to speak • Interrupts conversations less often 	<p><i>“She will now engage in show and tell in the class, whereas at the beginning of the year she refused to do this.”</i></p> <p><i>“He will now speak to me more – and to the other kids – even sometimes when he shouldn’t be talking!”</i></p>
Assertion	<ul style="list-style-type: none"> • Will ask teachers for help 	<p><i>“He will also ask for my help now rather than just using his break card to leave the classroom.”</i></p>
Responsibility	<ul style="list-style-type: none"> • Is more independent in class • More responsible for daily learning tasks 	<p><i>“She is becoming more responsible for her daily learning; now when she comes into class in the morning she sets up her daily chart, she gets out her 1-5 scale.”</i></p>
Cooperation	<ul style="list-style-type: none"> • Pays attention to/follows instructions 	<p><i>“He will sometimes sit and do nothing but he is less disruptive and he follows instructions better than he did.”</i></p>

Findings from these interviews with teachers were considered in conjunction with SSiS reports completed by teachers at pre and post-intervention to determine whether student social skills had improved over the period of the program and whether the improvements were likely to be associated with student participation in the iMsocial program. In particular, the teacher SSiS reports were used to understand the extent that:

1. Improvements reported by teachers on the SSiS for the students involved the targeted (directly and indirectly) subscales and individual items, indicating the extent that improvements could be considered to be associated with the program;

2. Improvements occurred in the subscale and skill areas identified by teachers as important areas of student need; and
3. The improvements in social skills were likely to have practical implication for students relative to their same aged peers.

To understand the areas of most improvement from pre to post-intervention, Repeat Measure Analyses of Variance (ANOVA) were used to compare changes in the mean SSiS subscale scores. In these analyses assessment time (e.g., pre vs. post-intervention) was used as the within-subject factor and school was used as the between-subjects factor to understand differences across the three schools in the SSiS findings. These analyses showed that two of the three directly targeted SSiS subscales improved significantly from pre to post-intervention: communication [$F(1,16) = 12.53, p=.003, \eta_p^2=.44$] and engagement [$F(1,16) = 7.75, p=.013, \eta_p^2=.33$]. Two further pre to post-intervention significant improvements were also obtained: responsibility [$F(1,16) = 14.20, p=.002, \eta_p^2=.47$] and self-control [$F(1,16) = 9.51, p=.007, \eta_p^2=.37$]. Although no directly targeted items were drawn from these subscales they each contained indirectly targeted items (responsibility = 50% and self-control = 57%). Of note was the finding that it was these two subscales on which significant time x school interactions were obtained: responsibility [$F(2,16) = 4.59, p=.027, \eta_p^2=.36$] and self-control [$F(2,16) = 6.44, p=.009, \eta_p^2=.45$]. When considering the variations in mean changes from pre to post-intervention for these two subscales across the three schools it was evident that improvements at School 3 differed from the other two schools (see Figure 4).

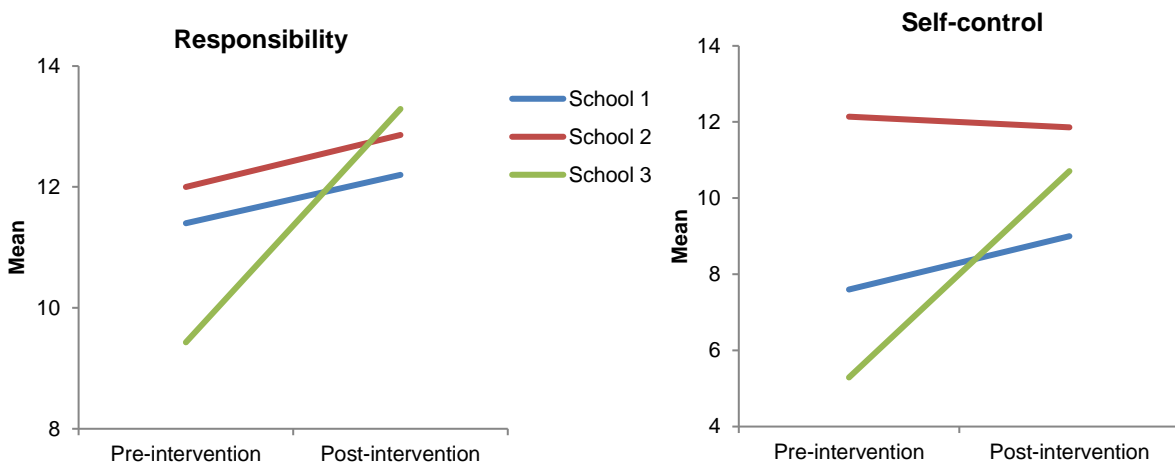


Figure 4 Pre and post-intervention mean scores for teacher ratings of the responsibility and self-control SSiS subscales for each of the three schools.

To further investigate the findings in Figure 4 for the responsibility and self-control subscales, additional ANOVAs were undertaken with School 3 separated from Schools 1 and 2. Significant improvements were obtained on both subscales for School 3 [responsibility: $F(1,6) = 17.93, p=.005, \eta_p^2=.75$; self-control: $F(1,6) = 25.94, p=.002, \eta_p^2=.81$], but not for Schools 1 and 2. A number of possible explanations exist for this finding. At School 3 SSiS reports were completed by the same ESO staff responsible for conducting the iMsocial program and it could be suggested that this contributed to bias and possible overrating of skill changes for participating students; however, if this were so then similar improvements on the remaining three social skill subscales (cooperation, assertion, and empathy) would also be expected; however, this was not found to be the case. Another possible explanation may be related to the age of the students at School 3 - all of whom

were in Year 8 - and the possibility that involvement in the iMsocial program contributes to different outcomes for an older cohort of students as they are more able to transfer skills to classroom environments (e.g., resolve disagreements calmly, take responsibility for part of a group activity). This transfer of skills may also have been facilitated by the ESOs who ran the program when they worked with the students in their classes; at post-intervention interviews the School 3 ESOs commented on providing the students with prompts to use the strategies and skills learnt in the program when faced with challenges in their classes.

When changes in individual items are considered using paired samples t-tests, 13 significant mean improvements of moderate to high effect were obtained. These improvements included nine targeted items (69%) and four non-targeted items (31%). All 13 items were considered important skills, falling in the important to critical range when rated by teachers at pre-intervention (see Figure 5). These significantly improved items came from five subscale areas: responsibility = 4, communication = 3, self-control = 3, engagement = 1, and cooperation = 1.

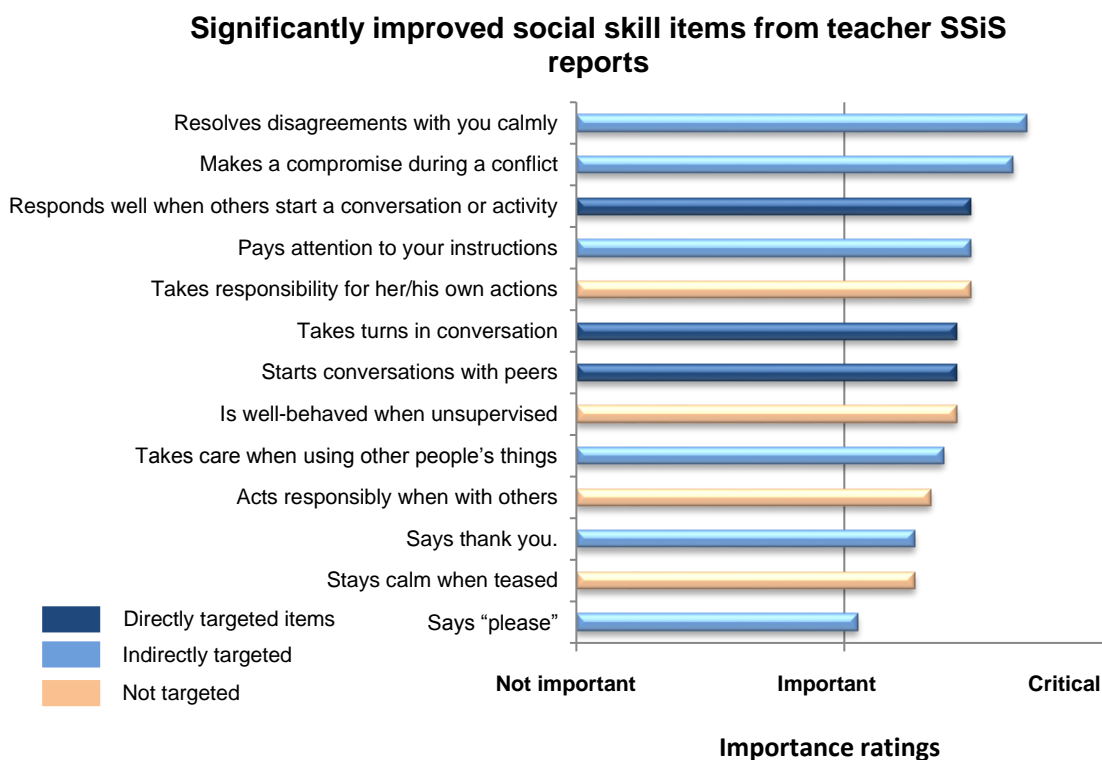


Figure 5 Mean importance ratings provided by teachers at pre-intervention for the social skill items with significant mean improvements from pre to post-intervention.

Changes in student levels of functioning using the SSiS behaviour levels were considered for each subscale to investigate the extent that changes in student social skills, as assessed by teachers, resulted in improvements that addressed the areas of need at the level of the subscale (as identified in Figure 1) and the extent that the changes resulted in improvements likely to be of practical significance for the participating students. This involved comparing subscale behaviour levels for each student at pre-intervention with those at post-intervention. In particular, this aimed to establish the numbers of students who improved their performance

over this period from functioning in the below average range to an average range of functioning on each subscale; this also provided a profile of students whose performance declined over the same period from functioning at an average range at pre-intervention to a below average range at post-intervention. The findings are shown in Figure 6.

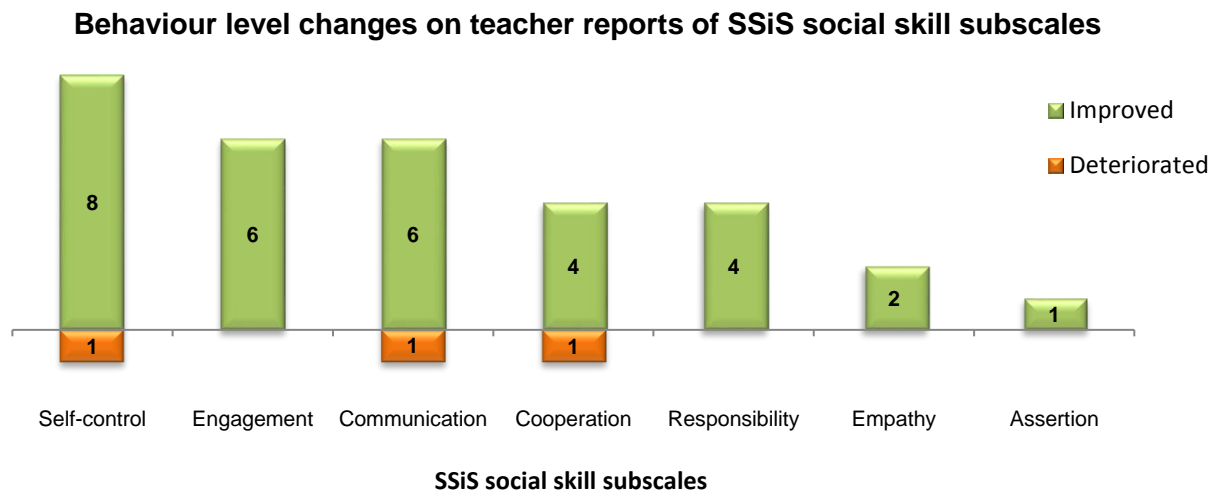


Figure 6 Numbers of students assessed by teachers as improved from below average to average functioning or as deteriorating from average to below average functioning on each SSiS social skill subscale from pre to post intervention.

As can be seen in Figure 6, overall far more improvements than deteriorations were reported by teachers. When considering these improvements in the context of numbers of students assessed by teachers as functioning in the below average range at pre-intervention on each subscale, the following results were obtained:

- **Self-control:** 8/11 students (88%) improved from below average to average functioning;
- **Responsibility:** 4/5 students (80%) improved from below average to average functioning;
- **Communication:** 6/8 students (75%) improved from below average to average functioning;
- **Cooperation:** 4/6 students (67%) improved from below average to average functioning;
- **Engagement:** 6/11 students (54%) improved from below average to average functioning;
- **Assertion:** 1/2 students (50%) improved from below average to average functioning; and
- **Empathy:** 2/6 students (33%) improved from below average to average functioning.

The focus thus far has been on teacher reported changes in the social skill subscales and these findings have provided discriminant support for the efficacy of the iMsocial program. The autism spectrum subscale is another SSiS subscale sensitive to the types of changes reported by teachers for the students. A Repeat Measure ANOVA conducted for this subscale found a significant decline in scores [$F(1,16) = 16.42, p=.001, \eta_p^2 = .51$] from pre to post-intervention, indicating improved social skills and fewer problem social behaviours; however, a significant time x school interaction was also obtained [$F(2,16) = 3.71, p=.048, \eta_p^2 = .32$]. Similar to the self-control and responsibility subscale findings, the interaction finding for the autism spectrum subscale was associated with changes at School 3. Although the mean scores for the autism spectrum subscale

declined from pre to post-intervention for all three schools, further ANOVAs conducted with the schools separated found significant changes for School 3 only [$F(1,6) = 19.04, p=.004, \eta_p^2 = .76$].

The findings for the responsibility, self-control, and autism spectrum subscales suggest that overall improvements were greater for students at School 3 than those students at the other two schools. Yet a Repeat Measure ANOVA examining pre to post-intervention mean changes for the overall measure of social skills produced by the SSiS (the Social Skill Standard Score) showed a significant mean improvement [$F(1,16) = 9.06, p=.008, \eta_p^2 = .36$] but no significant time x school interaction, suggesting no major differences in degree of mean improvements for overall social skills across the three schools.

The findings from the ANOVAs and the behaviour level improvements identified by teachers for students suggested that there would be a number of practical implications associated with changes in social skill performance for students who participated in the program that may be relevant in the classroom. To investigate the practical implications of such improvements, at post-intervention interviews teachers were asked to comment on whether use of the program at the school and improvements in student social skills had resulted in changes to the way they taught and supported the students and in student performance in the classroom. Examples of responses themes from teachers are shown in Table 8.

As can be seen in Table 8, teachers identified a number of practical implications of social improvements that related to the performance of students in the classroom and playground, but also implications for teaching the students with ASD and other students in the class. Teachers also commented on the academic benefits associated with improved social competency. For example, one teacher commented that advances one student had made socially had enabled him to join a mainstream group spelling program, whereas previously the student had not been able to participate in such a group activity. Although a number of similar examples were provided by other teachers and the mean scores for the SSiS Academic Competency standard score for the iMsocial participants showed an improving trend (see Table 4), no significant mean improvements were obtained on a Repeat Measure ANOVA for this measure from pre to post-intervention. Nonetheless, comments from teachers supported the view that improvements in social competency enabled students to participate more effectively in class activities and academic programs with potential longer term benefits.

Table 8 Response themes from teacher interviews regarding changes in teaching and support requirements of students following the iMsocial program.

Response themes	Implications for classroom &/or students	Examples of comments
Consequences of improved social competency	<ul style="list-style-type: none"> Teacher has higher expectations of student's abilities than previously Teacher extending student academically Less one-to-one time required for student Student now working in groups with peers in classes Less friendship problems in breaks Student more confident and will ask for help Student coping better with school 	<p><i>"I have slightly higher expectations of her now; before she wouldn't even walk into the classroom on her own, now she gets herself into class and doesn't need any help."</i></p> <p><i>"They are better at asking for help because they are more confident"</i></p> <p><i>"Students have obviously matured over the semester but they also seem to be coping better with school and the level of their interactions with the other kids have improved."</i></p>
Consequences of improved emotional regulation	<ul style="list-style-type: none"> Student more accepting of changes in routines Student more willing to attempt and persist at tasks Less one-to-one time required for student Student seems to be coping better with school Student getting along with other students better Student less anxious and more able to engage in classroom activities 	<p><i>"Now I sit at his desk and help [student] to do things rather than him using his break card to leave the classroom."</i></p> <p><i>"They are more self-directed as they are less anxious and this improves their learning outcomes."</i></p> <p><i>"I am spending less individual time with [students with ASD] and am able to spread my time across the whole class more."</i></p>
Teacher using, or keen to learn, new strategies to support ASD students	<ul style="list-style-type: none"> Teacher supporting student differently (e.g., give more notice about changes in the classroom) Teacher providing more encouragement for student to try tasks Teacher uses iMsocial strategies and protocols in classroom Teacher has improved their planning for student needs Teacher considering new methods to support student with ASD 	<p><i>"He is much more accepting of changes now and so I just give him some warning [about a change] and he copes much better."</i></p> <p><i>"It doesn't take long to use the strategies; I have used the strategies [iMsocial facilitator] showed me and it is actually rubbing off on the other kids in the class, especially for interrupting."</i></p> <p><i>"I think my planning for [students with ASD] has improved and now I have new strategies for working with them."</i></p>

Student Findings: Student self-assessments using the three SSiS subscales and qualitative questions were used to understand the extent to which students felt they had benefitted from the iMsocial program. Unfortunately student SSiS responses showed less evidence of improvements than reported by teachers. No significant mean improvements were obtained for Repeat Measure ANOVAs conducted to examine mean pre to post-intervention changes for subscales. Mean scores on the student ratings of individual items improved

for 53% of the items; however, when changes on SSiS items were examined using paired samples t-tests no significant improvements were obtained. Behaviour level changes on the three SSiS subscales also revealed variable findings as can be seen in Figure 7 for the eight students who completed the post-intervention SSiS reports. Despite the findings above, students did report benefits from the program in the qualitative questions included with the SSiS survey. At pre-intervention students most commonly hoped the program would help them with making and keeping friends, conversing and interacting with others, and to remain calm when upset. At post-intervention, when asked about the skills the iMsocial program had helped with, these were the skills the eight students noted (see Table 9).

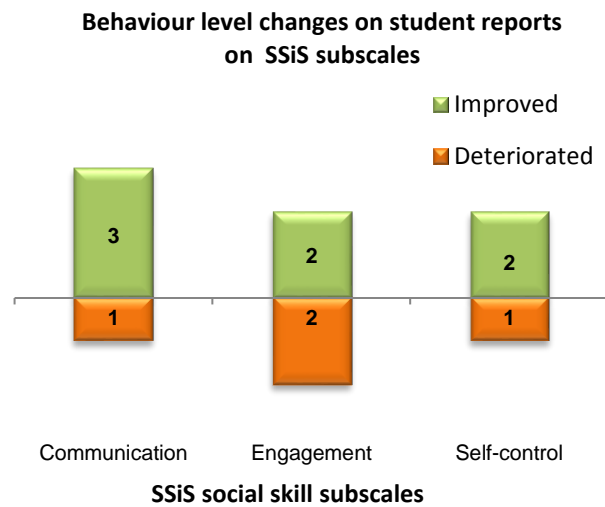


Figure 7 Number of students who improved or deteriorated on self-assessments of SSiS social skill subscales from pre to post intervention.

Table 9 Response themes and comments from student post-intervention qualitative question “Which of these skills do you think the iMsocial program that you did at school helped you most?”

Response theme	Student comments
<ul style="list-style-type: none"> Making and keeping friends 	<p>“Being able to make friends.”</p> <p>“Hanging out with my friends. It is easier to make friends.”</p> <p>“Make new friends along the way and keep positive when things I don't like make me sad.”</p> <p>[Student] has made huge progress since starting this program. He has matured and is feeling good about himself as he now has a best friend who wants to hang out with him daily! Who rings him up after school, who comes over and vice versa - he is very happy Thank you” [comment written by parent on student’s behalf]</p>
<ul style="list-style-type: none"> Conversing and interacting with others 	<p>“Eye contact and manners.”</p> <p>“How to ask to join others when they are doing the things I like. How to ask others to do things with me.”</p> <p>“Taking turns in conversations.”</p>
<ul style="list-style-type: none"> Remain calm when upset 	<p>“Keep calm when others upset me.”</p> <p>“Make new friends along the way and keep positive when things I don't like make me sad.”</p>

Students were also asked to indicate if they felt the skills gained from the iMsocial program had helped them at school, with five students (62%) responding positively. Responses provided are shown in Table 10.

Table 10 Response themes and comments from student post-intervention qualitative question “Which of these skills learnt in the iMSocial program have helped you at school?”

Response theme	Student comments
<ul style="list-style-type: none"> • Making and keeping friends 	<p>“How to make and keep a friend.”</p> <p>“Making friends. I’m good at that actually, but people refuse to be friends these days for no reason.”</p>
<ul style="list-style-type: none"> • Conversing and interacting with others 	<p>“I can understand their emotions when I look at their face.”</p> <p>“Joining in conversations.”</p>
<ul style="list-style-type: none"> • Academic performance 	<p>“Cause I’m getting some good grades like C’s and B’s it helps me a lot.”</p>

4.1.2.2 Skill Generalisation Beyond School (Parent Post-intervention Findings)

Parent interviews and SSiS reports completed at post-intervention were used to examine whether student social skills improvements had generalised to settings other than school. Only nine parents completed the SSiS reports at post-intervention (School 1 = 2, School 2 = 2, and School 3 = 5). Unfortunately the small number of parent SSiS reports limits the statistical power to investigate and extrapolate findings from the SSiS for parents; nonetheless, information from interviews provided additional evidence regarding the extent of generalisation that occurred.

Comparisons of the SSiS reports provided by parents at post-intervention with those completed at pre-intervention showed all mean subscales improved over this period; however, analyses conducted¹² found no significant mean improvements. When SSiS social skill items changes were considered, only one significant mean improvement was obtained for parent ratings of items and this involved the targeted engagement item that parents had identified as most important in Figure 2, that is ‘Interacts well with other children’ on which there was a large effect [$t(8) = -2.53, p = .035, \text{Cohen’s } d = -0.98$]. As would be expected, associated with the findings of fewer significant subscale and item improvements, there were also fewer behavioural improvements on social skill subscales from parent reports than obtained with teacher assessments (see Figure 8).

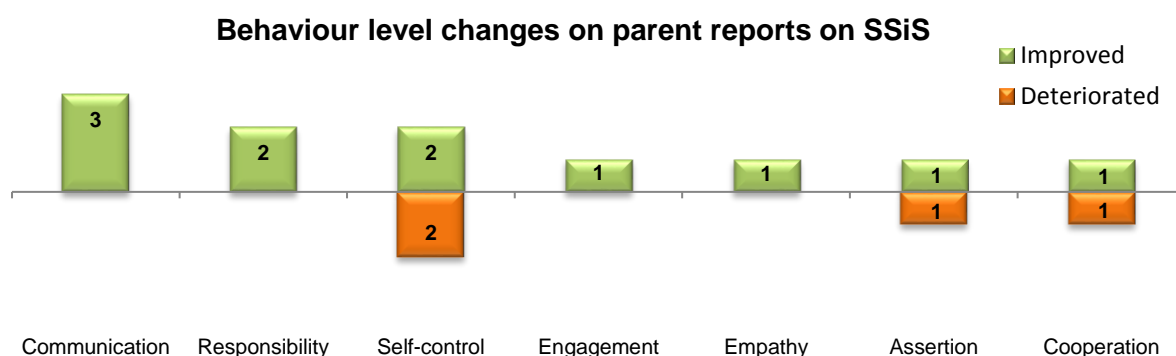


Figure 8 Numbers of students assessed by parents as improved from below average to average functioning or as deteriorating from average to below average functioning on each SSiS social skill subscale from pre to post intervention.

¹² Using Repeat Measure ANOVAs for all subscales except Engagement and Empathy which had skewed distributions requiring non-parametric analyses (Related Samples Wilcoxin Signed Rank Tests)

Although parent SSiS reports resulted in fewer improvements than did the teachers, there were more improvements than deteriorations. When considering these improvements in the context of numbers of students assessed as functioning in the below average range at pre-intervention on each subscale by the nine parents who completed post-intervention assessments, the following results were obtained:

- **Responsibility:** 2/4 students (50%) improved from below average to average functioning;
- **Communication:** 3/7 students (43%) improved from below average to average functioning;
- **Self-control:** 2/6 students (33%) improved from below average to average functioning;
- **Assertion:** 1/3 students (33%) improved from below average to average functioning;
- **Cooperation:** 1/4 students (25%) improved from below average to average functioning;
- **Engagement:** 1/7 students (14%) improved from below average to average functioning; and
- **Empathy:** 1/7 students (14%) improved from below average to average functioning.

The parent SSiS findings suggest that many of the skills students learnt in the program and that were reported by teachers did not generalise well to other settings. Nonetheless, while the parent SSiS reports did not show the same level of improvement reported by teachers, responses from parents at interviews did suggest there was some generalisation of skills to other environments. Most improvements reported by parents occurred in two of the directly targeted areas (i.e., engagement and communication), although improvements in self-control were also noted (see Table 11). Though a number of parents commented that they were not able to say whether the social skill improvements had been due to involvement in the program, the majority of parents interviewed were able to report on examples of social skill improvements that were consistent with the targeted skills from the program (e.g., making eye contact, starting conversations with adults, joining in activities with others). As with comments from teachers, parents noted that skills were not performed all the time and that some skills were performed in a 'stilted' manner but they recognised their child was attempting to use skills from the program. Several commented on their child's efforts to use their skills within the family but noted that use of skills had not extended to unfamiliar people. Only two parents said they had not observed their child using skills from the program; one parent said they had not observed any improvements although commented that the child's teacher had reported on social advancements whereas the second parent commented that her child had only attended the iMsocial sessions at school sporadically but had nonetheless been able to "recite the steps" taught for skills in the program.

Table 11 Examples of social skill improvements noted by parents at post-intervention.

Social Skill Area	Examples of skills observed	Examples of comments
Engagement	<ul style="list-style-type: none"> Has developed friendships (e.g., at school, through the iMsocial group, friendships extend beyond school) Engages with others (e.g., uses meet and greet skills; attempts to socialise with others; starts conversations with adults) Joins group activities Interacts with others More confident and comfortable in group situations 	<p><i>“Recently she went for a sleepover with a group of friends and was invited back on her own for a play-date; it all went well and this is new for her. Just thinking about it has made me feel very happy -- and to be able to say it out loud to someone – it has never happened for her before.”</i></p> <p><i>“She has come out of her shell in group situations ... at a 16th birthday party on the weekend she walked in with her head held high instead of hiding behind my coat”</i></p> <p><i>“He is a changed lad ... he is more confident in social situations.”</i></p>
Communication	<ul style="list-style-type: none"> Improved skills for joining and/or interrupting conversations Improved conversational skills (e.g., will initiate and participate in conversations, language has improved) Better at expressing self More interest in ‘chatting’ to others Attempting to vary voice tone Better understanding of social rules Makes eye contact 	<p><i>“Interrupting has always been an issue but recently I saw [student] use her skills to interrupt more appropriately at a family dinner.”</i></p> <p><i>“He will now tell me why he is unhappy about something rather than just being upset – he told me he didn’t want to go to school because his teacher was going to be away and they were going to have a relief teacher – so I know what is going on. Expressing himself is definitely a new skill.”</i></p> <p><i>“When he first watched the videos he said ‘I don’t sound like that’ now he knows and tries to sound different.”</i></p>
Self-control	<ul style="list-style-type: none"> Seems calmer Responds more appropriately when upset 	<p><i>“Biggest change is that at school and at home he remains much calmer.”</i></p>
Other	<ul style="list-style-type: none"> Improved self-esteem Has a sense of belonging Happy to be photographed/videoed Is happy at school 	<p><i>“Being in the group gave her a sense of belonging; she hasn’t had this before.”</i></p> <p><i>“Has made a huge difference to his self-esteem as he now has friends...now he feels he is like everyone else”</i></p> <p><i>“He is happy at school and this is different to all previous years.”</i></p>

4.1.3 Follow-up Findings

Three months after the post-intervention interviews and SSiS assessments were completed, follow-up interviews and assessments were conducted. The follow-up findings provided an indication of the extent to which skill improvements associated with participation in the 18 week communication and social interaction skills module of the iMsocial program had been maintained.

4.1.3.1 Maintenance of Social Skill Changes at School (Teacher and Student Follow-up Findings)

Teacher Findings: At follow-up, SSiS assessments were completed for all 19 students who participated in the iMsocial program trial. Repeat Measure ANOVAs were conducted to determine whether the significant social skill gains identified at post-intervention were maintained three months after the completion of the program. Significant mean improvements from pre-intervention were maintained at follow-up for the communication [$F(1,16) = 6.84, p=.019, \eta_p^2=.30$], responsibility [$F(1,16) = 11.89, p=.003, \eta_p^2=.43$], and self-control [$F(1,16) = 8.28, p=.011, \eta_p^2=.34$] subscales suggesting that skills improvements had been maintained. At follow-up the mean improvement for the engagement subscales was no longer significant; however, an examination of a scatter plot showed one student outlier whose engagement score had declined by approximately half from pre-intervention to follow-up. Interviews with the student's teacher confirmed the decline in the student's performance. When the Repeat Measure ANOVAs were rerun with this student outlier removed, a significant mean improvement was obtained [$F(1,15) = 8.21, p=.012, \eta_p^2=.35$], suggesting engagement improvements for the remaining students had been maintained. Examination of the assessment time x school interactions showed that the interaction was maintained for self-control [$F(2,16) = 6.23, p=.010, \eta_p^2=.44$] but not for responsibility.

When mean improvements for the individual SSiS social items were considered at follow-up, mean scores for all 13 items that were significantly improved at post-intervention remained higher at follow-up than pre-intervention although four remained significantly improved on paired samples t-tests. These items included three targeted items and the effect size for each comparison was high. The means of the following items remained significantly higher at follow-up: *responds well when others start a conversation or activity, acts responsibly when with others, takes care when using other people's things, and makes a compromise during a conflict.*

Skill maintenance was also considered by examining the maintenance of behaviour level improvements evident at post-intervention (i.e., improvements from below average functioning at pre-intervention to average at post-intervention) for students according to the teacher SSiS assessments. Sixty eight percent of all behaviour level improvements from below average to average functioning were maintained at follow-up, with the following subscale profiles:

- **Responsibility:** 4/4 students (100%) maintained average functioning;
- **Assertion:** 1/1 students (100%) maintained average functioning;
- **Cooperation:** 4/4 students (100%) maintained average functioning;
- **Communication:** 5/6 students (83%) maintained average functioning;
- **Engagement:** 3/6 students (50%) maintained average functioning;
- **Empathy:** 1/2 students (50%) maintained average functioning; and
- **Self-control:** 3/8 students (38%) maintained average functioning.

These findings suggest some loss of skill gains across a number of the social skill subscales for students from post-intervention to follow-up according to teachers. Nonetheless, while some behaviour levels changes were evident, Repeat Measure ANOVAs for the mean changes from pre-intervention to follow-up for the overall social skills standard score [$F(1,16) = 7.63, p=.014, \eta_p^2 = .32$] and the autism spectrum subscale [$F(1,16) = 22.20, p<.001, \eta_p^2 = .58$] continued to show significantly improved performance. This suggests that there was maintenance of improved performance for a number of students, although a significant assessment time x school interaction for the autism spectrum subscale [$F(2,16) = 6.22, p=.010, \eta_p^2 = .44$] suggested differences in the mean changes across each school as shown in Figure 9.

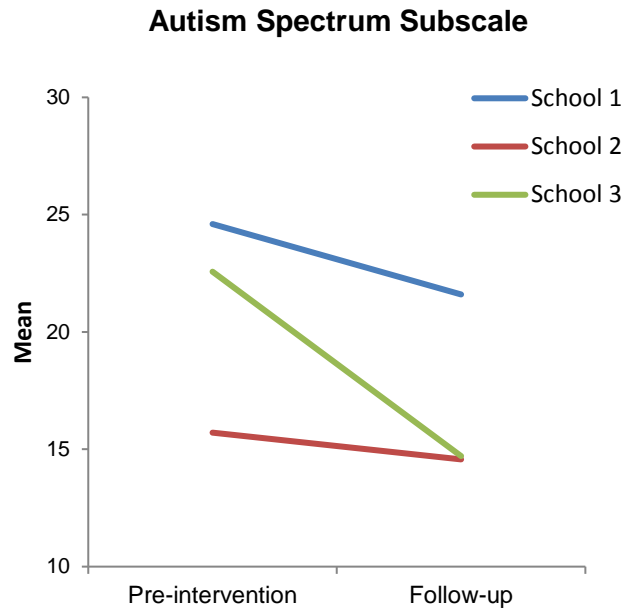


Figure 9 Pre-intervention and follow-up mean scores for teacher ratings of the autism spectrum subscale for the three schools.

Teacher interviews supported the view that a number of skill gains had been maintained and that these skill improvements had positive implications for school engagement and academic performance for students. Teachers reported maintenance of social competency gains and/or improvements for all but one student. This student, who had recently been identified as having an intellectual disability, was demonstrating problem behaviours that the teacher considered interfered with social interactions and classroom performance (e.g., other students fearful of verbal and physical outbursts thus limiting interactions with others). Teachers provided examples of social interaction and communication skills and associated implications for classroom and/or students consistent with those described at post-intervention (see Tables 7 and 8) and offered further examples as shown in Table 12. While reporting on areas of improvement, teachers also reiterated that skills may not be performed on all occasions, that student performance fluctuated (e.g., due to tiredness or other contextual factors), and that ongoing support for the students was likely to be necessary.

Table 12 Additional social competency improvements noted by teachers at follow-up interviews.

Social Skill Area	Examples of skills observed	Examples of comments
Social Awareness and Responsibility	<ul style="list-style-type: none"> Increased social maturity Mentoring other students Less 'policing' of others' behaviours 	<p>"He asked about what he was like [socially] as a Year 6 and was really accepting of the feedback"</p> <p>"She is mentoring a Year 6 student with ASDshe has been amazing"</p>
Resilience	<ul style="list-style-type: none"> Coped well with difficult social situations 	<p>"She has shown a lot of resilience since her friendship group broke down...before she would have just withdrawn."</p>
Empathy	<ul style="list-style-type: none"> Empathy for other students 	<p>"He helps a student at the Learning Centre with Down Syndrome ... he interacts in a really positive way."</p>
Engagement	<ul style="list-style-type: none"> Showing awareness of others interests 	<p>"He is more aware of the others and what they are interested in"</p>
Communication	<ul style="list-style-type: none"> Makes eye contact Understands personal space 	<p>"Her eye contact has improved and so has her turn taking, personal space (use of safe hands)."</p>

Student Findings: At follow-up, SSiS assessments were completed by 9 students. As with the post-intervention findings, no significant pre-intervention to follow-up subscales or individual item mean improvements were obtained. However, at follow-up 67% of the students who completed the surveys indicated that the iMsocial program had helped them at school and in particular, it had helped with making friends, taking turns, saying hello, having conversations, saying please and thank you, and with approaching others to play games. The areas that students considered the program had helped them with the most were consistent with those identified at post-intervention (i.e., staying calm, conversations, and making friends) although they also added "speaking up when being bullied, when I need help, when I have a problem", to be able to "look people in the eye", and using "good manners".

4.1.3.2 Maintenance of Skill Generalisation Beyond School (Parent Follow-up Findings)

At follow-up, SSiS assessments were completed for students by 9 parents. At post-intervention, only one significant mean improvement was obtained when parent SSiS reports were considered and this involved a single engagement subscale item (i.e., 'Interacts well with other children'). However, at follow-up the mean improvement was not significant although the mean for this item remained higher than at pre-intervention. Though this mean improvement was not statistically significant according to parent SSiS reports, at follow-up interviews all parents reported that their child's skills had either remained the same as post-intervention or had continued to improve. In view of this, statistical analyses were conducted to examine pre-intervention to follow-up improvements, with one significant improvement with a large effect obtained for the engagement pre-intervention (Median=8.0) and follow-up (Median=11.0) subscale improvement [$Z = -2.04, p = .042, r = .68$]. In

terms of behavioural improvements noted at post-intervention (as shown in Figure 8), at follow-up behaviour level improvements were maintained in self-control (100%), responsibility (100%) and communication (67%).¹³

Follow-up interviews were conducted with 11 parents and many of the skill examples provided by parents related to the target areas of communication and engagement and were similar to the areas reported at post-intervention (see Table 11) and offered further examples as shown in Table 13.

Table 13 Additional social competency improvements noted by parents at follow-up interviews.

Social Skill Area	Examples of skills observed	Examples of comments
Communication	<ul style="list-style-type: none"> • Taking turns • Less repetitious conversation • Improved interchange in conversations 	<p><i>“Her conversations are less repetitive...before she would ask the same questions of people but now she pays attention to people’s responses and follows up on what they said.”</i></p> <p><i>The program helped him realize that everything is not just about him; he has learnt to take turns in conversation.”</i></p>
Engagement	<ul style="list-style-type: none"> • Better understanding of connecting with others • Keen to engage with others • Keen to learn about engaging in social situations • Has a better understanding of the types of questions to use to initiate conversations to engage with others • Made friends outside of school • Has contact with friends outside of school 	<p><i>“She has a better understanding of getting along with peers and doesn’t take it to heart so much when they say ‘I don’t want to play with you today’ “</i></p> <p><i>“He asks us about what he should do in particular social situations ... and mimics what we do.”</i></p> <p><i>“She has made friends at dance classes...and is happy to stay at the class on her own.”</i></p>
Self-control	<ul style="list-style-type: none"> • Improved use of ‘safe hands’ and ‘safe words’ • Behaviour at school improved • Improved tolerance 	<p><i>“He is functioning loads better at school....and his teacher says he is choosing to participate in class work more.”</i></p> <p><i>“He copes for longer in social situations now; before he would be asking to leave after 1 to 1½ hours, now he can last about 2½ hours.”</i></p>

In addition to providing examples of skill improvements, most parents were able to provide examples of their child using the social skills learnt in the program in settings other than school. Examples of parent comments are as follows:

“He will now sit out and talk with visitors rather than staying in his room; last time he even asked [the visitor] ‘How’s your week been?’”

“We went for a physio appointment with a new physio and [student] walked in and introduced herself and shook his hand, this is something she wouldn’t have done before.”

¹³ Not able to report on the student who improved on the engagement subscale at post-intervention as no follow-up parent SSiS was available.

“Recently he said ‘How are you?’ to his father and his father nearly fell over; he has never initiated a conversation like that before.”

“At her grandfather’s 80th birthday party she was one of the key hostesses taking food around to people and she talked with people she didn’t know and made eye contact; she did really well!”

“I went on a school excursion with his class and I saw him go up to a kid he didn’t know and he said ‘Hi – what’s your name?’ this would never have happened before, he wouldn’t have initiated an interaction before.”

“Last week we got a letter about what house group he is going into at school next year and the first thing he did was ring his friends to ask what house they were in... they are all in the same house and he was so excited and I heard him say to his friends ‘you know we will be in the same house until the end of school’, then he went to his room and turned his music on and danced about for over an hour and a half.”

While reporting on student successes, a number of parents also reported that the performance of particular skills still needed further refinement. For example one parent commented that her son was more sociable but that *“he will say hello to everyone – like at the supermarket - rather than realising who it is appropriate to talk to.”*

4.1.3.3 Future Social Skill Training Needs

The need for further social skill training was raised with teachers, parents and the students at follow-up. All teachers, 91% of parents, and 75% of students considered further social skills programs would be beneficial. Students who felt no further social skills training was needed commented that this was the case *“Because I’ve done well enough and I don’t think I need to do anymore”* and *“I think I learnt a lot and I should be OK now 😊”*. Students who felt there was a need for further programs indicated that additional programs would be appropriate *“If I am struggling with other stuff”* and that they *“Want to learn more. I want to continue to talk easier to my teachers and adults”*. In terms of timeframes, the students indicated that further programs would be needed *“next term”, “next year”, “before you change school”, and “when I am a bit older”*.

Parents and teachers considered that social skills training needed to be ongoing to ensure new skills are learnt and consolidated. Staff from one school noted that social skills were critical to academic performance and consequently social skills training had been incorporated within the school’s curriculum. There was a strong consensus from parents and school staff that social skill programs should be provided to help students deal with the social challenges they will face as they move through the developmental stages and life stage transitions. There was also agreement that there were very few, if any, available programs to help students cope with the challenges that confront students at middle and senior school levels (e.g., managing puberty, relationships, anxieties associated with increasingly complex study demands).

4.2 Process Evaluation Findings

The following information summarises the findings from interviews with school staff and parents to understand the implementation processes at each of the schools and to determine the feasibility of conducting the

program in school environments. Student responses on qualitative questions in surveys regarding the program are also reported.

Group Composition: The iMsocial program is advertised as suitable for children aged 8-12 years and previous program evaluations have generally involved gender-based groups of approximately eight participants. The participating schools were provided with details of groups involved in previous trials of the iMsocial program and were invited to select participants from their student group to undertake the program. Participant selection was undertaken in each school by Learning Centre or Special Education staff, with parents and teachers subsequently contacted to check they were agreeable and to determine if there were any concerns regarding participation.

Each school implemented mixed gender groups for the iMsocial trial. Facilitators from each school felt these mixed gender groups functioned effectively. The focus of the iMsocial program on learning to socialise was a key consideration in the decision by School 3 facilitators to establish a mixed gender student group whereas previous social skill programs offered at the school, which had focused less on socialisation, had involved largely gender-based groups. These facilitators considered the mixed gender group and peer involvement were important factors in the engagement of these older students in the program. Facilitators from all schools considered peer involvement was a key advantage of the school-based iMsocial program as students either knew each other already, or soon became familiar with each other, and had opportunities to interact with each other outside of the scheduled sessions (e.g., in classrooms or the playground).

The age range of students involved in trials varied across schools. School 1 focused on middle to upper junior school levels (Years 4-6); School 2 trialled the program with four Year 3 and three Year 6 students to examine the appropriateness of the program for students at the lower and upper suggested age ranges; and School 3 implemented the program for a slightly older Year 8 cohort (all aged 13 years). Though all facilitators felt that these age groupings had functioned effectively in the sessions, one teacher did note that the older students from their class expressed some concern regarding their involvement in the program with the younger students.

Nonetheless, all facilitators indicated that the age range of students was suitable for such a group-based program, with students sufficiently mature to participate in group programs. Group size in the trial ranged from 6 to 9 students (including students without a diagnosis of ASD). Facilitators considered that approximately eight students was a suitable group size, thus allowing for opportunities to break into smaller groups for socialization activities. However, they also felt group size would be determined by factors such as whether any students had challenging behaviours and according to student age. Facilitators recommended smaller groups of approximately four would be appropriate for younger students (i.e., Reception to Year 2) to undertake such a social skills program but that groups of 10-12 would be possible for older students (e.g., Year 8 students).

Program content and structure: Despite the variable age range across schools, all facilitators reported the session content as age appropriate. The School 2 facilitator commented that the program seemed more challenging for the Year 3 students but that the Year 6 students were able to assist during sessions and act as effective role models for the younger students. Facilitators at School 3 noted initial concerns that the targeted skills may be too rudimentary for the 13 year old students but reported that this was not the case for the group who undertook the trial; although they considered future iMsocial programs offered at the school would most

likely target Year 6 and 7 students (approximate ages 11-12). When interviewed at the end of the program, one parent of a 13 year old commented that their child had said that they felt the skills covered were too basic; however, the parent stated that the program and skills covered had actually been very beneficial and that conversational improvements had been observed.

All facilitators agreed that the order and structure of sessions was effective. Commencing each session with a game was an example of successful session structure that allowed students to settle and become reacquainted with each other. Facilitators also noted though that they did have flexibility to alter the session structure if needed, and particularly to ensure students were settled before undertaking any videoing tasks. For example, the order of activities could be altered to commence with sensory time activities to accommodate student sensory or behavioural needs on arrival at the session. To help understand student wellbeing on arrival at sessions, one school utilised the 'Incredible 1 to 5 Scale' (Burton & Curtis, 2012) for students to rate their level of stress and anxiety, with facilitators adjusting the sequence of session activities if needed. They also utilised this scale at the end of the session to check how students were feeling after the 90 minute session. This enabled the facilitators to help the student with implementing strategies to control their emotional responses if upset or anxious. The facilitators from this school considered this a valuable inclusion in the program and useful in light of a concern from one family member and a teacher that the 90 minute sessions were long and possibly tiring for the younger students with ASD.

During interviews, facilitators from two schools suggested the possibility of incorporating an additional optional 'celebratory' session into the program. Facilitators from one school suggested this session could be used for students to attend a group excursion, for example ten-pin bowling, to enable students to celebrate achievements while also practising the socialising skills learnt in sessions. Similarly, feedback from one student about the changes to the program included the addition of "more fun activities" and "more social games". Another school incorporated a celebratory session into the program, achieved by condensing several sessions to free up the final session of the program. This final session was opened to parents and other family members to attend and view the program. This not only provided parents with an opportunity to become familiar with the instructional and video modelling methodology used in the program but provided students with an opportunity to demonstrate and celebrate their achievements with family members.

Teaching and learning strategies and resources: Facilitators were all in agreement regarding the high standard of the iMsocial program and resource materials available from the iMsocial website. Information was described as comprehensive, clearly presented, well organised, and easy to follow. Example videos on the website were also considered to be valuable. Suggestions for modifications were minimal and included the possibility of information on the website about the costs of games or resources suggested in the program to enable schools to establish a program budget.

The suggested sensory activities, visual resources, reward systems, social stories, and games used in the program were considered to be highly effective. However, in some circumstance facilitators did make modifications to the suggested resources. For example, all three schools reported using alternative games (e.g., board or card games, games played on whiteboards) rather than computer games for shared game time. Issues associated with the lack of availability of computers in the iMsocial teaching areas, school internet firewall restricting access to games, dislike and overuse of computers were provided as reasons for use of

alternative games. Two schools reported issues with the suggested social story software program and one school opted to use PowerPoint instead to create social story boards as students were already familiar with use of this software. One school reported that in addition to using the example video models on the iMsocial program they also incorporated amusing YouTube videos to demonstrate how not to perform particular skills (e.g., Mr Bean videos). Facilitators reported these modifications were easily made and did not affect the integrity of the program.

There was high consensus regarding the value of the video modelling used in the program. Using a 5-point rating scale¹⁴ facilitators indicated that for 74% of students the watching of the video models had contributed *to a large extent* to changes in skills and behaviours and *somewhat* for the remaining 26% of students. Facilitators indicated that the video models were important as the students with ASD often preferred visual learning processes and because the practice of breaking skills into discrete steps then filming performance for viewing served to explicitly formalise the skill for the students. Facilitators reported that most students enjoyed the filming for the videos, although one school reported having a couple of students who were nervous about the filming and so facilitators filmed these students outside of the group area until they were confident enough to be filmed in a group situation. In addition to watching of videos, the facilitators considered that peer feedback and the practicing of the skills in sessions also contributed to skill changes.

Parents were asked at interviews whether they had watched the video models at home with their child. Not all parents reported receiving or viewing the videos and some said they had specifically requested no additional homework for their child due to tiredness or to limit school-related stress. Parents of nine students reported receiving and viewing the videos and all but one parent watched them with their child. Of these parents, half said they watched the video once with their child and half watched it 2-3 times. All parents considered the videos were beneficial as they showed the skills being taught and the steps involved for each skill, thus enabling them to support their child's learning outside of school. All parents who watched the videos with their child reported this viewing provided useful performance feedback, although not all students liked watching their videos. Parents of three of the older student participants said their child seemed embarrassed watching the video and expressed surprised at how they presented to others; nonetheless, these parents said the videos were a useful source of feedback and provided them with an opportunity to discuss with their child how they perform specific social skills. Parents commented positively about the content and quality of the videos, including the personalisation of viewing rewards, and one parent also suggested using neurotypical peers in video models to provide examples of performance that were less staged and stilted for students to also watch.

With regard to the use of the video modelling software application (app), most found the app was easy to use once they were familiar with its use. All facilitators agreed that practice in the use of the app was needed but found that the filming and editing became faster as they became more familiar with the steps. The customising of the videos with reward pictures for viewing that were specific to the interests of each student was another process that added time to the compilation of videos; however, both facilitators and parents commented on the value of these individualised rewards in the video models. The uploading of videos from the handheld devices for distribution to students for watching between sessions and with parents was a process that all schools

¹⁴ Rating scale: To a very large extent; to a large extent; somewhat; to a small extent; to a very small extent.

experienced difficulties with and sought assistance from the iMsocial Program Leader, suggesting that guidelines associated with the uploading of video models for students and parents should be developed and made available on the iMsocial website. These guidelines should include suggested methods for transferring videos from the handheld devices and for distribution to parents and/or teachers for subsequent viewing with the student (e.g., to the iCloud, email).

Program feasibility in schools: Interviews to determine the feasibility of running the iMsocial program in schools identified both benefits and challenges. Facilitators identified a number of benefits associated with the delivery of the iMsocial program in school environments. Already mentioned was the opportunities for group participants to interact with each other in classrooms and/or playgrounds outside of session times, enabling connections made during the program to be built upon. A further benefit noted was student familiarity with facilitators, which was considered to enhance engagement as students were already comfortable working with facilitators and were accustomed to the behavioural rules and expectations of group activities run at school.

Another benefit identified was staff familiarity with student needs. Such knowledge can be used to guide decisions regarding group composition and the number and expertise of facilitators required to run the group. For example in this trial, School 2 planned to conduct the iMsocial program with a single volunteer facilitator; consequently no students with challenging behaviours were included in the trial group. Conversely, awareness of the needs of those chosen to participate in the iMsocial program (e.g., behavioural needs and/or anxiety with being videoed) led the other two schools to trial the program with two staff facilitators. All schools agreed that this prior knowledge of student needs provided a means of ensuring optimal group size, composition and staffing to accommodate student needs (e.g., presence of challenging behaviours).

A further benefit noted with running the program in schools is that facilitators are able to support students and assist teachers in other school environments. Facilitators from one school noted that involvement in the program had contributed to students becoming more proactive in problem solving issues with facilitators outside of sessions. Teachers from another school commented that they had worked with facilitators to directly integrate what had been learnt by students in the iMsocial program into the classroom situation.

Nonetheless, although a number of benefits associated with delivering the iMsocial program in schools were identified, there were also some logistical challenges to overcome. In particular, running the program was considered to be resource intensive. Estimates of the time required for the program provided by the schools were 20-40 minutes for session planning and preparation; 80-90 minutes for delivering the session; and 40 minutes for editing, uploading and distribution of videos for students to watch. For two schools there were two staff involved in the delivery of the program, with the consensus from those involved in the trials that in general two facilitators were most likely to be required for effectively running groups of more than four students if future programs were offered. Additional administrative and preparation time was also required before the program commenced (e.g., to organise groups, staffing, and teaching space; to liaise with parents and teachers; to prepare materials). Nonetheless, all facilitators agreed that less time was required for preparation and post-session tasks as they became familiar with the program and also that the time required for subsequent programs would be less than required to run the first program at a school as many materials would already be prepared.

Another logistical challenge identified by all three schools involved the re-watching of the video models outside of session times. The recommended number of times for watching each video model is 5-10 times. This viewing of videos is normally undertaken as homework. Two schools emailed the video models to parents for the students to watch between sessions and students in the third school had their video models on their iPads and the students were to watch the videos in their classrooms. However, each school reported problems with ensuring the videos were each watched 5-10 times and this was confirmed at parent interviews with most saying the videos were only watched at home 1-2 times. To address this, schools made other arrangements to ensure the students watched the video models in between sessions. For example, one school organised for the group to reconvene briefly at the end of each week to watch everyone's videos and commenced each session by revisiting an example video from the previous week at the beginning of each session. All facilitators noted that creating opportunities to watch the videos at school was worthwhile but also felt that sending the videos home enabled parents to see what was being undertaken and achieved in the program thus enabling support and follow-up at home. Facilitators agreed on the importance of obtaining parent commitment to support the program objectives by ensuring the students watched the videos the recommended number of times to enhance retention of skills through repetitious viewing. During interviews, a number of teachers commented that they would also like to receive copies of the video models so they could also support the student in the classroom with their social skills using strategies consistent with those being taught in the program. These findings suggest that additional guidelines may be helpful on the iMsocial website regarding alternative methods for ensuring video models are watched sufficiently to support student learning.

An area of interest for the delivery of the iMsocial program in schools involved the logistical challenges associated with the time required for the weekly sessions and the timetabling of the sessions. One school reported they altered the length of the sessions from 90 minutes to 80 minutes so sessions ran across two 40 minute school lessons, thus enabling the students to still have recess with friends and to have a break before needing to return to lessons. Only one teacher noted timetabling problems, with the iMsocial program conflicting with a double science lesson; however, this was rectified by a change of lesson times by the teacher.

At all interviews parents and teachers were asked about whether there were any issues associated with student time out of the classroom to attend the iMsocial program. No teachers raised concerns about missed lesson time or issues with respect to students missing or needing to catch up on work. The consensus from teacher feedback was that social communication skills were an important foundation for student learning and participation in the classroom and thus a priority area for the participating students. Most teachers indicated that the students demonstrated behaviours that indicated that they enjoyed attending the program (e.g., were excited to go to the session, reminded the teacher on the days they had an iMsocial session, and/or were disappointed if a session had to be rescheduled or cancelled). Only one parent reported to their child's teacher and to researchers that they and their child had concerns about missed lesson time. This parent noted that their child had a number of other weekly commitments that took them out of class (e.g., counselling, speech therapy, physiotherapy) and a number of afterschool sport commitments that meant keeping up with additional homework to catch up on missed work was stressful. All other parents reported they had no concerns with time out of class and most reported that neither had their child expressed any concerns. In general, comments from parents indicated that the program was an important part of the child's week. For example, parents said

their child had commented that they looked forward to attending the iMsocial program, they enjoyed the program as it enabled them to spend time with friends, and they would express disappointment if they were not going to be at school on an iMsocial day. Less enthusiastic responses noted by three parents included comments from their child about having to do something that their friends weren't required to do or they were missing out on class time with their friends.

Program delivery support: Two forms of support from Autism SA were available for schools trialling the iMsocial program: assistance from the iMsocial Program Leader and the iMsocial private on-line forum. During this evaluation, the iMsocial Program Leader visited each of the schools on two occasions in the first several weeks of program delivery to assist facilitators as needed. All facilitators agreed that these visits were worthwhile and helped them become confident in the delivery of the program. The Program Leader was also available by phone or email to assist with other issues as they arose during the course of the program. None of the facilitators utilised the on-line iMsocial forum, either because they felt they had no need (i.e., having two facilitators to bounce ideas off helped overcome issues) or they were not aware of the forum. There was agreement, however, that such a forum could potentially be a valuable resource.

Facilitators indicated that the availability of support from someone with experience in delivering the program (e.g., the iMsocial program leader) was an important resource, particularly when first running the program at a school. Facilitators indicated they had contacted the iMsocial Program Leader for assistance with engaging students with specific needs in the program (e.g., students with challenging behaviours) and for overcoming issues associated with the delivery of the program (e.g., uploading videos for distribution). The facilitators commented that other schools intending to run the program would likely require similar support and would also benefit from having contact with staff from other schools who had run the program.

Future use of the program: An important determinant of future intentions to use the iMsocial program by the participating schools was the perceived effectiveness of the program which was balanced against the resources required to deliver the program. At the end of the 18 sessions, facilitators, teachers, and parents were all asked to rate how effective they considered the iMsocial program had been for the students with ASD who participated in the trial. As can be seen in Figure 10 facilitators, teachers and parents most often rated the program as having been very helpful for the participating students. Indicators of effectiveness provided by the various respondents included observations of students using skills learnt in other environments, willingness of students to engage in session activities, increased confidence to participate in program activities and to ask for help outside of the program, observations of increased social connectedness in the schoolyard, the absence of any inappropriate

iMsocial Effectiveness Ratings

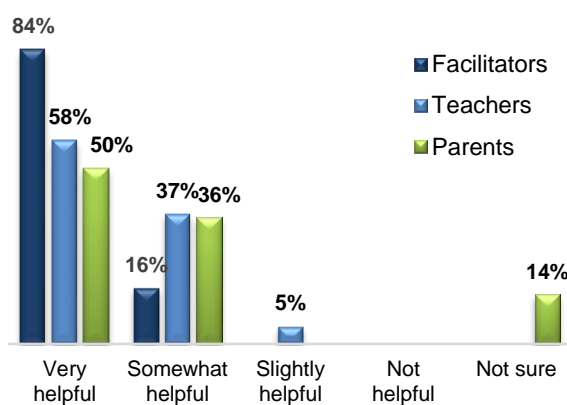


Figure 10 iMsocial program effectiveness ratings from facilitators, teachers, and parents at post-intervention.

behaviours in sessions, and feedback from others (e.g., facilitators received independent feedback from four teachers regarding the social skills improvements of one student).

At the beginning of this evaluation, all schools agreed to trial the 18 communication and social interaction skill sessions and at post-intervention interviews all facilitators indicated that the 18 session module of the iMsocial program had worked effectively as a standalone program. Nevertheless, as the program had been beneficial and well accepted by students all schools indicated that they intended to continue with the program for the remainder of the year and offer the remaining 16 sessions to participating students.¹⁵ While considering that the program could be offered as separate modules, the facilitators also considered that the program structure and session content were sufficiently independent that it would be possible to deliver aspects of the iMsocial program to students in the future to address more discrete skill areas covered in the program rather than offering all sessions (e.g., to address interrupting skills).

Staff from all three schools considered the iMsocial program had been effective and would deliver it again should suitably skilled personnel and resources be available. Each school indicated they had a cohort of students who may benefit from undertaking the iMsocial program, and this included a number of students without an ASD diagnosis. There was a strong consensus that the iMsocial program was best suited to being a school-based program for the reasons identified previously, and because being based in schools enables facilitators to work with teachers to equip them with the tools and skills needed to support student social, academic, and behavioural successes.

All facilitators commented positively about their experiences of delivering the iMsocial program for the group of students at their school. Although noting that delivering the sessions could be demanding they also commented that the experience had been worthwhile (e.g., one facilitator commented that “professionally it is one of the best things I have done”) and that the opportunity to observe student successes had been very gratifying (e.g., another facilitator commented “it has been very rewarding to see the kids transfer their skills”). With regards to other schools using the program there was agreement from all facilitators that the opportunity to liaise with staff with experience at delivering the program from other schools would be valuable before delivering the program (e.g., to view materials, get suggestions for effective group functioning) and that this could be facilitated by Autism SA.

5. Summary and Recommendations for Use of iMsocial in Schools

Schools have been identified as a key environment for teaching social skills to children with ASD, yet Ostmeyer and Scarpa (2012) note a shortage of school-based programs with research supporting the efficacy of the program. This research aimed to evaluate the outcomes and feasibility of using the iMsocial program when delivered by teaching and support staff in small group situations in school environments. Findings showed that the program can significantly improve important social skills for students with ASD and that the program is ideally suited to be school-based. The evaluation identified key factors and recommendations associated with the effective delivery of the program in schools. With respect to the specific research

¹⁵ Unfortunately School 2 later discontinued the subsequent iMsocial sessions as the volunteer facilitators was no longer able to deliver the program.

objectives identified for this evaluation, the following summary of findings and associated recommendations are provided:

Objective 1: *To provide teaching and support staff with an easily accessed and evidence based video modelling tool and associated small group program that targets the social learning needs of students with ASD.*

The iMsocial program has previously been demonstrated to be an effective social communication program for children with ASD when delivered by Autism SA facilitators. Similarly, the evaluation findings for the current trials showed the program was effective when delivered by teaching and support staff in schools. Comparisons of targeted and non-targeted social skills using teacher reports on the SSiS at pre and post-intervention and three months following program completion showed support for skill acquisition and maintenance consistent with program content rather than general development associated with maturation over the program timeframe.

Although the program content included explicit (direct targeting) instruction and modelling (indirect targeting) of skills from all seven SSiS subscales, the communication and social interaction skills module of the iMsocial program primarily targeted skills associated with the communication and engagement subscales, with skills in the cooperation subscale targeted to a lesser extent. Significant pre and post-intervention mean improvements were obtained for the engagement and communication subscales on the teacher SSiS reports, with mean improvements maintained at follow-up. Significant mean improvements were also obtained on two other SSiS subscales, the responsibility and self-control subscales; with significant school interactions suggesting these findings were largely associated with improvements reported at School 3. Factors contributing to this finding may include student age (all 13 years old) and support to use iMsocial strategies provided by ESO facilitators in classrooms settings at this school.

These findings suggest the iMsocial program when delivered by teaching and support staff in schools contributed to social skills improvements for a number of students, many of which had practical implications for students as reflected in improved levels of functioning relative to same age peers on the targeted subscale areas. Importantly though, the areas of skill improvement were largely consistent with the social learning needs for students identified by teachers. Areas of highest need identified at pre-intervention by teachers involved the subscale areas on which significant mean improvements were obtained, with teachers identifying social learning needs associated with engagement and self-control, followed by skills for communication. As noted by Iadarola et al. (2015), the effectiveness of school-based social skills programs is heightened when there is alignment between the program goals and the learning goals the school has for the students.

Objective 2: *To provide a social learning program for students with ASD that optimises educational experiences through the development of social interaction and communication skills with the associated behavioural, academic, and quality of life benefits.*

At interviews, teachers reported social skill improvements for all participating students, albeit to differing degrees and across different areas of social need. They noted that improvements were associated with behavioural benefits (e.g., student is calmer or more accepting of changes) and quality of life benefits (e.g., student has made friends) for students in both classroom and playground settings; similar benefits were also

reported at follow-up interviews. Importantly teachers also reported on academic benefits for students associated with social skill and behaviour improvements, including examples such as being able to extend the student academically as they are less anxious, involving the student in mainstream group programs as they are interacting more effectively with peers, and being able to assist the student as they will ask for help rather than leave the classroom. Nonetheless, while considering that involvement in the iMsocial program had contributed to varying degrees of improved social skills and behaviours with behavioural, academic, and quality of life consequences for students, the teachers also noted that habitual performance and skill consolidation required ongoing support to be available for the students and that classroom teachers needed the expertise to effectively support social learning (see Recommendations for Objective 6).

Objective 3: *To engage the students with ASD and their families in the evaluation of the school-based iMsocial program to ensure the program best meets the needs and goals of end-users.*

All students who participated in the iMsocial trial and their parents were invited to be involved in the iMsocial evaluation. Although not all participated, thus limiting statistical power and capacity to extrapolate parent findings, information received from those who did participate provided an indication of the extent that the program met student and parent needs and goals. In general, the program was found to target areas of social learning identified by parents and students as important and, although statistical support for improvements were limited, student and parent qualitative responses indicated performance improvements on targeted social skills and behaviours.

At pre-intervention, parent SSiS reports identified two of the areas the program directly targeted (i.e., engagement and communication) as areas of greatest need for students in addition to empathy – a skill area covered in the self-protective social behaviour module of the iMsocial program -- and self-control. Post-intervention parent SSiS findings suggested that skill generalisation beyond school had not been effective with only one significant mean improvement evident on an engagement item (*'Interacts well with other children'*) although the mean improvement for the engagement subscale was not statistically significant. However, reanalyses conducted on the engagement subscale scores at follow-up – undertaken due to the number of favourable parent comments about student performance – showed a significant engagement mean improvement from pre-intervention suggesting generalisation of engagement skills in settings other than school.

Though overall there was limited statistical support for improvements using parent SSiS reports, at interviews most parents considered their child had advanced socially and were able to provide examples of occasions when they had observed their child using skills targeted in the iMsocial program (e.g., initiating conversations with family members and others, making eye contact with unfamiliar people). In general, these skills fell in the areas of engagement, communication, and self-control. As with reports from teachers, parents noted that skills were not yet habituated but that they had observed their child attempting to put particular skills into practice. A number of parents also commented that the social skill advancements their child had made had consequences for school life, for example they noted that their child had commented that they felt a greater sense of belonging due to being a part of the iMsocial group and were happier to go to school. As was the case with teachers, the majority of parents considered social skills training was likely to be an ongoing need for their

child to ensure they had the skills to cope with the changing social challenges associated with growing up and moving through different developmental life stages.

At pre-intervention students identified five areas that they hoped the program would help them with including: engagement, communication, self-control, self-protective skills, and skills for classroom participation and learning. Most commonly students indicated they wanted help with being able to make and keep friends, to be able to converse and interact with others, and to stay calm. At post-intervention and follow-up these were the areas that students felt they had benefitted from the most following involvement in the iMsocial program, with recognising the emotions of others, improved academic performance, speaking up, making eye contact and good manners also mentioned. The majority of students (75%) considered that it would be beneficial to do further social skill programs in the future, for example when older, changing schools, or *“struggling with other stuff”*.

Objective 4: *To trial the web-based iMsocial program in schools to ensure this innovative program can be effectively delivered by teaching and support staff using the program specifications and resources on an ongoing basis.*

There was a strong consensus from facilitators at each school that the iMsocial program was suited to being a school-based program, ideally for students aged 8-12 years. Few modifications to the program structure or content were required to suit school environments, and those changes that were made were easily accommodated (e.g., using board games instead of computer games for shared game time, inclusion of a celebratory/feedback session for families). Session content and skills covered in the program were considered to be age appropriate and suitable for schools. Facilitators were all in agreement regarding the high standard of the iMsocial program and resource materials available from the iMsocial website. Similarly there was high consensus regarding the value of the video modelling used in the program although some difficulties with the uploading of video models for distribution were noted. Concerns were also raised regarding the frequency with which the video models were watched at home, with parents reporting that if videos were watched it was 1-2 times rather than the recommended 5-10 times. Each school implemented follow-up methods at school to ensure viewing of the video models.

Interviews to determine the feasibility of running the iMsocial program in schools identified both benefits and challenges. Facilitators identified a number of benefits associated with the delivery of the iMsocial program in school environments (e.g., opportunities for students to interact with each other between sessions, opportunities to consolidate skills in classroom and playground settings). Nonetheless, although numerous benefits were identified with delivering the iMsocial program in schools, there were also logistical challenges to overcome. In particular, running the program was considered to be resource intensive. Two schools delivered the program using two staff and considered this was the necessary staffing requirement, particularly if students had challenging behaviours, whereas the third school chose students with no behaviour concerns as the program was delivered by a single facilitator. Session length of 90-minutes with additional time for session planning, delivery and follow-up editing of videos were additional resource considerations. Timetabling considerations were important to ensure that students were not disadvantaged by missing particular classes, although time out of the classroom was only an issue for one student (who also had multiple other out-of-class

commitments each week). Session length was raised by a parent of a younger student participant who was concerned about the demands of concentrating for 90 minutes on skills they found particularly challenging.

Staff at each of the schools considered the iMsocial program had been effective and would deliver it again should suitably skilled personnel and resources be available. Each school indicated they had a cohort of students who may benefit from undertaking the iMsocial program, and this included a number of students without an ASD diagnosis.

Recommendations: The following recommendations associated with the use of the iMsocial program in schools are based on feedback from key informants including facilitators, teachers, and family members:

- Consider incorporating a social outing/excursion or celebratory session in the iMsocial program to enable students to celebrate achievements while also practising the socialising skills learnt in sessions.
- Ensure timetable conflicts or concerns are considered when scheduling the iMsocial program and have facilitators check periodically with teachers and students regarding timetable or missed lesson concerns.
- Monitor students before and following the 90 minutes sessions (e.g., using the Incredible 1-5 scale) to address any issues on arrival and to ensure they are not tired or struggling due to the length of the session.
- Recruit suitable volunteers who could assist an ESO with delivery of the iMsocial program in schools to address the resource issues associated with the program.
- Develop a template for an introductory parent information session that includes information to explain the importance and evidence base associated with the use of the videos for visual learners and benefits of repetitious viewing. The aim of this session would be to encourage parent buy-in and responsibility for supporting the viewing of the videos outside of sessions. Implement a mid-program review with parents to confirm that videos are being watched and to check for any concerns about the program. Such a review could be conducted by phone or via an email based survey.
- Develop guidelines to include on the iMsocial website regarding methods for schools to upload videos for distribution and viewing between sessions.

Objective 5: *To understand individual and contextual influences for children with respect to outcomes from participation in the iMsocial group program.*

At interviews informants mentioned various individual and contextual factors for students that may be relevant to the outcomes associated with involvement in the iMsocial program. Whereas a number of sources mentioned factors related to the individual students that may have affected their capacity to benefit from the program (e.g., family had moved house, marriage separations) generally these were accompanied by examples of the student still making progress with their social skills. Nonetheless, open communication channels with facilitators from teachers and parents will help address any issues that may arise from such individual and contextual factors.

A contextual factor identified by a number of informants that was considered to have favourable or unfavourable impacts on student performance involved the composition of the group involved in the iMsocial

program. Examples of the group composition resulting in favourable outcomes included students feeling they belonged to a group when attending the program with a group of similarly aged peers, students not feeling different to other class members as other students from their class were also attending the program, and opportunities to mentor younger students in groups with mixed age ranges. However, whereas some students attending the program in a mixed-aged group viewed the experience favourably others were reported to feel less comfortable and embarrassed about being included in a group with much younger students.

Recommendation: The composition of groups to be involved in the iMsocial program should be discussed with teachers to determine whether any issues are likely to arise. Facilitators should check periodically with teachers about how students feel about the group in which they are involved.

Objective 6: *To contribute to the knowledge, skills, and self-efficacy of teaching and support staff in the implementation of programs to respond to the individual educational and developmental needs of students with ASD.*

All teachers interviewed indicated they had previous experience teaching students with ASD and most had undertaken professional development sessions on teaching students with ASD, yet they also indicated that further support to translate theory and strategies into practice in classroom environments would be desirable. This finding is consistent with other surveys of teachers regarding teaching students with ASD (Sagger et al., 2016). The iMsocial program has been developed over a number of years and incorporates evidence based practices and an explicit approach for teaching social skills to students. An anticipated advantage of delivering the iMsocial program in schools was that it enabled facilitators to work with teachers to equip them with the tools and skills needed to support student social, academic, and behavioural successes. During interviews, some teachers commented that they had been provided with information about the iMsocial strategies for supporting students in class and that these strategies had been effective for supporting the learning of the students with ASD and other students in the class. Other teachers commented in the interviews that they were not familiar with the strategies used in iMsocial but would be keen to receive information about the program to enable them to support their students more effectively. Several teachers also commented that they would like to be able to view the videos of the students from the iMsocial so they could support the transfer of skills from the iMsocial sessions to classroom and playground settings.

Recommendations: The following recommendations associated with the use of the iMsocial program in schools are based on feedback from facilitators and class teachers.

- Provide an information session for class teachers of students participating in the iMsocial program to inform them of the program content and to provide information about how they can support the social learning of their students in the classroom.
- With the consent of students and parents provide teachers with copies of their student's video models to enable them to view student progress and support student use of skills in classroom and playground settings.

Objective 7: *To contribute towards the development of the "toolbox" of educational practices and resources available for teaching and support staff working with children with ASD to use and to raise awareness of the available resources.*

The Special Education Coordinators/Directors and facilitators from all three schools reported that the iMsocial program had been effective and indicated that they intended to include the program in the school's "toolbox" of practices and resources for supporting students with social skill needs, including students who may not have an ASD diagnosis. Similarly, teaching staff at the trial schools indicated that the gains they had observed in student social and communication skills and the favourable student responses to participation in the program supported the ongoing use of the iMsocial program in their schools for students with ASD or with similar social skill needs.

To further contribute to the development of a toolbox of effective educational practices and resources available for teaching and support staff working with children with ASD to use, and to raise awareness of the available resources beyond the schools that participated in the trials, the researchers and the iMsocial Program Leader provided a presentation at the Christian Schools Australia Special Education Network Professional Development day in August 2016. Special education personnel from approximately 25 schools attended at this development day and information was provided on the iMsocial program and preliminary evaluation findings. An invitation to provide a similar presentation in 2017 has also been made to the Students with Disability Inclusion and Learning Team at the Catholic Education Office.

Recommendation: Investigate opportunities for the researchers, Autism SA, and facilitators in schools to present and disseminate information about the iMsocial program to other schools at appropriate forums.

Objective 8: *To contribute towards future research associated with equipping teaching and support staff with the educational tools, protocols and knowledge to support the social, behavioural and academic needs of students with ASD.*

Schools are an ideal environment for the delivery of social skill programs for students with ASD, yet the findings in the research literature regarding school-based programs have not demonstrated the expected beneficial outcomes (Bellini et al., 2007). However, the findings from this evaluation have shown that the iMsocial program when delivered as a school-based program can improve important social skills for students with ASD with relatively high levels of skill maintenance evident. This evaluation contributes important information related to understanding factors important in the use of social skill programs in schools, including adequate resourcing for program delivery (e.g., adequate preparation time, facilitators with suitable expertise), methods to ensure transfer of skills to classrooms, commitment of families to support the program, and the targeting of skills appropriate to the students developmental life stage.

Recommendation: A key research finding arising from this and previous iMsocial evaluations involves the need for ongoing social learning for students with ASD. All informant sources identified and strongly endorsed the need for further social skill training, particularly to address the anticipated social challenges of adolescence. As has been demonstrated with the iMsocial program, schools present as an ideal environment for the delivery of developmentally targeted social skill programs to assist students to learn the skills needed to cope at the different developmental life stages of childhood and adolescence and to facilitate effective life-stage transitions while also equipping teaching and support staff with the educational tools, protocols and knowledge to support the social, behavioural and academic needs of students with ASD.

An important research recommendation included in the evaluations of the iMsocial program that were successfully conducted at Autism SA involved consideration of a sequence of such social skills programs across the developmental years at school, targeting important social skills and needs for students in the early, middle and later years of school. This research would need to consider the types of skills and social needs at these different stages, the type of social skills program most appropriate in terms of content and activities, and how best the effectiveness of such programs might be assessed. These assessments would need to include longer term follow up across years, rather than just the three months in the present study, in order to determine the extent to which social skill acquisition is maintained over time. The longer term follow up of programs conducted in the later years of school might also consider the extent to which acquired skills are maintained to facilitate the successful transition to post school options.

A set sequence of such social skills programs might not only be beneficial in dealing with important social skills and needs of students with ASD and other students needing such assistance, but it might also provide students, teachers and parents with the knowledge and reassurance that schools can and will provide support for such students across their developmental years to facilitate their educational and personal outcomes.

Information arising from this evaluation will be disseminated via Autism SA and to the participating schools. Funds allocated to this research have also been directed towards the dissemination of iMsocial program research findings, including the previous iMsocial evaluations, in the following outputs:

Harries, J., Kirby, N., & Guscia, R. (2016). Evaluation of group and outreach video-based social communication skills programs for children with Autism Spectrum Disorders. Manuscript in preparation.

Kirby, N., Harries, J., & Purmer, M. (2016, December). *Evaluating the implementation in schools of a video-based social communication group program for students with Autism Spectrum Disorders*. Poster and three minute presentation presented at the Australasian Society for Autism Research (ASfAR). Perth, Australia.

Findings from the current evaluation will also be used to compile a manuscript for journal submission on the use of iMsocial program in schools.

References

- Allen, K., Wallace, D., Renes, D., Bowen, S., & Burke, R. (2010). Use of video modelling to teach skills to adolescents and young adults with autism spectrum disorders. *Education and Treatment of Children, 33*, 339-349.
- Beaumont, R., & Sofronoff, K. (2008). A multi-component social skills intervention for children with Asperger syndrome: The Junior Detective Training Program. *Journal of Child Psychology and Psychiatry, 49*, 743-753.
- Bellini, S., & Akullian, J. (2007). A Meta-Analysis of Video Modeling and Video Self-Modeling Interventions for Children and Adolescents With Autism Spectrum Disorders. *Exceptional Children, 73*, 264-287.
- Bellini, S., Peters, J. K., Benner, L., & Hopf, A. (2007). A Meta-Analysis of School-Based Social Skills Interventions for Children With Autism Spectrum Disorders. *Remedial and Special Education, 28*(3), 153-162. doi: 10.1177/07419325070280030401
- Buron, K. D., & Curtis, M. (2012). *The Incredible 5-Point Scale: Assisting students in understanding social interactions and controlling their emotional responses*. Kansas: AAPC Publishing.
- Cardon, T. A. (2012). Teaching caregivers to implement video modeling imitation training via iPad for their children with autism. *Research in Autism Spectrum Disorders, 6*, 1389-1400.
- Charlop, M., Dennis, B., Carpenter, M., & Greenberg, A. (2010). Teaching socially expressive behaviors to children with autism through video modeling. *Education and Treatment of Children, 33*, 371-393.
- Delano, M. (2007). Video modelling interventions for individuals with autism. *Remedial and Special Education, 28*, 33-42.
- Dowrick, P. W., Kim-Rupnow, W. S., & Power, T. J. (2006). Video Feedforward for Reading. *The Journal of Special Education, 39*, 194-207.
- Estes, A., Rivera, V., Bryan, M., Cali, P., & Dawson, G. (2011). Discrepancies Between Academic Achievement and Intellectual Ability in Higher-Functioning School-Aged Children with Autism Spectrum Disorder. *J Autism Dev Disord, 41*(8), 1044-1052. doi: 10.1007/s10803-010-1127-3
- Ganz, J. B., Earles-Vollrath, T. L., & Cook, H. E. (2011). Video modeling: A visually based intervention for children with Autism Spectrum Disorder. *Teaching Exceptional Children, 43*, 8-19.
- Gelbar, N. W., Anderson, C., McCarthy, S., & Buggey, T. (2012). Video self-modeling as an intervention strategy for individuals with autism spectrum disorders. *Psychology in the Schools, 49*, 15-22.
- Goodenow, C. (1993). The psychological sense of school membership among adolescents: Scale development and educational correlates. *Psychology in the Schools, 30*, 79-90.
- Gresham, F. M., & Elliott, S. N. (2008). *Social Skills Improvement System: Rating Scales Manual*. Minneapolis: Pearson Education.
- Harries, J., Guscia, R., & Kirby, N. (2014). *Autism SA and Telstra Foundation iModeling Social Groups Project 2: Final Report 2012-2013*. South Australia: University of Adelaide.
- Harries, J., Hampel, S., Guscia, R., Wilson, L., & Kirby, N. (2012). *Evaluation Report of the Autism SA and Telstra Foundation iModelingTM Social Groups Project. Final Report 2009-2011: University of Adelaide*.
- Harries, J., Kirby, N., & Guscia, R. (2016). Evaluation of group and outreach video-based social communication skills programs for children with Autism Spectrum Disorders. *Manuscript in preparation*.

-
- Iadarola, S., Hetherington, S., Clinton, C., Dean, M., Reisinger, E., Huynh, L., . . . Kasari, C. (2015). Services for children with autism spectrum disorder in three, large urban school districts: Perspectives of parents and educators. *Autism, 19*(6), 694-703. doi: 10.1177/1362361314548078
- Kagohara, D. M., van der Meer, L., Ramdoss, S., O'Reilly, M. F., Lancioni, G. E., Davis, T. N., . . . Sigafos, J. (2013). Using iPods® and iPads® in teaching programs for individuals with developmental disabilities: A systematic review. *Research in Developmental Disabilities, 34*, 147-156.
- Kroeger, K. A., Schultz, R. J., & Newsom, C. (2007). A Comparison of Two Group-Delivered Social Skills Programs for Young Children with Autism. *J Autism Dev Disord, 37*(5), 808-817.
- Macintosh, K., & Dissanayake, C. (2006). Social Skills and Problem Behaviours in School Aged Children with High-Functioning Autism and Asperger's Disorder. *J Autism Dev Disord, 36*(8), 1065-1076. doi: 10.1007/s10803-006-0139-5
- McMahon, C. M., & Solomon, M. (2015). Brief Report: Parent-Adolescent Informant Discrepancies of Social Skill Importance and Social Skill Engagement for Higher-Functioning Adolescents with Autism Spectrum Disorder. *J Autism Dev Disord, 45*(10), 3396-3403. doi: 10.1007/s10803-015-2494-6
- Mechling, L. C., & Ayres, K. M. (2012). A Comparative Study: Completion of Fine Motor Office Related Tasks by High School Students with Autism Using Video Models on Large and Small Screen Sizes. *J Autism Dev Disord, 42*, 2364-2373.
- Mechling, L. C., & Youhouse, I. R. (2012). Comparison of Task Performance by Students with Autism and Moderate Intellectual Disabilities when Presenting Video Models on Large and Small Screen Sizes. *Journal of Special Education Technology, 27*, 1-14.
- Miltenberger, C., & Charlop, M. (2015). The Comparative Effectiveness of Portable Video Modeling vs. Traditional Video Modeling Interventions with Children with Autism Spectrum Disorders. *Journal of Developmental and Physical Disabilities, 27*, 341-358.
- National Autism Center. (2015). Findings and Conclusions: National Standards Project, Phase 2. Randolph, MA: National Autism Center. Retrieved from <http://www.nationalautismcenter.org/national-standards-project/phase-2/>.
- Ostmeyer, K., & Scarpa, A. (2012). Examining School-Based Social Skills Program Needs and Barriers for Students with High-Functioning Autism Spectrum Disorders Using Participatory Action Research *Psychology in the Schools, 49*, 932-941.
- Plavnick, J. B., Sam, A. M., Hume, K., & Odom, S. L. (2013). Effects of Video-Based Group Instruction for Adolescents with Autism Spectrum Disorder. *Exceptional Children, 80*, 67-83.
- Ratcliffe, B., Wong, M., Dossetor, D., & Hayes, S. (2014). Teaching social-emotional skills to school-aged children with Autism Spectrum Disorder: A treatment versus control trial in 41 mainstream schools. *Research in Autism Spectrum Disorders, 8*(12), 1722-1733. doi: <http://dx.doi.org/10.1016/j.rasd.2014.09.010>
- Rayner, C., Denholm, C., & Sigafos, J. (2009). Video-based intervention for individuals with autism: Key questions that remain unanswered. *Research in Autism Spectrum Disorders, 3*, 291-303.
- Reichow, B., & Volkmar, F. R. (2010). Social Skills Interventions for Individuals with Autism: Evaluation for Evidence-Based Practices within a Best Evidence Synthesis Framework. *J Autism Dev Disord, 40*, 149-166.
- Sagger, B., Klug, D., Harper-Hill, K., Ashburner, J., Costley, D., Clark, T., . . . Carrington, S. (2016). Australian Autism Educational Needs Analysis – What are the needs of schools, parents and students on the autism spectrum? Full report. Brisbane: Cooperative Research Centre for Living with Autism.
- Saggers, B. (2016). Supporting students with autism in the classroom: What teachers need to know, *The Conversation*.
-

-
- Seltzer, M. M., Shattuck, P., Abbeduto, L., & Greenberg, J. S. (2004). Trajectory of development in adolescents and adults with autism. *Mental Retardation and Developmental Disabilities Research Reviews*, *10*, 234-247.
- Shochet, I. M., Suggers, B. R., Carrington, S. B., Orr, J. A., Wurfl, A. M., Duncan, B. M., & Smith, C. L. (2016). The Cooperative Research Centre for Living with Autism (Autism CRC) Conceptual Model to Promote Mental Health for Adolescents with ASD. *Clinical Child and Family Psychology Review*, *19*(2), 94-116. doi: 10.1007/s10567-016-0203-4
- Stephenson, J., & Limbrick, L. (2015). A Review of the Use of Touch-Screen Mobile Devices by People with Developmental Disabilities. *J Autism Dev Disord*, *45*(12), 3777-3791.
- Tutt, R., Powell, S., & Thornton, M. (2006). Educational Approaches in Autism: What We Know about What We Do. *Educational Psychology in Practice*, *22*, 69-81.
- Wang, P., & Spillane, A. (2009). Evidence-Based Social Skills Interventions for Children with Autism: A Meta-analysis. *Education and Training in Developmental Disabilities*, *44*, 318-342.
- Wang, S.-Y., Cui, Y., & Parrila, R. (2011). Examining the effectiveness of peer-mediated and video-modeling social skills interventions for children with autism spectrum disorders: A meta-analysis in single-case research using HLM. *Research in Autism Spectrum Disorders*, *5*, 562-569.
- White, S. W., Keonig, K., & Scahill, L. (2007). Social Skills Development in Children with Autism Spectrum Disorders: A Review of the Intervention Research. *J Autism Dev Disord*, *37*, 1858-1868.
- White, S. W., & Roberson-Nay, R. (2009). Anxiety, social deficits, and loneliness in youth with autism spectrum disorders. *J Autism Dev Disord*, *39*(7), 1006-1013. doi: 10.1007/s10803-009-0713-8
- Wong, C., Odom, S. L., Hume, K. A., Cox, A. W., Fettig, A., Kucharczyk, S., . . . Schultz, T. R. (2015). Evidence-Based Practices for Children, Youth, and Young Adults with Autism Spectrum Disorder: A Comprehensive Review. *J Autism Dev Disord*, *45*, 1951-1966.
- Woodman, A. C., Smith, L. E., Greenberg, J. S., & Mailick, M. R. (2016). Contextual factors predict patterns of change in functioning over 10 years among adolescents and adults with autism spectrum disorders. *J Autism Dev Disord*, *46*, 176-189.

Appendix A: iMsocial Group Program Overview

iMsocial Learning Areas¹⁶

The iMsocial™ program targets specific areas of social learning. Initially the program teaches rudimentary skills as the basis for teaching concepts that are more complex. While the fundamental skills are necessary precursors to the more advanced skills, early success using video modelling also serves to enhance self-efficacy and motivate further learning. The learning areas included in the iMsocial program have been identified as important to assist children with ASD to build a ‘social toolbox’ of skills to navigate the world around them.

While the full iMsocial program addresses two areas of social learning (i.e., teaching the rules of social interaction and concepts in relation to personal safety and self-protection), only the sessions addressing rules of social interaction were included in this evaluation of iMsocial in school settings. There are 18 sessions on the rules of social interaction and the content is as follows:

Session 1 – Getting to know you 1

Session 2 – Getting to know you 2

Session 3 – Personal Space

Session 4 – Saying hello to someone you don’t know 1

Session 5 – Saying hello to someone you don’t know 2

Session 6 – Saying hello to someone you know 1

Session 7 – Saying hello to someone you know 2

Session 8 – Saying Goodbye

Session 9 – Respect

Session 10 – Taking turns in talking 1

Session 11 – Taking turns in talking 2

Session 12 – Joining in a conversation 1

Session 13 – Joining in a conversation 2

Session 14 – Interrupting 1

Session 15 – Interrupting 2

Session 16 – Interrupting 3

Session 17 – Taking turns in talking 3

Session 18 – Consolidating all the communication skills

¹⁶ From the iMsocial materials provided by Autism SA.

Appendix B: Example iMsocial Session Plan



iMsocial™ Group without an Intellectual Disability Session One – Getting to Know You 1¹⁷

Facilitators –

Session set up: Set up the session with the group sitting in a half circle so that participants can all see each other. You may need to pre-warn the children that they will be expected to sit in a different seat each session or after each activity. This avoids issues with ownership over seating.

Filming tip: For the first session it is important that the children are comfortable in the group and are settled into the new environment. For the group facilitators it is very important to get to know the children and help them settle in. There will be no filming in this session.

Children come in, settle down (5 minutes)

Activity One – Getting to know you game (10 minutes)

Start the game once all the children have arrived.

For this activity you can use a ball or other suitable object. Throw the ball to someone in the group when you catch the ball you can share something about yourself. This can be as simple as your name.

In the first activity of the session we use a game to give the children the opportunity to get to know each other in a more relaxed atmosphere. The focus is on the game and not in particular on the individual.

Activity Two – Introducing ourselves (10 minutes)

The group sits in a circle. With the group decide what kind of information we can share with each other to introduce ourselves, write the suggestions on the whiteboard. Let everyone have a turn at introducing themselves to the group.

Let the children decide together what they would like to share about themselves. Keeping in mind that this is information you would only share with someone when you meet him or her for the first time (name, age, year level at school). The group facilitator will encourage everyone to have a go.

¹⁷ Materials from iMsocial.org.au

Activity Three – Group name and group rules (10 minutes)

The group sits in a circle. Explain to the group that every group has to have rules. What are the rules this group needs?

Each group will need some rules to have it function properly. Why? Think about a team sport. If everyone does what he or she likes to do then the team is not able to score a point; it will be chaos on the field. Each team also has a team leader (e.g. coach) to train the team, encourage and support the team and to ensure everyone has a role in the team.

*Ask the children to come up with a list of rules they think are important to have in the group. This will give them ownership over the rules and it means you haven't imposed the rules on them. When you have to refer to the rules during group time you are reminding them of their **own** rules.*

After collecting all the rules the children can come up with, you should be able to categorise them into four/five different groups e.g.; listen to each other, one person speaking at the time, respect each other and property. This will reduce the list of rules into approximately four rules, which will make it easier for the children to remember them.

For more information about setting up group rules, refer to Baker (2003) 'Social skills training for children and adolescents with Asperger syndrome and social communication problems'.

After the group has decided on the group rules ask them to come up with a name for the group and choose a reward puzzle picture that best represents the group.

Write down all the suggestions on the whiteboard. Try to let everyone have a go at suggesting a name for the group. Make sure they are sensible and keep an eye on the time. This activity does not need to take too long. To decide on the name let the children vote for their two favourite names. The children are allowed to put up their hand twice while you read out the list. The name that gets the most votes will be the name for the group. If there is a tie get the children to vote for the ones with the most votes only. Allow only one vote each.

Note: facilitators will explain how the reward chart is used in Session 2.

Snack Time (15 minutes)

Time to have a snack and a drink and some time to chat to each other.

Snack Time is an important time for the children to interact with the each other, to have a break from the learning component of the program and to reload themselves.

Sensory Time – Stepping Stones (10 minutes)

*During the session learning activities and activities that require concentration are followed by activities that will provide the children with the opportunity to reload and obtain the required sensory input. You can choose a sensory activity from the list or use the suggested **Stepping Stones** activity.*

*Refer to the **Sensory Time Suggestions List** for instructions on how to perform this activity.*

At the start of the program you might find that you need to add more sensory activities to help the children settle into the new environment. You can easily add another sensory activity at any time during the session. Sensory activities do not need to be very long, one minute activities can work effectively to regulate focus.

Activity Four – Computer games time (20 minutes)

The group sits in a circle. First explain to the children how the computers work and introduce them to the rotation system we have for taking turns with partners at computer time.

*You can create your own rotation schedule or download the **Rotation Schedule** provided in the Pre-Season Program.*

The games time is spent on the computer. Different games are provided plus the access to the Internet provides a whole scope of games for the children to play. We purposely only allow the children to play games with a strategic focus, which will encourage the children to work together to achieve the goals of the game.

To make sure the children all get a chance to work with each other we use a rotation schedule. This will prevent arguments about just wanting to play with one child. The first few sessions of the program allow the children to choose their own games. This could mean that the two children sharing the computer can play a different game each.

Pack up and say goodbye (10 minutes)

Time to get your snack, drink and bag. Say goodbye to everyone.

Each session will end with a brief overview of the session and some positive comments on the session by the facilitators. Before the children are allowed to go home everyone has to say goodbye to each other, teaching them the skill of saying goodbye.

Appendix C: Poster presented at the ASfAR 2016 conference



Evaluating the implementation in schools of a video-based social communication group program for students with Autism Spectrum Disorders.

Neil Kirby¹, Julia Harries¹, Merel Purmer²
¹ University of Adelaide, ² Autism SA
 (Program information available from www.imsocial.org.au)

Background

The iMsocial™ program is a 34-week video-based social communication group program developed by Autism SA. This web-based program targets two social learning areas:

- Communication and Social Interaction skills (18 sessions); and
- Self-protective Social Behaviours (16 sessions).

Evaluated over a 5-year period, effectiveness of the iMsocial program has previously been demonstrated when delivered by Autism SA facilitators. A key evaluation recommendation involved trialling the delivery of the iMsocial program in schools.

Aims

This evaluation reports on school-based trials of the Communication and Social Interaction skill module of the iMsocial program and aimed to determine the feasibility of delivering the iMsocial program in schools and the effectiveness of the program at facilitating the integration of social learning into classrooms.

Method

This evaluation of the Communication and Social Interaction skills iMsocial module was delivered in three schools by teachers and educational support staff (N=5).

Program description

- Video modelling using iPads constituted the primary intervention strategy for this group-based program.
- 18 x 90 minute weekly sessions.
- Weekly sessions involved videoing students during:
 - Group games (e.g. teamwork game for taking turns session);
 - Skill instruction (e.g. using social stories, role plays); and
 - Shared game time (involving computer and board games undertaken in pairs).
- Plus some Sensory time (e.g. relaxation, yoga exercises);
- Best video examples viewed in class and for students to view at home (ideally 5-10 times/fortnight).

Participants

School	Students with ASD	Age
1	5 (2 girls, 3 boys)	9-11 yrs (mean = 10.4 yrs)
2	7 (2 girls, 5 boys)	7-11 yrs (mean = 9.4 yrs)
3	7 (2 girls, 5 boys)	13 yrs (mean = 13.2 yrs)
Total	19 (6 girls, 13 boys)	7-13 yrs (mean = 11.2 yrs)

Evaluation procedure

1. Outcome evaluation: Involved quantitative data from classroom teachers, parents and students using the Social Skills Improvement System (SSIS) and qualitative data from interviews. Targeted and non-targeted social skill subscale and item comparisons to provide discriminant support for program efficacy.
2. Process evaluation: Interviews with Facilitators at each school and Special Education Coordinators.

Key Findings

SSIS reports and interviews evaluated whether the program:

- Had contributed to social skill improvements;
- Addressed areas of need for students; and
- Had practical implications for students.

Evaluation information was collected at three time points (pre and post-intervention and three months after completion).

Outcome Evaluation Findings

Key Teacher Findings

- Repeat Measure ANOVAs for teacher SSIS reports supported program efficacy for most students. In particular, there were significant pre to post-intervention improvements for two of the three directly targeted SSIS subscale (Communication and Engagement) for all schools; improvements maintained at 3 month follow-up.
- Significant improvements and an *assessment time x school* interaction on two SSIS subscales (Responsibility and Self-control) indirectly targeted (e.g. skills learnt from being in group) with significant improvements for School 3 only; improvements were maintained at 3 month follow-up.
- Significant improvements occurred in areas identified by teachers as areas of need (Communication, Engagement, and Self-control).
- Practical implications for students reflected in improved levels of functioning compared to aged peers (Figure 1).

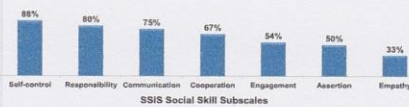


Figure 1. Percentage of students functioning in the below average range at pre-intervention who improved to an average range at post-intervention.

- At interviews teachers provided examples of improvements consistent with skills taught:
 - *"She will now engage in 'show and tell' in the class, whereas at the beginning of the year she refused to do this."*
 - *"He will also ask for my help now rather than just using his break card to leave the classroom."*

Key Parent Findings (Generalisation)

- No significant pre to post-intervention improvements at social skill subscale level but a significant improvement on the SSIS item parents rated most important for students (i.e., *'Interacts well with other children'*); the significant mean improvement was not maintained at follow-up but remained higher than pre-intervention.
- Parents provided examples of students using skills learnt in the program at home.
 - *"He will now sit out and talk with visitors rather than staying in his room; last time he even asked [the visitor] 'How's your week been?'"*
 - *"Recently he said 'How are you?' to his father and his father nearly fell over; he has never initiated a conversation like that before."*
- Most reported that home viewing of videos was less frequent than recommended (i.e. most watch 1-2/fortnight)

Key Findings

Key Student Findings

- Most common areas of need identified by students at pre-intervention included: to make and keep friends; to converse and interact with others; and to stay calm.
 - *"Help me to meet new people and not get stage fright. I don't want new people to think I am stupid."*
 - *"Keep calm when others upset me. Also make friends I can hang out with at school."*
- At post-intervention and follow-up students commented that these were the areas the program helped them with most; other areas included recognising others' emotions and improved academic performance.
 - *"Being able to make friends. Look people in the eye."*
 - *"Talking to people and having conversations."*
 - *"I can understand their emotions when I look at their face."*

Process Evaluation Findings

- Consensus (trainers, teachers, students, parents) that program suited 8-12 year old age group.
- Content and skills covered were appropriate for schools.
- Teachers, parents and students noted that time out of the classroom was not an issue; concerns raised by parent of one student (who also had multiple other out-of-class commitments each week) though student's teacher did not think it was a problem.
- All schools reported problems with watching videos at home between sessions; all implemented follow-up methods at school to ensure viewing of video models.

Conclusions and Recommendations

Use of iMsocial in Schools

Advantages:

- Participants can interact with each other at school outside of session times.
- Social skills can be supported in classes between sessions by teachers and educational support staff.
- Classroom teachers can be supported to consolidate learnt social skills using strategies from the program.

Recommendations:

- Ensure program delivery is adequately resourced (e.g. adequate preparation time, same staff trainers)
- Consider group composition (e.g. as close in age as possible).
- Ensure parent buy-in for watching videos at home between sessions.

Conclusions:

- Program can significantly improve important social skills and is ideally suited to be school-based.
- Benefits included opportunities to consolidate social skills in classroom and playground settings.

Future Research Recommendations

- Develop a range of social skills programs to address the social issues faced by students at different life stages.