Research paper

THE EFFECTIVENESS OF SOCIAL COMMUNICATION GROUPS FOR CHILDREN WITH AUTISM SPECTRUM DISORDER IN MAINSTREAM SCHOOLS

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Abstract. The purpose of this study was to evaluate the effectiveness of a 10-week Social Communication Group (SCG) programme involving six children diagnosed with Autism Spectrum Disorder (ASD). The sessions were carried out at the mainstream school attended by the children. This study evaluated the effectiveness of the programme in enhancing specific social communication skills in each participant, as opposed to previous research on social skills groups where results were more general. The children's social communication skills were rated pre- and post-therapy by the first author, parents and Learning Support Assistants (LSAs) to allow comparison. Feedback forms filled in by the LSAs and the first author's own observations allowed ongoing evaluation of each child's performance throughout sessions. Questionnaires given pre- and post-therapy to the parents and LSAs were expected to provide evidence of generalisation of social communication skills at home and at school. Qualitative and quantitative data obtained from this small group study indicated that this method of intervention was effective in enhancing the social communication skills of children with ASD. Although all the participants showed an improvement in their overall performance, specific objectives targeted through structured activities that were motivating and repetitive elicited a higher percentage improvement. Factors such as the children's primary language, pre-therapy status and their understanding at conversational level seemed to have an impact on their individual improvement. Generalisation of skills acquired during therapy was limited since it depended on the commitment of parents and LSAs in implementing the goals of the programme at home and at school.

Keywords Autism Spectrum Disorder, social communication, group therapy, mainstream school, case study

1 Introduction

The development of social communication is necessary for the adequate use of verbal and non-verbal communication for social purposes, across various contexts and with different communication partners (Prizant & Wetherby, 2005). According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-V) (American Psychiatric Association, 2013), one of the criteria necessary for diagnosing Autism Spectrum Disorder (ASD) is an impairment in social communication and social interaction, including deficits in social-emotional reciprocity, deficits in non-verbal communicative behaviours used for social interaction and deficits in developing and maintaining relationships. There are two main theories which attempt to explain the social deficits in ASD, namely Theory of Mind and social motivation theory. Previous studies have supported the hypothesis that Theory of Mind is impaired in children with ASD (Baron-Cohen, 2000). Theory of Mind is required for the understanding of the mental states of others, including their beliefs, desires, intentions and emotions (Baron-Cohen, 2001). In other words, children with ASD find it challenging to infer the thoughts of others. An impairment in Theory of Mind would result in difficulties during social communication (Cummings, 2009). In contrast, some theories have suggested that the social communication deficit arises from lack of social motivation rather than an impairment in social cognition. Social motivation models indicate that due to their impairment in early social attention, the social learning experience of children with ASD would be limited during development. Therefore, as a result of their preference for non-social stimuli, the impairment in social skills and social cognitive development would be more significant (Brodkin et al., 2012).

Social skills intervention must be part of the therapeutic programme of children with ASD since it is unlikely that these skills will improve spontaneously (Flood et al., 2010). Furthermore, the impairment in interacting with others limits these children's development of additional social communication abilities. Intervention targeting social communication should focus on encouraging the acquisition of skills, enhancing performance of skills, eliminating competing negative behaviours and facilitating generalisation (Gresham, Horner & Sugai, 2001). According to Forness et al. (1999), intervention is more effective when it targets specific skills rather than when it is general. Moreover, frequent therapy sessions would produce more positive results (Gresham et al., 2001).

Social communication skills are generally targeted using a behavioural approach which involves modelling, prompting and reinforcement (Baker, 2010). These strategies could be implemented in a Social Communication Group (SCG) programme. Intervention within a small group of individuals having social communication difficulties would give them an opportunity to interact during conversations and games while enabling them to form friendships (Baker, 2010). Generalisation in children with ASD does not occur spontaneously and must be incorporated as part of the therapy programme (Flood et al., 2010).

Table 1. Age and language abilities of each child.

Child	Age (years)	Primary Language	Summary of Language Abilities
1	8;00	English	Adequate receptive and expressive language
2	8;01	Maltese	Receptive Language: requires modelling to understand instructions and is unable to follow a conversation
			Expressive Language: does not use complex sentences when speaking
3	8;05	English	Adequate receptive and expressive language
4	9;01	Maltese	Receptive Language: difficulty understanding at conversational level
			Expressive Language: difficulty expressing himself when answering questions
5	9;02	English	Receptive Language: difficulty understanding at conversational level
			Expressive Language: adequate
6	9;03	Maltese	Receptive Language: difficulty understanding when asked a question, especially at conversational level
			Expressive Language: difficulty expressing himself, especially in statements requiring reasoning

Research on SCGs for children with ASD has shown inconsistent results due to the diverse presentation of participants as well as the different methods and measurements used across studies (e.g. Barry et al., 2003; Chung et al., 2007; Dittner et al., 2006; Fombonne et al., 2007; Jones et al., 2004). Evidence regarding the effectiveness of SCGs is necessary to prove that resources are being put to good use (Cicchetti et al., 2009). Research should aim to establish an intervention method suitable for individuals with ASD to avoid treatments with additional risks (Offit, 2008). The purpose of the current study was to investigate the effectiveness of SCGs for children with ASD who attend mainstream schools. A case study approach was adopted, thus enabling a detailed group evaluation with reference to individual characteristics of each child. Apart from identifying the specific communication skills that were enhanced in children after participating in the SCG programme, the study evaluates the factors which might have affected improvement on an individual basis. It also seeks evidence of generalisation of the skills acquired during the sessions to everyday settings.

2 Methods

2.1 Participants

The subjects were recruited from the caseload of speech-language pathologists (SLPs) working in a local Health Centre. The sample consisted of six students who had been diagnosed with ASD and attended a mainstream school, where they had a Learning Support Assistant (LSA). The participants were aged between 8;00 and 9;03 years, with a mean age of 8;06 years. This age range was selected since the chosen SCG programme, designed by Agius (2007), was formulated for children of this age. The six participants are referred to in the present text using a number from 1 to 6, with Child 1 being the youngest child. Although the participant selection criteria did not include gender specifications, the children whose parents consented to their participation in the study were all males.

2.2 Procedure

The main goals of the programme were to enhance basic skills such as attention, listening and greeting, to improve the participants' conversation skills, to enable them to be aware of different emotions, to enhance their friendship skills and to encourage them to take part in activities requiring teamwork. The programme consisted of i) an initial meeting with the parents during which they were provided with detailed information on the programme

ii) 10 group intervention sessions with the six participants and iii) a final meeting with the parents and LSAs during which they were given reports summarising each child's progress. The intervention sessions were carried out at the participants' school, which was considered to be a clinical setting for the purposes of this study. Parents and LSAs were advised to attend the sessions, which took place once a week and lasted one hour. Each session targeted a specific set of social skills. Since the children were bilingual, both Maltese and English were used when targeting the SCG goals. Across sessions, the participants were provided with a series of worksheets, which formed part of the SCG programme. Parents and LSAs were advised to use these at home and at school to encourage generalisation of skills targeted during therapy.

A detailed overview of the programme construction is found in Agius (2007), who describes how the activities for each session were planned following a review of relevant literature and research into different social skills programmes (e.g. Rinaldi, 1992; Aarons and Gittens, 1998). Available resources such as handouts were included among the session materials (e.g. Schroeder, 1996; Barratt et al., 2000; Mortimer et al., 2005). Emotions were addressed during every session using The Transporters, a series of short animated films produced by the Autism Research Centre at Cambridge University (2006). Finally, the guidelines of the programme were adapted from Rinaldi's (1992) Social Use of Language Programme.

2.3 Measures

The effectiveness of the intervention programme was measured using pre- and post- treatment comparison. The programme's Observation Schedule and Checklist (refer to Appendix 1) was used to measure the children's performance in various social communication skills. The Checklist content was based on research into the various areas typically targeted during therapy with children with ASD, as well as other social skills programmes and observation schedules (see Agius, 2007). In completing the Checklist, the children's social communication skills were assigned a 'pre-rating' and 'post-rating' score before and after therapy. Table 2 exemplifies use of the Checklist rating scale with the conversational skill of 'Looking (Eye Contact)' (Section 1).

Baseline and outcome measures were supplemented by field notes on individual participants' performance on tasks, based on ongoing observation and evaluation. The pre- and post-treatment measures together with the field notes were collected by the first author. In addition, LSAs were requested to complete a feedback form during each session, thus providing another ongoing measure

Table 2. Rating of 'Looking (Eye Contact)' on the Observation Schedule and Checklist.

Rating Level	Description	Example
1	Not evident	No eye contact
2	Emerging, but need improvement	Eye contact inconsistent
3	Appropriate level	Eye contact present even during conversations

Since children with ASD find it difficult to generalise skills acquired during therapy to other settings such as home and classroom (Keen & Rodger, 2012), the effectiveness of the programme at home and at school was also considered. The parents and LSAs of the participants were requested to fill in a Questionnaire on their opinion of the child's communication skills before the therapy programme (refer to Appendix 2). An identical Questionnaire was completed upon completion of intervention. Both the Checklist and the Questionnaire were divided into five main sections evaluating conversation skills, emotions, games, teamwork and friendship skills.

Reliability and validity of measures were not addressed directly in the methodological design due to time restrictions. However, use of the Checklist in previous research (Agius, 2007) showed that it effectively evaluated skills targeted during programme sessions. Moreover, it was explicitly designed to accompany this particular therapy programme. The specificity of measures to the participants reduced the generalisability of results, limiting their external validity (Jewell, 2014). Measurement error in pre- and post-treatment scores was minimised since the same observer assigned all ratings. The Questionnaire items targeted the same skills addressed in the Observation Schedule and Checklist, enhancing the validity of results. However, completion of the Questionnaire by different individuals may have introduced observer bias in the responses.

Data collected were analysed using both quantitative and qualitative methods. Data obtained from the Checklist and Questionnaire was analysed quantitatively using descriptive statistics. The ongoing observations of children's performance during tasks and the feedback forms completed by the LSAs for every session were analysed qualitatively.

2.4 Ethical considerations

Ethical approval from the University of Malta's Research Ethics Committee was obtained prior to data collection. The Committee's ethical guidelines were followed throughout the research study.

3 Results

3.1 Analysis of Performance within the Clinical Setting

Of the 10 sessions making up the SCG programme, each child attended at least eight. Average attendance was 92% of the total number of sessions. The average attendance of relatives (mothers and grandmothers) and LSAs was 66% and 90% respectively.

Pre- and post-rating Checklist scores were compared to calculate the percentage improvement in social communication skills for each child and the mean percentage improvement for the group. Skills not requiring further intervention at the pre-therapy stage were identified through the Checklist. Skills which were not evident or were still emerging at the onset of therapy were grouped according to whether they improved or not by the end of the programme. Improvement was accounted for when skill ratings moved up by one or two ranking points. The overall improvement of each child and the mean improvement of all six

children was calculated by obtaining a percentage of the total number of enhanced skills in relation to the skills that were not at an appropriate level pre-therapy. This is represented in Figure 1.
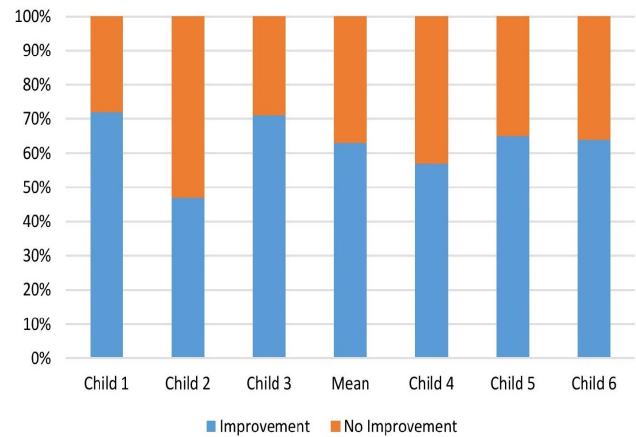

Figure 1: Overall percentage improvement of all children compared to the mean.
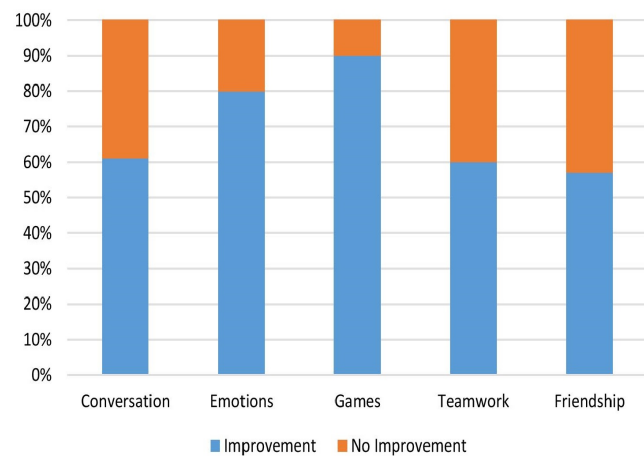

Figure 2: Mean percentage improvement of the main areas of social communication skills.

The mean percentage improvement of the six participants in conversation skills, emotions, games, teamwork and friendships skills was calculated and represented in Figure 2. A qualitative description of relevant results is provided in the next sections.

3.1.1 Conversation Skills

The main conversation skills targeted during the SCG included greetings, eye contact, turn taking, listening, topic maintenance,

initiation and voice volume.

- **Greetings**: The six children all showed improvement in greeting by saying "hello" and "goodbye" more spontaneously.

- **Eye contact**: None of the children showed adequate eye contact for conversational purposes pre-therapy, but 50% of them improved this skill. Child 4, 5 and 6 improved by maintaining more eye contact. Child 1 was able to maintain eye contact when listening but not when speaking. Child 2 avoided looking at the listener's face when speaking so that eye contact was not evident whereas Child 3 made eye contact when greeting but not during conversation.

- **Turn taking**: Five of the children did not show appropriate turn taking skills pre-therapy and only Child 4 did not show improvement since he did not wait for his turn to speak during conversation.

- **Listening**: Five of the children presented with difficulties in listening attentively during conversation since they interrupted the speaker or appeared to be distracted. Child 4 was the only child who did not show improvement in active listening due to his tendency to vocalise when someone else was speaking.

- **Topic maintenance**: Improvement in topic maintenance was observed in all the children since they were able to speak for a longer time about a particular subject.

- **Initiation**: The six children presented with difficulties in initiating a conversation. Five of them showed improvement by introducing a topic or by asking questions.

- **Volume**: Of the four children who presented with an inappropriate volume level, three showed improvement. Child 2 increased the volume level of his voice while Child 4 and 6 decreased their loudness. Child 5 did not use adequate volume since it was either too high or too low.

3.1.2   Emotions

The emotions targeted were *happy, sad, angry, afraid, excited, worried, surprised, disappointed, tired, unfriendly, sorry, kind* and *helpful*. Five of the participants had presented with difficulties in explaining and/or recognising emotions in themselves pre-therapy. They all showed improvement in this area. In addition, all six children presented with difficulties in explaining and/or recognising emotions in others. Only Child 2 did not show any evident improvement in the latter. By the end of the programme, 50% of the children, including Child 1, 3 and 5, also exhibited an understanding of complex emotions.

3.1.3   Games

Games included in the SCG focused on enhancing participation, following and accepting rules, attending as well as showing appropriate behaviour when winning or losing. Five of the children presented with difficulties in participation during games and an improvement was observed in that they became more attentive. This was evidenced by an increase in their listening and/or looking behaviours. All of the children showed an improvement in collaboration during games, which was observed through turn taking, understanding and/or following instructions and accepting and/or following rules. Although all the children behaved appropriately when winning a game, four of them had difficulties when losing. Three of the latter showed improvement in behaving appropriately in this area.

3.1.4   Teamwork

Teamwork activities included in the SCG focused on encouraging collaboration, sharing, commenting and giving assistance. Although the children were encouraged to work together, two of them preferred working alone throughout all the sessions. Improvement was noted in the skills listed below.

- **Collaboration**: The children who tended to take a leadership role improved by allowing others to contribute, while those who preferred working alone improved by joining the rest of the group.

Child 2 showed progress by simply participating, given that in earlier sessions he refused to take part in teamwork activities. Child 6 was the only participant who did not demonstrate any difference in collaboration pre- and post-therapy since he preferred working individually.

- **Sharing materials**: Four of the children were not observed to share materials pre-therapy. Three of them improved by sharing the materials used during the crafts activities with the members of the team. This was not observed in Child 2.

- **Commenting**: Discussion of ideas was not evident in the initial session. Four of the children improved since they started discussing ideas with the group while the others just followed the rest of the team.

- **Giving assistance**: Only one of the children was observed helping others during the initial session. However, by the final session, three other children started giving assistance by helping others find pictures, helping them to finish their puzzle or preparing for the activities.

- **Leadership**: Although not targeted directly, three out of the six children improved in leadership skills by accepting leadership, speaking for the team and accepting ideas of others.

3.1.5   Friendship skills

Friendships skills targeted through role play and brainstorming included asking another child to play, asking a question, introducing oneself, controlling anger, practising independence and solving problems. Improvement observed in friendship skills is described below.

- **Welcoming others**: The participants became more welcoming towards their peers as the sessions progressed, except for Child 5. This trend was evident as participants accepted peers joining them when asked to play with them. Willingness to work with others was also shown during teamwork activities. Participants also started showing a preference for particular peers when choosing teams.

-**Introducing self**: All children improved in introducing themselves by using greetings, saying their name and their age, and mentioning their hobbies.

- **Reciprocity**: Four of the participants took part in more reciprocal conversations. However, this improvement was not observed in Child 1, who continued talking in a monologic style most of the time, and in Child 2, who did not take part in conversations.

- **Controlling Anger**: Child 4, 5 and 6 became more able to control their anger when waiting for their turn during games and when disagreeing with a peer. Child 1 and 2, who also presented with difficulties in controlling their anger, did not show any improvement in this regard.

- **Independence**: Child 1, 3 and 5 became more independent when making decisions while the other participants did not show any improvement in this area.

- **Solving problems**: Although all of the children presented with difficulties in solving problems during social situations, only Child 1 and 3 showed progress in this skill.

- **Making friends**: All the children improved in making friends except for Child 2 who, even though frequently encouraged, was rarely seen interacting with the others.

3.2   Evaluation of Performance at Home and at School

The pre-therapy and post-therapy Questionnaires given to parents and LSAs were compared. Figures 3 and 4 show percentage change in rating of skills according to whether parents and LSAs reported improvement, no change or regression. The mean percentage improvement of skills at home and at school was 20% and 19% respectively. Most of the skills remained the same after therapy, both at home and at school. According to the Ques-

tionnaire data, regression was evident in some of the skills. This outcome is discussed further in the next section. The percentage improvement at home of Child 2 is not included since the parents' post-therapy Questionnaire was not returned.
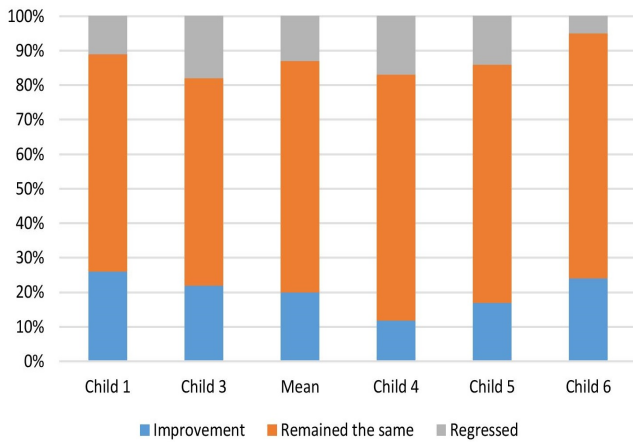

Figure 3: Percentage improvement at home relative to the mean percentage improvement for the whole group.
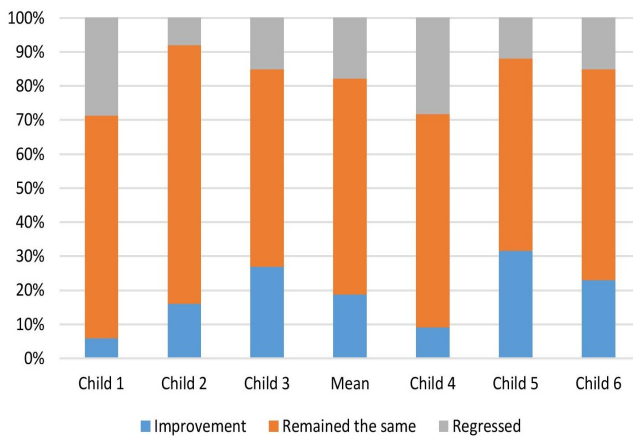

Figure 4: Percentage improvement at school relative to the mean percentage improvement for the whole group.

4 Discussion

The purpose of this study was to evaluate improvement in the social communication skills of six children with ASD after attending a 10-week SCG programme in a mainstream school. Based on observations within the clinical setting and parents' and LSAs' ratings, improvement was evident in the social communication of all six children taking part in the study. However, a 100% improvement was not shown by any of the children, implying that further therapy on social communication was required. Social interaction and pragmatic skills are influenced by cultural factors (Bratanić, 2007; Harzing & Neyer, 2008). It should therefore be taken into consideration that difficulties in social communication might also be observed in typically-developing school-aged children, as in the inability to wait for a turn. In addition, personality has an impact on reaction to social situations even in typically-developing children (Mischel & Shoda, 2008), as in acceptance or otherwise of

losing. These variables might therefore account, at least in part, for lack of improvement in the skills targeted by the programme. However, it could not be established whether limited progress was specific to children with ASD since a control group of typically-developing children was not included in the study.

Attendance did not seem to affect the children's individual improvement. However, it might have had an impact if they missed more than 80% of the sessions. More improvement was shown in children who a) were English-speaking, b) had more age-appropriate skills before therapy and c) had adequate understanding at conversational level. English-speaking children possibly showed most improvement since they tended to participate and lead more in activities, resulting in more use of English during sessions which in turn encouraged their participation further. Nevertheless, this improvement could be a result of their increased willingness to participate, which led to more opportunities for practising their skills. Another factor which might have had an impact on this result is the fact that the DVDs targeting emotions were in English. Although Maltese was also used during the sessions, the use of English in the previously mentioned task might have been a limitation for the Maltese-speaking children. Those children having a more positive pre-therapy status showed increased improvement since they presented with fewer skills requiring intervention. Another possible reason is that they had more skills which were already emerging pre-therapy, rather than skills which were not evident. Therefore, they required intervention on improvement of skills as opposed to others who necessitated intervention on acquisition. Finally, the comprehension difficulties exhibited by Child 2, 4, 5 and 6 seemed to have affected performance during tasks requiring conversational understanding, namely free conversation with peers, show-and-tell and teamwork activities. Improvement in each of the main skills addressed by the SCG programme is discussed in the following sections.

4.1 Conversation skills

The results obtained for conversation skills correspond to those reported in the study by Barry et al. (2003), where improvement was mostly shown in greetings rather than in other conversation skills. However, Barry et al. (2003) did not evaluate improvement in specific conversation skills such as eye contact, turn taking, listening, topic maintenance, initiation and voice volume. In Cragar and Horvath's (2003) case study of a 10-year-old boy attending group therapy, improvement in conversations was evident in that the child interrupted the speaker less. Yet, lack of progress in the child's understanding of non-literal language and humour was reported, similar to findings emerging from the Checklist and Questionnaire data in the current investigation. Several studies have reported an improvement in the initiation of social interactions as a result of group therapy (e.g. Bauminger, 2002; Crooke, Hendrix & Rachman, 2008; Kroeger, Newsome & Schultz, 2007). In this study, only Child 2 did not improve in initiating conversations. At the start of the programme, this child did not participate in interactions, so that for him, progress entailed maintaining a conversation rather than initiating it. In the four case studies evaluated by Chung et al. (2007), all children progressed when making initiating comments. However, in contrast to the current study, Chung et al. (2007) also involved typically-developing peers who modelled adequate use of social skills to the participant group.

4.1.1 Emotions

The children showed more improvement in recognising and explaining emotions as experienced by themselves rather than by others. This ties in with the proposed difficulties in Theory of Mind (Baron-Cohen, 2000), which prevents children with ASD from understanding the perspective of others, including their feelings. Improvement in the understanding of complex emotions was only observed in three of the children. This was expected since studies such as Balconi and Carrera's (2007) reported that chil-

dren with ASD had the most difficulty in recognising complex emotions. Baron-Cohen et al. (2007) found that difficulties in recognising complex emotions might persist through adulthood. However, there is evidence that intervention may encourage the development of these emotions. In fact, Bauminger's (2002) study on the effectiveness of cognitive behavioural intervention for children with ASD in a group setting reported improvement in the production of complex emotions.

4.2 Games

The highest percentage improvement in skills was observed in games. This was probably due to the fact that games were more structured when compared to the tasks used to target the other objectives. In addition, the prospect of winning acted as a motivator, which reinforced the children's participation and collaboration during games. This aspect of reinforcement forms part of the behavioural approach which encourages learning in children with ASD (Baker, 2010). There are very few studies that have evaluated the effectiveness of games as part of a SCG programme. Barry et al. (2003) found that children showed more improvement in play skills compared to conversation skills, while Dittner et al. (2006) reported that children improved in their ability to play with others. Targeting social skills through games, Jones et al. (2004) observed improvement in all the skills addressed, although progress in the children's actual performance during games was not evaluated.

4.3 Teamwork

There was a general improvement in collaboration, sharing materials, commenting, giving assistance and leadership. This corroborates the findings of Jones et al.'s (2004) study, in which participants were reported to start offering help and encouragement to others. An improvement in the sharing of ideas was observed in four of the children in the current study. Improvement in this area was similarly reported by Jones et al. (2004). Leadership skills were observed in the children who were more willing to collaborate in the earlier sessions of the programme. Dittner et al. (2006) found no significant improvement in leadership skills in their investigation. However, the scales they used to assess performance might not have been sufficiently valid since they included general social skills and did not evaluate the abilities targeted during sessions.

4.4 Friendship skills

Friendship skills exhibited the least improvement, possibly because the relevant intervention was less structured and more unpredictable, excluding the friendship skills targeted during brainstorming activities and role play. The lack of structure in intervention was due to the fact that it depended on situations presenting themselves during the sessions, which would differ from one group to another. Five of the participants improved in making friends, but Child 2 failed to interact with others through to the final session. In Fombonne et al.'s (2007) study, 12 out of the 13 adolescents with Asperger's Syndrome and High-Functioning Autism who gave feedback on their ability to make friends reported an improvement. However, this outcome was based on self-report rather than the researchers' observations, suggesting that the participants' subjectivity in reporting may have influenced results. In Barnhill et al.'s (2002) study, seven male adolescents were able to form a friendship with one other group member, even though they did not improve in the actual goals targeted during therapy. Cragar and Horvath (2003) reported that the child observed in their case study managed to make friends at school after attending a social skills group. Moreover, in a parent-assisted social skills group investigated by Dillon et al. (2012), 28 teenagers were successful in maintaining most of the friendship skills acquired during therapy. The current study was unable to determine whether friendships

were maintained since a follow-up assessment was not carried out due to a limited time frame.

4.5 Generalisation

The limited evidence of generalisation could have resulted from the lack of implementation of worksheet activities at home or at school. Although parents and LSAs were encouraged to use these worksheets, it was reported that they did not have time to implement them. Most children with ASD are not able to generalise skills outside the clinical setting without additional support, suggesting that this aspect must form an integral part of any SCG programme (Flood et al., 2010). Previous studies have also reported limited generalisation skills. For example, Barry et al. (2003) found greetings to be generalised as opposed to conversation and play skills. Generalisation was reported by the parents taking part in Fombonne et al.'s (2007) study, but no evidence of generalisation was present in the investigation carried out by Jones et al. (2004). A decrease in aggression, increased self-control and improved interaction were reported by Dittner at al. (2006). In the latter study, however, parents participated directly during sessions and the measurement scales were based on their reports. Cragar and Horvath (2003) reported an increase in generalisation after a nine-month follow up.

When comparing pre- and post-therapy Questionnaires completed by the parents and LSAs, regression was observed in specific skills which differed across participants. This outcome could have been due to a change in the parents' and LSAs' perceptions of the children's skills. In turn, the latter could have resulted from a recent incident involving the child, such as difficulties with conflict resolution emerging during an argument with a peer. Regression might have also been an outcome of parents' and LSAs' increased awareness of social communication deficits: upon completion of the programme, they were likely to be more knowledgeable in the requirements of each skill. Another possibility could be that parents and LSAs compared their child with other participants in the group and subsequently rated his skills as less appropriate. In addition, the pre-therapy Questionnaire was completed at the beginning of the scholastic year, when LSAs might have not yet had sufficient experience with the children to judge whether specific skills were at an appropriate level pre-therapy. Furthermore, reporting bias in parents and LSAs may have resulted in lack of objectivity in the generalisation data. The latter was manifested in discrepancies in the ratings of individual children's behaviours by the two observers.

4.6 Limitations

The findings of this study cannot be generalised to the broader population of children with ASD due to the small sample size. The data were obtained from a case study of a single group, so that the results are not necessarily applicable to other Maltese children attending a different mainstream school. Regretfully, the study lacked a control group consisting of children not receiving group therapy. This would have allowed comparison with the experimental group, providing more objective results regarding the effectiveness of the SCG. However, the ethical issue of limiting therapy to the experimental group led to exclusion of a control group from the study's methodological design. Nonetheless, improvements in social communication do not usually occur spontaneously (Flood et al., 2010), which implies that unless the participants were attending additional therapy, improvement shown could be attributed to the SCG. Indeed, at the beginning of the programme, none of the parents reported that their children were receiving intervention targeting their social skills. It is also acknowledged that the Checklist and Questionnaire measures depended on the perspective of the individuals completing these instruments. Yet, subjectivity should have been minimised since forms were completed by the same individuals pre- and post-

therapy. Ensuring the validity and reliability of the Checklist and Questionnaire data would have increased the objectivity and accuracy of results. In addition, skills emerging during the group sessions might have been restricted by the structured nature of the clinical setting, limiting the representativeness of the data.

5 Conclusion

The results of this study support the claims in the literature that SCGs are effective in enhancing the social communication skills of verbal children with ASD. The percentage improvement resulting in the main skills targeted highlights the importance of structured activities, motivation through rewards and repetition of tasks for effectiveness in the intervention of children with ASD. Although differences in children's primary language, pre-therapy status and understanding at conversational level had an impact on their individual improvement, further investigation is required regarding the effects of these specific factors. Results showed limited evidence of generalisation, but the parents and LSAs still reported an improvement in each child's specific deficits. These positive results should encourage the implementation of SCGs in mainstream schools, although further research on their effectiveness with a more representative sample is recommended.

6 Acknowledgements

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8 Conflicts of interest

The authors report no conflicts of interest.

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Appendix 1

SOCIAL COMMUNICATION GROUPS
OBSERVATION SCHEDULE AND CHECKLIST

Name: **Date Pre-Rating:**
Group: **Date Post-Rating:**
Number of sessions attended:

Rating
1 = Not evident
2 = Emerging but needs improvement
3 = Appropriate

Note: Positive changes in post-rating scores are in bold

Skill		Pre-Rating	Post-Rating
1. Conversation:			
Initiation	Greeting		
	Looking (eye contact)		
	Introducing a topic		
	Asking a question		
Maintaining a conversation	Attention		
	Active listening		
	Turn taking		
	Topic maintenance		
	Topic change		
	Flexibility of topic		
	Seeking clarification		
	Responding		
	Affirming		
	Negating		
	Questioning		
	Commenting appropriately		
Ending a conversation	Closure		
Comprehension	Verbal comprehension		
	Understanding non literal language		
	Understanding humour		

1

Skill		Pre-Rating	Post-Rating
Non-verbal communication	Facial expression		
	Volume		
	Tone of voice		
	Prosody		
	Posture		
	Proxemics		
2. Emotions:			
Recognising emotions	In self		
	In others		
Explaining emotions	In self		
	In others		
Showing emotions	Expressing verbally		
	Appropriateness		
	Showing empathy		
3. Games:			
Participation	Attention		
	Listening		
	Looking		
Collaboration	Turn taking		
	Understanding instructions		
	Following rules		
	Accepting rules		
Winning and losing	Winning		
	Losing		
4. Teamwork:			
Participation	Joining a team		
	Accepting team members		
	Collaboration		
	Contributing to common goal		
	Discussion of ideas		
	Incorporating others' ideas		
	Rejecting ideas appropriately		
Assistance	Giving assistance		
	Seeking assistance		
	Sharing materials		
Leadership	Accepting leadership		
	Speaking for team		
	Explaining ideas		

2

Skill		Pre-Rating	Post-Rating
5. Friendship:			
Entry skills	Joining a group		
	Recognising cues		
	Welcoming others		
Reciprocity	Conversation		
	Activities		
Compliments	Giving		
	Receiving		
Criticism	Giving		
	Receiving		
Co-operation	Tolerance		
	Coping with mistakes		
	Coping with being interrupted		
	Telling the truth		
	Giving guidance		
	Giving encouragement		
	Behaving appropriately		
Characterisation	Choosing friends with similar interests		
	Adapting to character of others		
Assertiveness	Ability to say 'no'		
Conflict resolution	Age appropriate		
	Accepting mistakes of others		
	Coping with change		
	Avoiding provoking others		
	Recognising others' perspective		
	Recognising being unfair		
	Recognising unfriendly acts		
	Using verbal persuasion		
	Avoiding physical response		
	Seeking negotiation		
	Seeking compromise		
	Seeking referee		
	Forgiving		
Empathy	Recognising signs of annoyance		
	Recognising approval		
	Recognising embarrassment		
	Recognising boredom		
	Inhibiting offensive comments		
	Apologising for mistakes		
	Offering comfort		
Ending	Saying goodbye		

3

Appendix 2

Sample questions of Parents' and LSAs' Social Communication Questionnaire

<u>Section A: Communication</u>

    1. Initiating Conversation

1A. Does the child use greetings to initiate conversation such as says 'hello'?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

1B. Does the child maintain eye contact when speaking with others?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

1C. Does the child manage to initiate a conversation by introducing a new topic?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

1D. Does the child initiate conversation by asking questions?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

    2. Maintaining a conversation

2A. Is the child attentive to the speaker during a conversation?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2B. Is the child an active listener thus being able to give feedback to the speaker by either non-verbal or verbal conversation?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2C. Is the child able to wait for his turn during a conversation?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2D. Is the child able to maintain speaking about a particular topic for some time even if the topic is chosen by another person?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2E. Is the child able to change the topic during the same conversation?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2F. Is the child able to be part of a conversation when the topic is not chosen by him?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2G. Does the child ask for clarification when he does not understand what the speaker is saying?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2H. Does the child respond appropriately during a conversation?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2I. Is the child able to agree with the speaker?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2J. Is the child able to disagree with the speaker?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2K. Does the child show interest by asking questions?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never

2L. Does the child comment appropriately?

☐ Yes, most of the time

☐ Yes, but not always

☐ Never